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Design of a worksite intervention to lower cardiometabolic risk in South Africa

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DECLARATION

I, Shivneta Singh, hereby declare that the research work presented in this thesis is my original work and all the materials used are appropriately acknowledged and explicitly referenced. A reference list is attached to the thesis.

I also confirm that the thesis has not been submitted in any of its part or entirety for any degree in any other institution of higher learning locally or internationally.

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DEDICATION

I dedicate this thesis to:

My loving parents Anesh and Anitha Singh,

My amazing sister, Shivecka and brother, Nakeel Singh,

and finally

My best friends, Kamantha Perumal and Priyanta Sewnarain.

“Education is the most powerful weapon which you can use to change the world.”

Nelson Mandela

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ABSTRACT

Background: Non-communicable diseases (NCDs) continue to increase globally, with an unduly larger impact in low to middle income countries (LMICs). NCDs are the main cause of death worldwide. There is strong evidence that lifestyle changes, such as weight loss, increased physical activity, and improved diet quality can help avert or slow down type 2 diabetes and reduce cardiometabolic risk factors, for example, high blood glucose, plasma lipids, and blood pressure. Regardless of the verification of research data, supporting the use of lifestyle interventions to prevent diabetes (improve glucose tolerance and lower high blood pressure), and implementing interventions in real-life settings has been proven to be difficult.

Aim: The purpose of the study was to guide the development of an acceptable, appropriate, and feasible worksite intervention targeting the food environment and behavioural intervention to reduce cardiometabolic risk at a worksite in South Africa (SA).

Methodology: In this cross-sectional study both qualitative and quantitative methods were used. The capacity of the built environment was explored through structured observations of the food and physical environment to offer healthy food and promote physical activity. Semi-structured in-depth interviews (IDIs) were conducted with worksite managers and canteen managers to assess the appropriateness, acceptability and feasibility of changes at worksites and explore the perceptions, provisions, facilitators and barriers to healthy eating at the worksite environment. Purposive snowballing sampling was used to recruit worksite managers and canteen managers for the IDIs. Focus Group Discussions (FGDs) were conducted amongst employees to explore the perceptions, provisions, drivers of and barriers to healthy eating at the worksite. An Organisational Readiness to Implement Change (ORIC) questionnaire was administered face to face at the worksite canteens and online through emails to employees aged between 18 to 65 years to determine the worksite readiness to implement changes at the worksite. Canteen staff were approached to rate possible intervention components for the purpose of tailoring the interventions and identifying the best way to deliver the intervention. The interventions were rated by canteen managers or canteen staff on a scale from one to five with regards to the feasibility of implementing different components of the intervention: with one (1) being impossible to implement and five (5) being easy to implement. A scoping review was carried out to gather data from empirical findings on the categorisation of healthy foods through Front of Pack (FOP) labelling schemes and was reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for Scoping Reviews (PRISMA-ScR) guidelines. Key findings from the formative work were used to select suitable food and physical environment interventions for the worksite. Worksite canteen intervention training was conducted to train canteen managers for the implementation of the food environmental intervention using the training manual that was developed by the researcher.

Results: The study was conducted at six Unilever SA worksites, three in KwaZulu-Natal (KZN) and three in Gauteng province. The Unilever worksites comprised of five factories and one Head Office, namely, Unilever Maydon Wharf (Personal Care and Home Care), Unilever Indonsa (Savoury dry food plant - Knorr, Robertson's, Rajah), Unilever Khanyisa (Home Care), Boksburg (Home care) and Lordsvue (Ice cream -

Ola) and La Lucia Head Office (Head Office). The study was also conducted at Retailability Head Office, a fashion apparel brand, which borders on the Unilever Head Office, making a total of seven worksites. The findings of the structured observations for the physical environment indicated that walking tracks were demarcated within the worksites; however, there were no signage prompts to encourage walking. Stairwells were clean, well lit, easily visible and accessible at each building; however, the health benefits of using the stairs were not displayed.

The food environment was observed at six canteens including La Lucia Head Office and Retailability, Unilever Maydon Wharf, Unilever Indonsa, Unilever Khanyisa and Unilever Boksburg. There were two canteens at La Lucia Head Office: the main canteen and a coffee shop. There was no canteen at Unilever Lordsvlei, but there was a dining area with packaged food sold at the vending machine. Regarding the observation of the food environment, the worksite canteens offered five subsidised contract dishes among other unsubsidised dishes of which the healthy meal was the most expensive in a four-week menu cycle. Pre-made pre-packaged food options were sold at the canteens and displayed near to the point of sale.

Ten semi-structured IDIs were conducted with worksite managers, to assess the appropriateness, acceptability and feasibility of changes at worksites and to explore the perceptions, provisions and facilitators of and the barriers to healthy eating at the worksite environment. Several themes emerged from the IDIs with worksite managers with regards to participation in a lifestyle intervention namely: availability, worksite resources and barriers to participation.

Four semi-structured IDIs were conducted with canteen managers to assess the appropriateness, acceptability and feasibility of changes at worksites and barriers to healthy eating at the worksite environment. Numerous themes emerged from the IDIs with canteen managers including the enablement of a healthy food environment, information dissemination, employee preference and canteen enablers.

Five FGDs were conducted, each group comprising of 4-6 employees, until data saturation was reached to understand the appropriateness, acceptability and feasibility of a range of possible changes at the worksite. Many themes emerged from the FGDs such as nutrient-dense foods, nutrient-poor foods and energy-dense beverages as well as the food environment and healthy longevity.

Worksite readiness to implement change was determined through the ORIC questionnaire. The ORIC statements that Unilever employees agreed with most scored 4.51 on the scale of "I believe this change will benefit our worksite", followed by 4.49 on the scale of "I am committed to implementing this change" and 4.41 on the scale of "I want to implement this change". The lowest scores (disagreement) were 3.35 for "I have the equipment we need to implement this change", 3.37 for "I have the resources we need to implement this change" and 3.46 for "I have the expertise to implement this change". All statements were significantly different from '3', on average. All mean values were >3 which indicates there was a significant agreement with all the statements. Factor analysis with promax rotation was applied to the 31 statements. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of 0.958 and a significant Bartlett's test

indicated that the data was adequate for successful and reliable extraction. The alpha value for factor 1 and 2 was $>.7$, therefore indicating reliability.

Composite variables were formed by calculating the average of the agreement scores for all items included in a variable. It was observed that there was a significant agreement for commitment (COM) and implementation (IMP) (with agreement that they desired the change and were committed to it being significantly higher than their agreement that they could implement the change). Results from a paired t-test showed agreement that they desired the change and were committed to it and were significantly higher than agreement that they could implement the change, $t(299) = 15.229$, $p < .001$. Further analysis to determine differences across worksites was conducted. Analysis from ANOVA showed that there was a significant difference in COM (commitment) across worksites, $F(3, 296) = 5.375$, $p = .001$. Post hoc analysis using Tukey's test indicated that agreement to commitment was significantly higher at Maydon Wharf than at La Lucia Head Office ($p = .043$) and at Khanyisa ($p = .021$); and at Indonsa than at La Lucia Head Office ($p = .031$) and at Khanyisa ($p = .021$). Furthermore, there was a significant difference in IMP (implementation) across worksites, $F(3, 296) = 9.960$, $p < .001$.

The ORIC statements that Retailability employees agreed with the most scored 4.58 on the scale: "I am committed to implementing this change", followed by 4.53 on the scale of "I believe this change will make things better", 4.50 on the scale of "I feel that implementing this change is a good idea" and 4.50 on the scale of "I feel this change is compatible with our values". The lowest scores (indicating disagreement) were 3.11 for "I have the equipment we need to implement this change", 3.24 for "I have the resources we need to implement this change" and 3.46 for "I have the expertise to implement this change." All statements were significantly different from '3', on average. All mean values were >3 which indicated there was significant agreement to all the statements. Factor analysis with promax rotation was applied to these 31 items. Two factors were extracted which accounted for 72.19% of the variance in the data. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .784 and a significant Bartlett's test indicated that the data was adequate for successful and reliable extraction. The alpha value for factor 1 and 2 was $>.7$, therefore indicating reliability. It was observed that there was a significant agreement for commitment (COM) and implementation (IMP) (with agreement that they desired the change and were committed to it being significantly higher than their agreement that they could implement the change). Results from a paired t-test showed that agreement that they desired the change and were committed to it was significantly higher than agreement that they could implement the change, $t(37) = 6.727$, $p < .001$.

The intervention rating scale was completed by 12 canteen managers and canteen staff using a scale from one to five for the feasibility of implementing different components of the intervention. Interventions that were easy to implement were reported by 100% ($n=12$) of participants for increasing fruit and vegetable choices, 92% ($n=11$) for the provision of free water, followed by 75% ($n=9$) for the addition of a salad bar and ready-to-eat healthy meals. The one-sample t-test was done to determine whether the average 'implementability' score differed significantly from the central score of '3'. The easiest interventions to implement were reported by 83% ($n=10$) of participants being the strategic positioning of healthier

alternatives to make healthy items more accessible with 75% (n=9) recommending traffic light labelling and healthy option stations. The most difficult to implement was reported by 25% (n=3) of participants for the display of kilojoules of a product translated into the number of minutes to perform a certain physical activity.

A scoping review was conducted on FOP labelling schemes to inform the selection of a FOP labelling scheme best suited for canteen foods at worksites in SA. Several articles (n = 2513) were identified and screened after excluding duplicates (n = 2474). Overall, 1347 articles were excluded from the study because their abstracts and titles did not match the qualifying criteria. A total of six articles was used in the qualitative analysis after a full-text review of the remaining articles. It was concluded that grading foods into categories of healthfulness through evidence of key nutritional dimensions is a practical tool to inform food environmental interventions that may assist in public health promotion by influencing consumer choice in workplace canteens and beyond.

The results from the observations, IDIs, FGDs, ORIC questionnaire, canteen rating intervention scale and scoping review were used to guide the development of the physical and canteen intervention and canteen staff were capacitated with training to implement the food environment intervention. A list of interventions detailing the tools to be used and responsibilities for executing the six weeks' intervention with two weeks' maintenance classes for phase three of the study, titled the South African Pioneer Worksite Multicomponent Lifestyle Intervention Study (WMLIS) was developed by the research team.

Conclusion: Interventions are a useful tool that can be used in worksite settings to improve employees' overall occupational well-being. Interventions targeting the food environment and behavioural intervention can promote healthy eating behaviours and reduce cardiometabolic risk. It is important to take into account organisational complexity and the built environment when designing an intervention. In this study, formative research methods were used to engage worksite stakeholders to develop an intervention plan that is both theoretically and practically grounded to foster institutionalisation of the intervention. The findings of this study was used to contextualise and guide the development of acceptable, appropriate and feasible worksite food environment and behavioural intervention to reduce cardiometabolic risk among South African employees. The methods used allows for drawing of general conclusions for the implementation of lifestyle and food environment changes at worksites in SA. It is recommended that the study should be scaled up to other worksites to determine the comparativeness of this study to the response of other worksites regarding the acceptability, appropriateness and feasibility of worksite interventions.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ASH	Action on Smoking and Health
BMI	Body Mass Index
BPS	Basis Points
CANSA	Cancer Association of SA
CDC	Centers for Disease Control and Prevention
COM	Commitment
COVID-19	Coronavirus Disease
DF	Degrees of Freedom
DOH	Department of Health
DPP	Diabetes Prevention Programme
DUT	Durban University of Technology
EAP	Employee Assistance Programme
FOP	Front of Pack
FAO	Food and Agriculture Organisation
FGD	Focus Group Discussion

GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HPL	Health Promotion Levy
IDF	International Diabetes Federation
IDI	In-depth Interview
IMP	Implementation
IQR	Interquartile Range
IREC	Institutional Research Ethics Committee
KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
KZN	KwaZulu-Natal
LDL	Low-Density Lipoproteins
LMICs	Low to Middle Income Country
NCDs	Non-communicable diseases
OIFR	Occupational Illness Frequency Rate
ORIC	Organisational Readiness for Implementing Change
PAHO	Pan American Health Organisation

PHC	Primary Health Care
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
R	Rand
SA	South Africa
SD	Standard Deviation
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SDG	Sustainable Development Goal
SAFBDGs	South African Food Based Dietary Guidelines
SPSS	Statistical Package for Social Sciences
STATS SA	Statistics South Africa
SDG	Sustainable Development Goal
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
US	United States
WHO	World Health Organisation

WHP	Worksite Health Promotion
MWLIS	Worksite Multicomponent Lifestyle Intervention Study

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter presents an overview and summary of the research study. The following will be highlighted in this chapter: the importance of the study, problem statement, aim of the study, objectives, design and setting, assumptions and delimitations, an outline of the project, key definitions and the structure of the thesis.

1.2 Importance of study

Formative research is the foundation for developing efficient strategies such as developing and improving existing programme, for example, intervention programmes (Corey 2011: 11). Formative research is a method through which researchers outline an interest-based community, determine how to access the community, and delineate the community's attributes associated with a specific issue of public health (Denning *et al.* 2013: 1). This includes identifying communication channels, which influences behavioural change (Denehy *et al.* 2017: 2). It assists researchers to identify and understand the characteristics (such as interests, behaviour and needs) of the target group that influence their decisions and actions.

There are several worksite intervention programmes to improve health outcomes, each with a varied degree of success. However, there are few worksite intervention programme focusing on diet and physical activity in developing countries. There is a four-fold burden of disease in South Africa (SA): Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (HIV and AIDS), tuberculosis, maternal and infant mortality, and non-communicable diseases (NCDs) (Bradshaw *et al.* 2017: 1). Risk factors of NCDs such as diet and physical activity are modifiable through appropriate and effective interventions (WHO 2018a: 3). The worksite is a suitable platform to engage in behavioural change as this is an environment where individuals spend much of their waking hours (Mishra *et al.* 2013b: 1066). The environment in which an individual works has the potential to influence their health-related behaviours and promote behavioural change. Additionally, worksites provide access to a relatively stable group of adults and have the potential to be more sustainable due to social networks and peer-support. Current research suggests that occupational health and well-being services have multiple advantages in changing cardiometabolic risk factor profiles (Arena *et al.* 2013; Sandercock and Andrade 2018). Implementing health programmes at worksites allows for the opportunity to continually engage adults on positive and sustainable lifestyle choices.

1.3 Context of the research

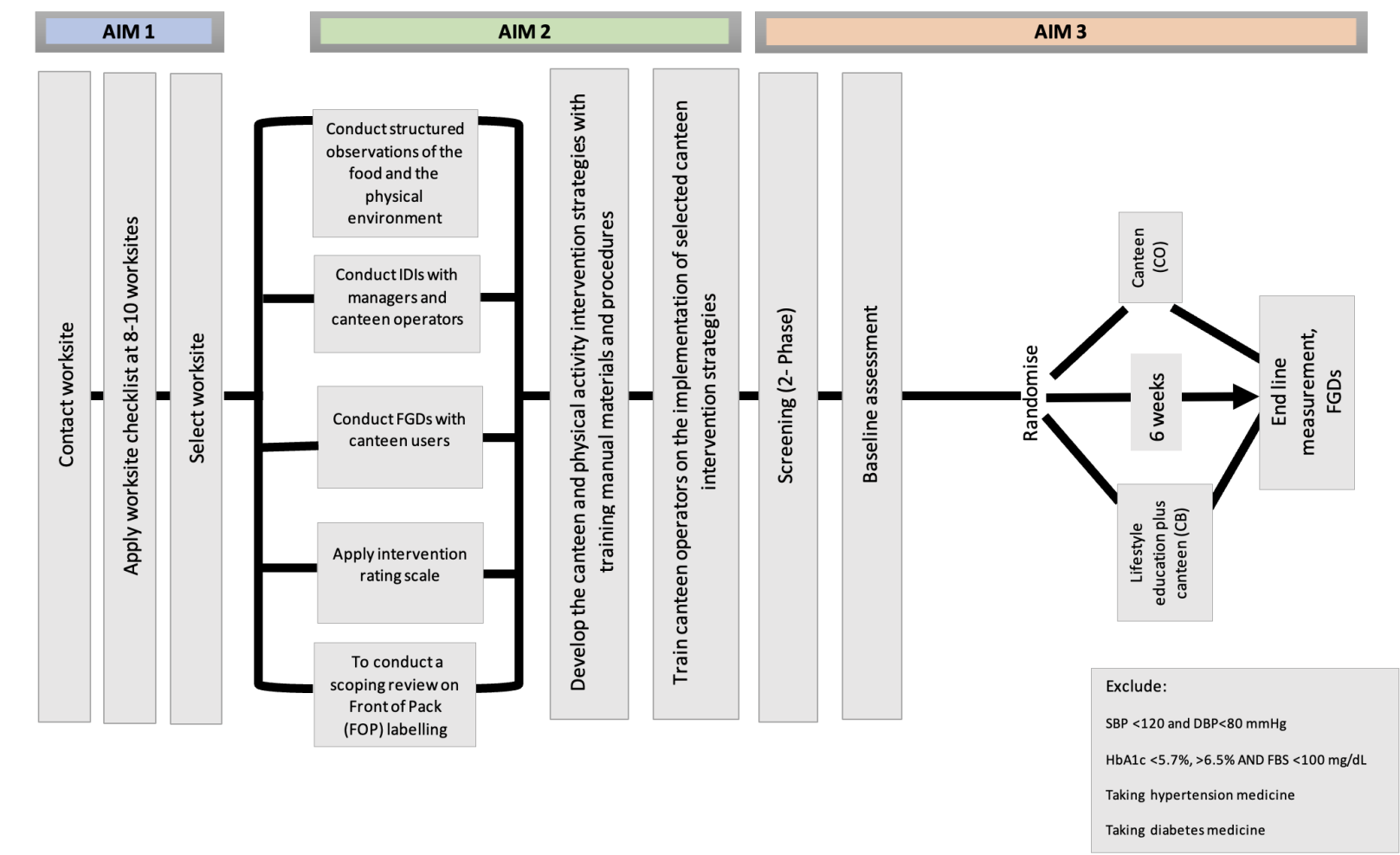
The three-phase South African Pioneer Worksite Multicomponent Lifestyle Intervention Study (WMLIS) funded by the South African Medical Research Council aims to assess the effectiveness of a worksite intervention to lower cardiometabolic risk in SA (Figure1.1). Phase 1 included the identification and recruitment of an optimal worksite for implementing the intervention to reduce cardiometabolic risk. This

study formed part of and represented Phase 2 of the SA Pioneer WMLIS involving formative work to contextually adapt and design the worksite intervention considering the characteristics of the setting and the views of workers, managers and supervisors on the design and format of delivery of the intervention.

In Phase 3, of the SA Pioneer WMLIS, the effectiveness of the food environment and behavioural intervention on cardiometabolic risk among employees at the worksite will be measured by evaluating the change in number of individuals reaching two or more cardiometabolic risk goals, namely reductions in blood pressure, triglycerides, and glycosylated haemoglobin (HbA1c) through a randomised control trial.

Within this context, the primary aim of this study was to understand the variables and the mechanisms that can be used to design an effective intervention in the workplace that is more likely to be appropriate and efficient.

Figure 1.1: Overview of the South African Pioneer WMLIS (Naicker 2019)



1.4 Problem statement

There is strong evidence that lifestyle changes, such as weight loss, increased physical activity, and improved diet quality, can help avert or slow down type 2 diabetes and reduce cardiometabolic risk factors, for example, high blood glucose, plasma lipids, and blood pressure (Fox *et al.* 2015: 1). Regardless of the verification of research data supporting the use of lifestyle interventions to prevent type 2 diabetes, improve glucose tolerance and lower high blood pressure, implementing them in real-life settings has been proved to be difficult.

Formative research includes a range of qualitative and quantitative approaches to help inform study participants' recruitment and retention, define assessment protocols and acceptance (Corey 2011: 2). Formative research is a tool enabling researchers to identify and analyse population or target audience attributes that are important to the particular issue of interest. Before an intervention is created or introduced, this procedure is carried out to obtain comprehensive information on the individuals for whom, and the context in which, interventions will be planned. Given the difficulty of changing health-related behaviours due to a variety of factors such as cognitive, economic, social, cultural, and systemic factors (Kelly and Barker 2016: 113), formative research facilitates interactions between researchers and target populations at all levels of behavioural interventions, including clinic-based, school-based, community-based, and population-based interventions.

The key objective of formative research is the creation of techniques, materials and methods for the study intervention process (Gittelsohn *et al.* 2008: 26). Formative research is vital for intervention development. This includes identifying noticeable and important themes, social norms for message development, identifying key intervention behaviours, evaluating the level of awareness or gaps in knowledge about a specific educational subject, identifying the appropriate communication channel, and understanding local concepts of health and disease through rapport building, targeting, segmenting and testing messages and approaches. The range of possible uses of formative research demonstrates how it can be a successful technique for the overall success of the South African Pioneer WMLIS.

1.5 Aim of the study

The purpose of the study was to guide the development of an acceptable, appropriate, and feasible worksite intervention targeting the food environment and behavioural intervention to reduce cardiometabolic risk at a worksite in SA.

1.6 Objectives

1.6.1 Research problem:

There is evidence that lifestyle education interventions at worksites are successful but there is limited evidence that changing the food environment at worksites will lower cardiometabolic risk. In terms of

implementation science, the design of an intervention and contextualising is of the utmost importance for maximum impact (Braithwaite *et al.* 2018: 2).

1.6.2 Specific objectives

- To determine the capacity of the built environment through structured observations of the canteen and physical environment to offer healthy food and promote physical activity.
- To conduct semi-structured In-Depth Interviews (IDIs) with worksite and canteen managers, and Focus Group Discussions (FGDs) with employees, to understand the appropriateness, acceptability and feasibility of changes at the worksite.
- To determine the worksite readiness to implement change through the Organisational Readiness for Implementing Change (ORIC) Questionnaire.
- To apply an intervention rating scale to canteen intervention components and a delivery strategy to worksite managers and canteen managers.
- To conduct a scoping review on Front of Pack (FOP) labelling schemes to inform the selection of a FOP labelling scheme best suited for canteen foods at worksites in SA.
- To develop the canteen and a physical environmental intervention programme using the findings from this formative study.
- To develop the intervention training manual and train canteen managers for the implementation of the food environmental intervention.

1.7 Assumptions

- It is assumed that the responses and data collected from the employees from the all the measurement tools will be of an unbiased and honest nature.
- It is assumed that through snowballing sampling, information rich participants will be recruited for the IDIs.
- It is assumed that stakeholder mapping will be an effective tool in identifying participants.

1.8 Delimitations

The study will only be conducted at six Unilever worksites, four in the KwaZulu-Natal province and three in Gauteng. The study will also be conducted at Retailability Head Office in the KwaZulu-Natal province.

1.9 Outline of the project

The outline of the study, as depicted in Figure 1.2, was developed together with the research supervisor.

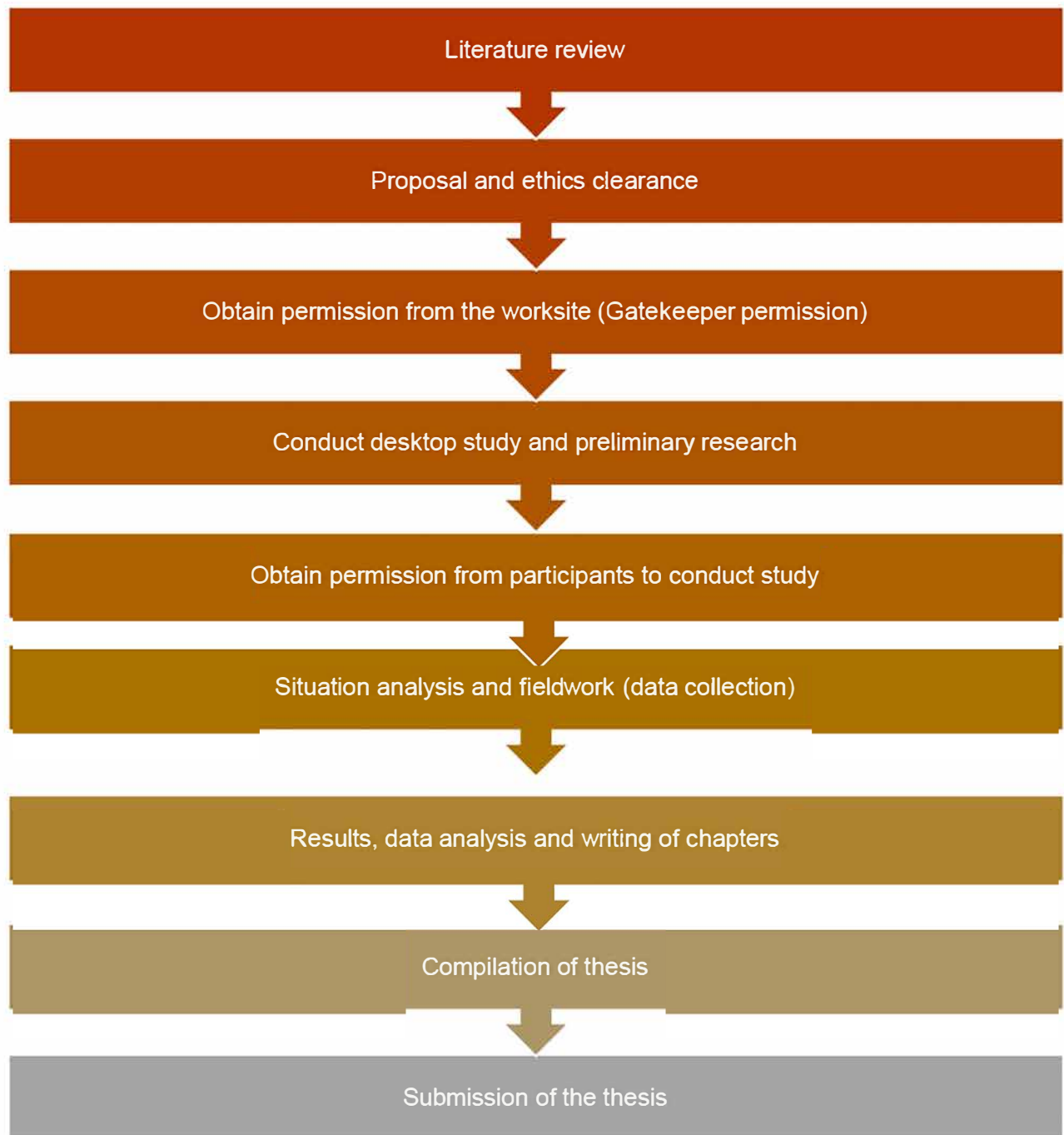


Figure 1.2: An outline of the South African Pioneer Worksite Intervention study (Phase 2)

1.10 Key definitions

Acceptability: Discernment among implementation stakeholders that a given innovation is acceptable, palatable or adequate (Proctor *et al.* 2011: 67).

Appropriateness: Perceived fit, significance or compatibility of the innovation or evidence for a given context, supplier or customer; and/or perceived fit of the innovation to address a specific problem (Proctor *et al.* 2011: 68).

Canteen: A restaurant provided by an organisation such as a university or company for its students or staff (Narayan and Katha 2019: 2).

Feasibility: The degree to which a new intervention can be effectively used or carried out within a given setting is referred to as feasibility (Proctor *et al.* 2011: 69).

Focus Group Discussions (FGDs): Focus groups are small groups consisting of eight to ten people who gather together to discuss a topic of interest. The discussion is directed by a group leader also known as a moderator (Mack *et al.* 2011: 51).

Food environment: Individuals' food choices and nutritional status are influenced by the collective physical, economic, political, and socio-cultural atmosphere, possibilities, and conditions (Vandevijvere *et al.* 2015: 1).

Formative research: A variety of qualitative and quantitative approaches are used to help inform research participants' recruitment and retention, and assess assessment protocols and acceptance (Corey 2011: 2).

Key informant interviews: In-depth qualitative interviews with people who are aware of what is happening in the group. The goal of key informant interviews is to gather information from a wide range of people (Mack *et al.* 2011: 29).

Organisational readiness: The degree to which organisational participants are prepared to adopt organisational change mentally and behaviourally. Members are more likely to promote change and show more cooperative behaviour when organisational readiness is high, resulting in the successful implementation of proposed change (Shea *et al.* 2014b: 2).

1.11 Structure of the thesis

This dissertation is reported according to the following format:

Chapter 1: Introduction to study

- Aims, objectives and context of the research.

Chapter 2: Literature Review

- A thorough review of studies conducted by other researchers.

Chapter 3: Methodology

- Methods of work and tools to be used.

Chapter 4: Results and discussion

- All results from findings are displayed and discussed.

Chapter 5: Conclusion and recommendations

- Recommendations for further development on study.

1.12 Conclusion

Chapter 1 focused on the purpose and importance of the study. As a guide to the development of the research, an overview of the three-phase study entitled the South African Pioneer WMLIS is provided, and a framework (Figure 1.1) and structure of this study is included. The following chapter will review the literature pertaining to the study.

1.13 Referencing style

The referencing style used in this thesis is according to the guidelines used by Durban University of Technology (DUT); DUT Harvard reference style on Endnote.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter aims to provide an insight into the growing worldwide burden of NCDs as well as provide better knowledge on the following topics: The food environment; interventions: food, education and physical environment; worksites as a platform to conduct interventions: suitability; formative work: importance in the context of worksite intervention; stakeholder mapping; worksite readiness for intervention; canteen interventions at worksites; physical environment interventions at worksites and lifestyle education at worksites.

2.2 Global prevalence of Non-communicable diseases

Non-communicable diseases continue to increase globally, with an unduly larger impact on low to middle income countries (LMICs) (Gowshall and Taylor-Robinson 2017: 225). Non-communicable diseases are the main cause of death worldwide. Many of these deaths are as a result of heart disease, diabetes mellitus, chronic respiratory disorders, or cancer. The World Health Organisation (WHO) highlighted that the worldwide burden of NCDs is expected to rise by 17% in the next decade, and by 27% in Africa (WHO 2021: 1). Approximately half of all deaths in Asia are due to NCDs, which account for 47% of the worldwide disease burden.

According to the South African Heart and Stroke Foundation, five people have heart attacks and ten people have strokes every hour in SA (Heart and Stroke Foundation 2016: 3). High blood pressure is a major risk factor for heart disease and chronic renal disease, as well as having a high comorbidity with diabetes. High blood pressure is responsible for two-thirds of strokes, half of ischemic heart disease cases, and more than 70% of hypertensive heart disease cases worldwide. In 2015, the global age-standardised prevalence of high blood pressure was 24.1% in men and 20.1% in women (NCD Risk Factor Collaboration 2017: 47). The South African Demographic and Health Survey (2016: 48) indicated that hypertension affects 46% of women and 44% of men aged 15 and older in SA. This is nearly twice the global average. The prevalence of hypertension has significantly increased among women and men since 1998, rising from 25% to 46% in females and 23% to 44% in males (Davids *et al.* 2019: 503).

A variety of factors influence the transition from infectious diseases to NCDs in LMICs, frequently indicated by economic development. This includes the change from traditional diets to processed foods (high in fat, salt and sugar), reduced exercise with inactive lifestyles, and altered cultural norms, for example, an increase in women smoking tobacco (Hussein 2014: 7). In LMICs, globalisation and urbanisation have exacerbated the rising burden of NCDs. Non-communicable diseases pose a major challenge to development. In low to middle income countries, NCDs is a significant driver for poverty as it exposes individuals to behavioural risk factors for NCDs.

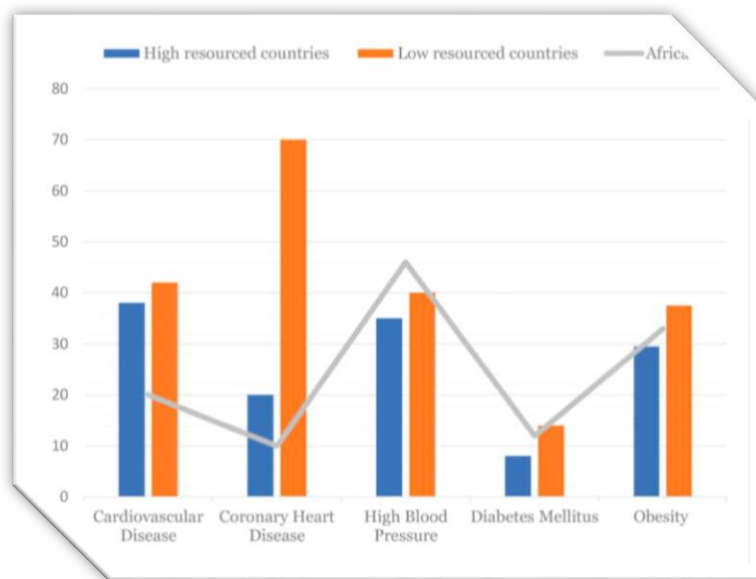


Figure 2.1: The percentage of deaths caused by NCDs in Africa's high-resourced and low-resourced countries (Kassa and Grace 2019: 7)

As depicted in Figure 2.1, the number of deaths linked to major NCDs vary in three world regions: high-resourced countries, low-resourced nations, and Africa. The percentage of deaths caused by cardiovascular disease, coronary heart disease, high blood pressure, diabetes, and obesity declines in high-income countries, but it continues to rise in low-resourced countries and Africa.

According to the global business case for NCDs, LMICS will have a return of seven dollars per individual for every dollar invested by 2030 if they implement the most cost-effective NCD interventions (including prevention and management) (Bertram *et al.* 2018: 2072). Furthermore, evidence suggests that for every dollar spent on depression treatment, five dollars is returned. In SA, similar large returns on investment are almost inevitable. Investing in NCD prevention and control is thus both necessary for growth and development, as well as cost-effective when appropriately planned and prioritised.

2.3 National prevalence of Non-communicable diseases

South Africa is dealing with a quadruple burden of disease (HIV and AIDS, tuberculosis, maternal and child mortality, and a growing burden of NCDs), which is impacting people's quality of life and driving up health-care costs on a personal and national level (Frade, Vearey and Tollman 2019: 3). The National Burden of Disease Study for SA examined NCD mortality levels and trends over a 14-year period and reported that NCDs were among the leading causes of death in the country (Dorrington and Nojilana 2016: 436). Non-communicable diseases had accounted for 39% of all fatalities in the country by 2010, with more than a third of fatalities happening before the age of 60.

Between 2006 and 2015, diabetes, stroke and coronary heart disease in SA accounted for around 1.88 billion US dollars in Gross Domestic Product (GDP) losses (Hofman 2016: 1). The conditions described

above are not only a source of morbidity, but also a leading cause of death in people of working age. Employers are challenged with additional costs through absenteeism and high staff turnover. Addressing NCDs in a country with several competing demands will require significant resources. According to WHO (2017: 30), the annual cost of addressing NCDs in a third world country like SA is estimated to be between R150 million to approximately R1 billion for population-based interventions and R1.125 billion for individual-based measures.

In September 2013, The South African National Department of Health (NDoH) launched The Strategic Plan for Prevention and Control of Non-Communicable Diseases 2013–2017 (Cois 2017: 231). The strategy identified a number of legislative and regulatory actions as well as a basic framework for the prevention and treatment of NCDs. This aimed to reduce the prevalence of established NCD risk factors such as hypertension, obesity and poor lifestyle habits (alcohol and tobacco use, and lack of physical activity). The plan proposed measures to develop the Primary Health Care system (PHC) and adapt its structure to the country's changing needs. It also attempted to increase understanding of NCD trends and risk factor distribution as well as identify the inadequacies of the existing surveillance system.

A number of essential interventions have been adopted in SA to reduce morbidity and mortality from NCDs over the past 20 years, but they must be improved and other catalytic interventions should be added (Nugent *et al.* 2018: 2029). This National Strategic Plan outlines the measures that will be performed across subdivisions between 2020 and 2025 to address and reverse the rising threat of NCDs. The primary goal of this plan is for SA to meet the Sustainable Development Goal (SDG) of reducing premature mortality from NCDs by one-third through prevention and treatment, as well as promoting mental health and well-being, by 2030 (Goal 3.4) (United Nations 2016: 18).

Coronavirus disease 2019, also known as COVID-19 is a novel infection caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Lai *et al.* 2020). The ability of nations to manage and react to NCDs has been hindered due to the rapid development of COVID-19 around the world (United Nations Development Programme (UNDP) 2020: 2). The virus has generated intense disturbance in healthcare systems while also drawing attention to countries' NCD burdens, as individuals with NCDs are more likely to become critically ill as a result of the virus, leading to death. Adults with NCD risk factors are more likely to become severely unwell with COVID-19, for example, smokers may have restricted lung capacity, putting them at a higher risk of serious disease (PAHO 2020: 1).

The disturbance of healthcare systems is especially difficult for patients who suffer from NCDs and require frequent treatment. A number of examples from various countries has demonstrated how the interruption of NCD services directly impacted individuals. The COVID-19 pandemic, for instance, has had an impact on cancer screening, case identification, and referral systems, resulting in a significant reduction in cancer diagnoses (Jones *et al.* 2020: 748). A decrease in hospital admissions of patients suffering from acute coronary syndrome often leads to a rise in out-of-hospital fatalities and long-term consequences of myocardial infarction (Mafham *et al.* 2020: 382). Disturbance in rehabilitation services for individuals with

NCDs had the consequence of affecting their treatment capacity and, as a result, raised the cost of treatment in various nations (Negrini *et al.* 2020: 364).

According to a study which examined the effect of the COVID-19 outbreak on NCD healthcare systems, 75% of nations documented a positive degree of interruption of NCD services, with vital dental treatment, rehabilitation, and palliative treatment, presumed to be fully interrupted (WHO 2020a: 10). This was observed to be consistent across a wide range of regions and income levels. Elective healthcare cancellations, lack of transportation due to imposed lockdowns, insufficient staff, and hospital closures were the most common causes of service disruptions. The findings of the study also demonstrate that vital services for hypertension, diabetes, and cancer management were interrupted in most countries, focusing on these countries' NCD burdens and rendering millions of citizens unattended. Individuals with NCDs have been negatively affected as a result of this disruption, which has been exacerbated by additional exposure to multiple behavioural risk factors for NCDs (for example, the usage of alcohol, stress and poor diets) as a result of the control mechanisms (for example, various levels of lockdown) taken by several countries (WHO 2020a: 11).

A concept of SA's proposed obesity prevention and management plan (2023–2028) was released by the NDoH on November 3, 2022, with the goal of "creating a healthy food environment where healthier food choices are made easier" (Sulcas 2022: 2). The plan includes a provision that the Health Promotion Levy (HPL) be expanded to encompass food products that are high in unhealthy fats, sugar and salt, in addition to restrictions that forbid the promotion of unhealthy food products to children.

2.4 Risk factors for Non-communicable diseases

There are a number of factors that can increase a person's risk for developing NCDs. Modifiable and non-modifiable risk variables are two types of risk factors (Manning, Senekal and Harbron 2016: 3). Social, behavioural, and structural determinants are modifiable risk factors, whereas non-modifiable risk factors include an individual's attributes (such as gender).

2.4.1 Individual determinants

The majority of NCDs are linked to behavioural or lifestyle factors that are influenced by aspects in the social environment (such as the worksite) and further structured by economic and political variables (Puone *et al.* 2013: 117). Conversely, some people have a higher genetic sensitivity to NCDs, which makes them more likely to develop the diseases. In SA, certain ethnic groups indicated to have a higher risk of developing NCDs. Indians in SA, for example, are more prone to insulin resistance than other ethnic groups, putting them at a higher risk of developing type 2 diabetes. It is also estimated that familial hypercholesterolemia affects one out of every 72 White Afrikaners. This is a hereditary disorder caused by the liver's inability to eliminate low-density lipoproteins (LDL) from the blood, resulting in elevated blood cholesterol levels (Soran *et al.* 2018: 10). Genetic testing and counselling programmes have a significant

contribution in identifying, preventing and managing the disease for individuals at a higher risk of developing the disorder due to their genetic endowment.

2.4.2 Behavioural determinants

Behavioural risk factors (use of tobacco, alcohol misuse, physical inactivity, and poor dietary habits) are linked to NCDs such as cardiovascular disease and type 2 diabetes (Maimela *et al.* 2016: 4) (Table 2.1). As a result of an individual's socioeconomic level and the environment, these risk factors arise in specific groups of people.

Table 2.1: The four major NCDs including their common risk factors (UNICEF 2015a: 16)

NCDs	Common modifiable risk behaviours for NCDs			
	Tobacco use	Unsafe consumption of alcohol	Physical inactivity	Poor eating habits (unhealthy diet)
Cardiovascular disease	☑	☑	☑	☑
Cancer	☑	☑	☑	☑
Chronic respiratory disease	☑			
Type 2 Diabetes	☑	☑	☑	☑

2.4.2.1 Tobacco use

The World Health Organisation (2019a: 1) stated that tobacco is an example of the world's greatest preventable causes of death. Tobacco smoking is responsible for more than two-thirds of lung cancer fatalities worldwide. In SA, the prevalence of smoking is moderately high. According to the Cancer Association of SA (CANSA) (2019: 5), tobacco-related diseases claim the lives of 42 100 South Africans each year, totalling 5.4 million people, whilst it is estimated that 900 000 non-smokers die from passive smoking. Worldwide, the healthcare cost in many economies surpasses the total tax revenue received from tobacco products. Tobacco usage during pregnancy, including cigarettes, Bidis (hand-rolled tobacco

leaves), snuff, and chewing tobacco, is harmful to the foetus. The Action on Smoking and Health (ASH) fact sheet (2019: 1) highlights that in LMICs, smoking during pregnancy is on the rise.

2.4.2.2 Alcohol misuse

Excessive alcohol use has been linked to a variety of social and biological disorders. Alcohol is linked to a number of NCDs, including cancer, heart disease, liver disease, pancreatitis, and diabetes (Parry, Patra and Rehm 2012: 1721). In SA, it is estimated that 12% of adolescents consume alcohol before the age of 13 years old. Alcohol intake during pregnancy can lead to foetal death or early delivery (Lee *et al.* 2020: 3). If the mother drinks alcohol while pregnant, the baby may develop foetal alcohol syndrome (FAS), which is related to cardiac defects.

2.4.2.3 Physical inactivity

Physical inactivity or a sedentary lifestyle is prevalent in modern life, particularly in urban areas. A sedentary lifestyle is linked to technological improvements, urbanisation, and infrastructure changes (Puone *et al.* 2013: 118). This is concerning because physical inactivity is linked to a number of NCDs. Physical activity is linked to a lower risk of heart disease, type 2 diabetes, hypertension, and breast and colon cancer. Physical inactivity is becoming more prevalent in SA (Micklesfield *et al.* 2014: 2). According to reports, South African women are more physically inactive and overweight than men (Peer *et al.* 2013: 19216). Females were found to be less inclined than males to participate in physical activities in a South African study (Malambo *et al.* 2016: 3). Research indicates that one in four adults are inactive worldwide (Haileamlak 2019: 810).

2.4.2.4 Unhealthy diets

Obesity and overweight are on the rise in both first and third world countries, owing to a shift from "whole" foods to "processed" foods (Puone *et al.* 2013: 118). Chronic diseases have been linked to specific dietary components. Diets high in saturated fat, salt, and refined carbohydrates, for example, have been associated with cardiovascular disease.

In SA, there is an increase in the emerging trend of unhealthy western diets. Energy drinks are a fast growing sector of the South African soft drink market (Stacy *et al.* 2017: 34). This creates a concern as there are many health risks associated with the consumption of soft drinks. The main health risk created by the consumption of these drinks is the high caffeine content. Unhealthy western diets are also associated with fast food consumption. According to a study by Steyn, Labadarios, and Nel (2011: 155) on the prevalence of street food and fast food consumption, 19% of black Africans are frequent street food consumers, compared to 1.9% of Indians and 2.9% of Whites. When fast food intake was reduced or curtailed, the effects were reversed. Regular customers comprised 14% of Indians, 12.5% of Whites, and 5.4% of Blacks.

Consumers should be encouraged to eat plant-based diets since they reduce the risk of obesity, diabetes, cardiovascular disease, and some cancers (World Cancer Research Fund International 2014: 2). Vegetables and fruits, whole grains, legumes, nuts and seeds are all part of a plant-based diet. This diet aids in the attainment and maintenance of a healthy weight. It also assists in the reduction of blood pressure. It's also a high-fibre diet that helps prevent colorectal cancer.

2.5 The food environment

All aspect (the surrounding, individuals, infrastructure, organisations) and activities related to the pre-production, production, processing, distribution, preparation, and food intake, as well as the end results of these activities, make up a food system (Branca *et al.* 2019: 24). The term "food environment" describes the "physical, economic, political and social framework in which consumers engage with the food system to make their decisions about obtaining, preparing, and consuming food," as represented in figure 2.2 below (WHO 2018b: 7). Food systems can be classified as long chain, high value, industrial, or short chain, low value, traditional, or rural. During the same period of time, a country may have more than one system. The factors that facilitates an individual's food attainment and intake within the broader food system is referred to as the food environment (Turner *et al.* 2018: 94). It encompasses both outward and internal dimensions. External dimensions include accessibility, cost, salesperson and product features, and advertising material, whereas private dimensions include food sources and goods' accessibility, affordability, convenience and appeal (Downs *et al.* 2020: 532).

As the years have passed, there have been significant changes in food systems due to a change in nutrition transition diets becoming more westernised in LMICs (Spires *et al.* 2016: 36). As a result of the advancement of multi-national food corporations, the liberalisation of international food trade and investment, and an increase in the marketing of unhealthy food products, traditional diets made from raw ingredients are being replaced by ready-to-eat, energy-dense, and non-nutritious meals or snacks (Branca *et al.* 2019: 24). Many of the ready-to-eat meals are highly processed, raising the danger of developing chronic diseases.

In SA, there has been a dramatic transition in diets since the post-apartheid government permitted international trade and foreign direct investment. The food supply was previously dominated by Big Food (big commercial entities that control the food and beverage industry) with more available and affordable products (Puone *et al.* 2013: 119). This resulted in a change of normative food culture, allowing products to become more acceptable. An increase in the market stake by big traders and fast food outlets has catalysed a change in dietary habits in rural and urban regions. Nutritional assortment is essential in preventing malnutrition (over and under nutrition) (Powell *et al.* 2017: 23). Healthy food options are expensive and with an increase in the cost of energy for preparing the meal therefore unaffordable for a large number of families in SA. A study conducted on the accessibility and affordability of healthy food choices in rural Western Cape indicated that for a household with five members, buying healthier food options compared to their typical food items (for instance, whole wheat bread substituted for white bread) had an increased expenditure of R1090.00 monthly (Temple *et al.* 2010: 56).

Good nutrition is vital in the first 1000 days of a child's lifespan (from conception until 2 years old). Correct nurturing practices of infants and children helps to improve their chance of survival and promotes optimal growth and development (UNICEF 2016b: 1). The marketing of formula and baby meals can jeopardize feeding habits during breastfeeding and early childhood. Stunting may occur due to a diet that lacks nutrient rich foods. According to UNICEF (2019c), 66.66% of children worldwide do not consume the prescribed minimum amount of food categories, and only one out of every six children has a diet that is considered adequate.

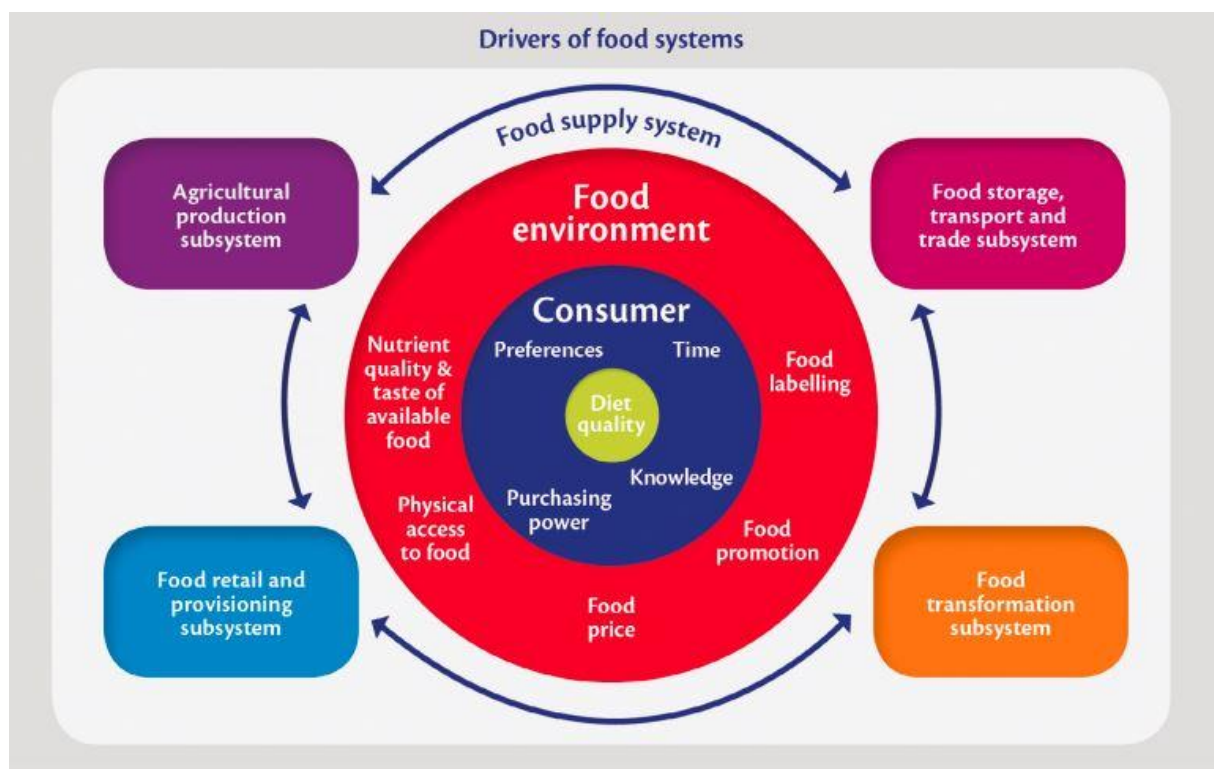


Figure 2.2: The interlink between food systems, food environment and diet quality (WHO 2018b: 7)

2.6 Interventions: Food, education and physical environment

2.6.1 Food interventions

Food-based nutrition interventions aim to enhance food-manufacturing and availability, processing and management, supply and commercialisation, in addition to accessibility and intake (Downer *et al.* 2015: 3). Food and nutrition interventions may be effective through all stages (primary, secondary and tertiary) of prevention. In the primary stage, interventions can be used to prevent disease risk factors, for example, overweight and obesity which is linked to the risk of many chronic illnesses. Interventions can be used to respond to the early detection of certain conditions, for instance, prediabetes, in the secondary stage. Lastly, disease management strategies can be developed in the tertiary stage to prevent difficulties for people who are diagnosed with a chronic disease. Food and nutrition interventions can be used efficiently to respond to a number of conditions that are connected to the exacerbation of chronic diseases. This

includes undernutrition and severe food insecurity as well as over-nutrition and unhealthy foods (Downer *et al.* 2015: 4).

There has been a rise in the number of diet-related chronic illnesses. The International Diabetes Federation (IDF) (2020: 1) stated that 463 million individuals have diabetes worldwide with more than 19 million people in the African region. The IDF's 2019 Diabetes Atlas indicated 12.7% of South African adults had diabetes in 2019 (Khan 2019: 1). Food interventions can be used to meet the dietary requirements of pre-diabetics and diabetics. It helps to regulate blood glucose levels and decrease the incidence of complications related to diabetes. A study that focused on meals designed by a nutritionist indicated that consuming pre-packaged, nutrient-rich meals had a statistically significant impact on the reduction of blood glucose levels (Downer *et al.* 2015: 3). Strategies focusing on interventions that are directed at the total population at risk of prediabetes can reduce healthcare costs, avert disease and prevent death (Tuso 2014: 91).

2.6.2 Education interventions

Health information is easily available to the public, mainly through the internet and mass media (Cusack *et al.* 2018: 2). Individuals are playing a more active and self-directed role in their health due to large amounts of health information being readily accessible. However, the information available may be misleading, misinterpreted or cause confusion amongst individuals. Individuals require basic skills to assess the quality of health information, interventions and their effects. People are susceptible to unreliable treatment claims and may make health decisions based on inaccurate or harmful information due to a lack of knowledge on key concepts. Providing individuals with knowledge about key concepts may assist them to make informed decisions. According to Cusack *et al.* (2018: 10), educational interventions can improve knowledge and skills if only for a short period of time.

An increase in the occurrence of diabetes (type 2) has created an urgency to intercede on an individual's lifestyle, focusing primarily on a balanced diet and movement (Onofrio *et al.* 2018: 1). Nutrition education, aimed at informing people on making healthy food choices related to the promotion of a healthy lifestyle, can lead to a changed and complete therapeutic approach. It is a highly effective tool that can enable patients to control the disease and improve their quality of life.

A study conducted in Bangladesh among a rural population to evaluate the efficiency of a health education-based traditional intervention strategy for reducing NCD risk factors, had a positive result (Mondal *et al.* 2019: 34). The study was an example of an affordable intervention using conventional methods, such as educational flyers to reduce the risk factors of NCDs among the rural community in a low resourced region. This had a significant impact on the increase of fruit and vegetable consumption and reduced salt intake. Several health awareness initiatives have endorsed this method as a favourable option for reducing the NCD burden, particularly in low-resourced settings.

2.6.3 Physical environment

Environmental factors are essential determinants of health behaviours. Environmental factors may moderate the effects of interventions that are adopted (Watts *et al.* 2011: 3). This is true when the intervention aims to change people's health behaviours by manipulating environmental elements or using information, education, and communication strategies. Environmental influences differ greatly between countries, regions and towns. A successful intervention in one setting may have a different or no effect, when implemented in another setting. As a result, while assessing whether it is appropriate to generalize study results on the determinants of health behaviours, such as physical activity, it is critical to account for the variations in environmental conditions. According to Fuller, Gauvin and Friedman (2014: 4), the multinational aspect of a study offers challenges due to geographical disparities. This, in particular, refers to variations between administrative boundaries used for sampling and defining exposure and can lead to potential bias.

Primary evidence has shown that physical environmental interventions are effective in increasing physical activity and modifying dietary habits (Wilson *et al.* 2012: 37). For instance, the use of signs that encourage the use of a staircase have progressively increased at, for example, train stations, shopping malls and in libraries. Additionally, interventions to reduce the cost of healthy food choices in vending machines have shown a rise in sales by 78% whilst similar results were produced in interventions to reduce the price of healthy food options in canteens. Interventions that included food labels in canteens resulted in a 5% reduction in energy intake and a 5% reduction in fat consumption.

Changes in individual-level eating behaviour, such as nutritional knowledge, indicated moderate success with short-term positive effects on health (Belon *et al.* 2016: 2). This is as a result of environmental factors that may limit or increase an individual's ability to make decisions on healthy eating. By targeting the structural origins of unhealthy eating, environmental solutions have a better chance of producing long-term changes, reducing risk factors and health effects. Belon *et al.* (2016: 7) highlighted three themes in the corporal environment, namely, availability of food outlets, availability of food options (healthy and unhealthy) in food outlets and the accessibility of the outlet. In the study, due to a shortage of grocery stores in the area, participants stressed the need to have food merchants in their town.

In another study conducted by Smit *et al.* (2016: 197), it was found that in terms of physical activity there were substantial variances in different regions in the Khayelitsha township of Cape Town. The physical environment of the more established areas appeared to be moderately favourable to outdoor physical activity. There were various sport facilities and parks; however, they were discovered to be poorly maintained and unsafe for citizens to use. The informal Taiwan zone, for example, had no parks or play spaces. There were no clean areas for children to play near to their homes as the density of the settlement was very high. Physical activity was restricted due to violence and crime in the settlement. Isolation was also a main limitation to walking or cycling as major facilities and shopping centres in Cape Town can only be accessed by a vehicle or public transport.

2.7 Worksites as a platform to conduct health interventions

The working population is a valuable resource to society as a result of its vitality, creativity and productivity (Jia *et al.* 2018: 2). Employee health has a direct impact on a company's survival and growth, and is linked to nation-wide financial growth, development, and social steadiness. A number of poor behaviours can harm the functioning and efficiency of individuals (usually between the ages of 18-65 years old). Studies indicate personal or family health problems have a drastic impact on the loss of productivity.

The WHO (2019b: 1) observed that the workplace plays a vital role in health promotion. There are several reasons for the workplace being an ideal location for health promotion, namely, a substantial amount of time is spent at worksites, the employed population is relatively steady and is suitable for lengthy health interventions and follow-ups; also, workplaces can provide participants with space and infrastructure; the physical and psychological environment of the workplace has a significant impact on employee health and work efficiency can be improved with employees' good health. The Centers for Disease Control and Prevention (CDC) in the United States (CDC 2016: 4) also promoted workplace health promotion programmes due to the benefits to employers, employees, families of employees, and communities programme.

The worksite is an ideal setting to engage in behavioural change (Mishra *et al.* 2013a: 1066). Evidence indicated that worksite-based health interventions have a positive outcome with regards to both employees and employers (Lassen *et al.* 2018). The challenges associated with healthy lifestyle choices can be counteracted by providing and leveraging resources in an environment where individuals spend most of their waking hours. The worksite has been recognised as a vital surrounding in which good eating habits and physical practices (such as exercise) can be promoted (Mulchandani *et al.* 2019: 2).

In addition, worksites provide access to a group of adults and have the potential to be more sustainable due to social networks and peer-support. According to a review conducted on the effect of worksite interventions encouraging healthy eating and physical activity amongst the working class, regardless of the intervention strategy, a positive effect was shown in several of the outcomes (Lassen *et al.* 2018). The study found minor to moderate effects on twenty-two variables, including dietary and/or physical activity, indicating that interventions incorporating community-level behaviour modification could be helpful. In the same study, a broader lifestyle strategy that focused on food choices among aluminium workers and physical exercise among fire fighters was found to have a moderately beneficial effect. Improvements in fruit and vegetable consumption, reduced sweetened beverage consumption and weight status, increased physical activity and strength, and improved work performance were among the outcomes.

Workplace health and wellness initiatives have a variety of advantages, including changing cardiometabolic risk factor profiles. By implementing health programmes at work, adults can be continuously engaged in making healthy and sustainable lifestyle choices.

2.8 Formative research

Formative research practices social science techniques to evaluate beliefs, insights, and behaviours and define the context in which these behaviours occur (Wilson *et al.* 2012: 39). Its main purpose is to comprehend why people do what they do. The data is collected through quantitative and qualitative methods which permit the development of an intervention personalised to the individual or group to which they belong. This has a greater impact on the relationship between intervention and the work group culture, increasing the probabilities that the intervention will have a favourable effect. Conducting formative research also establishes an interest in understanding the target population and can create trust, collaboration and acceptance of the study.

In order to maximise the effectiveness of formative research activities, an iterative process as depicted in Figure 2.3 should be applied (Behavioural Surveillance Team 2013: 2). The iterative process enables worksites to recognise formative research goals as well as identify possible challenges to fieldworkers; for example, challenges in respect of participation, and can develop solutions to reduce or eradicate such obstacles.

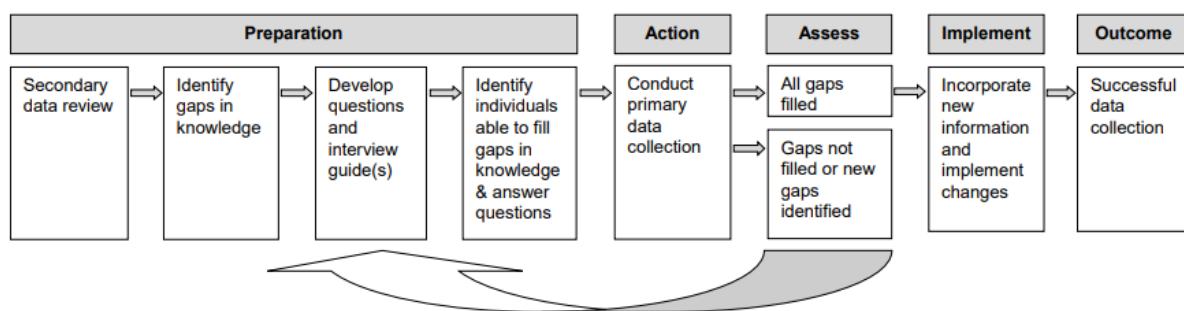


Figure 2.3: The iterative process of formative research (Behavioural Surveillance Team 2013: 2)

The formative research data was obtained by means of the following techniques: shareholder interviews, focus groups and observation of the work environment in a study conducted by DeJoy *et al.* (2013: 509). The findings from the formative research were a vital component for the foundation of an adaptation process in numerous ways. Firstly, the Diabetes Prevention Programme (DPP) data was changed into an independent study. Secondly, numerous attributes were presented to assist in creating employee commitment and participation in the study. And lastly, further adjustments had been created to offer individuals data and regular notices about programme actions.

2.9 Formative research methods and modes used to synthesise data

The most common methods used in formative research studies include direct observation, in-depth interviews, focus groups, structured and semi-structured surveys, and stack classifications (Gittelsohn *et al.* 2006: 26). The use of multiple methods in formative research is regarded to have numerous benefits

like the integration of data, the development of an intervention framework and guidelines for intervention planning.

In addition to the growing interest in applying qualitative synthesis to guide health-related policy and practice, the variety of methods for synthesizing qualitative research has expanded (Soilemezi and Linceviciute 2018: 4). Although the terms "meta-analysis" and occasionally "narrative synthesis" are commonly used to explain how quantitative research is synthesized, there are a number of other terms used to describe the synthesis of qualitative research. Meta-ethnography is one of the techniques that maintains the data in its qualitative form (France *et al.* 2019: 35). Content analysis is a technique that converts qualitative data into a quantitative form (Kleinheksel *et al.* 2020: 7113).

The most important consideration when summarizing and comparing various qualitative methods of synthesis is the intended use of the synthesized product (Barnett-Page and Thomas 2009: 59). The output of thematic synthesis, textual narrative synthesis, framework synthesis, and ecological triangulation is directly applicable to policymakers and intervention designers.

2.10 Stakeholder mapping

A stakeholder refers to a person, group or organisation, or an aspect that has a specific interest in or an affiliation to a particular topic or business (Wason 2019: 2). The stakeholders of a company can be internal, with a direct relationship to the company or external, with no direct relationship. Internal stakeholders include directors, managers, employees and connected stakeholders. Primary stakeholders, also known as connected stakeholders, refers to stakeholders that have a contractual or economic connection with the company. Shareholders, clients and suppliers are examples of interrelated stakeholders. Mutually, they can both have an influence on a company's actions and operations.

A stakeholder map is a graphic illustration of the network of stakeholders associated with customer experience (Figure 2.4) (Cramer 2019). This can be used as a tool to understand who is involved, to disclose existing formal and informal relationships between stakeholders, to detect challenges between stakeholders and to discover new business opportunities by founding new relationships, nurturing existing relationships or developing substitutes.

The complete involvement of stakeholders in the design and implementation of policies and projects is important but not promising to the success (Jhala 2014: 4). Stakeholder participation provides individuals with an opportunity to discuss how policies or projects may affect their lives, is vital for sustainability, creates a sense of ownership if it is introduced early in the development process, offers opportunities for learning and leads to responsibility.

Stakeholder analysis enables managers to identify the interests of diverse groups and discover methods of encouraging individuals who support the activity, while dealing with the risks posed by stakeholders who are against it (Jhala 2014: 5). It is also vital in identifying real development needs. This may include planning a different programme from the initial one. Stakeholders are influenced by and can influence what occurs

within the task, directly or indirectly. They can be for or against a change. A review of the study's participants and their association towards the study is a significant component of study's preparation course. Stakeholders can be classified into different groups, namely, beneficiaries or target groups, implementers, decision-makers or policy makers, and funding agencies.

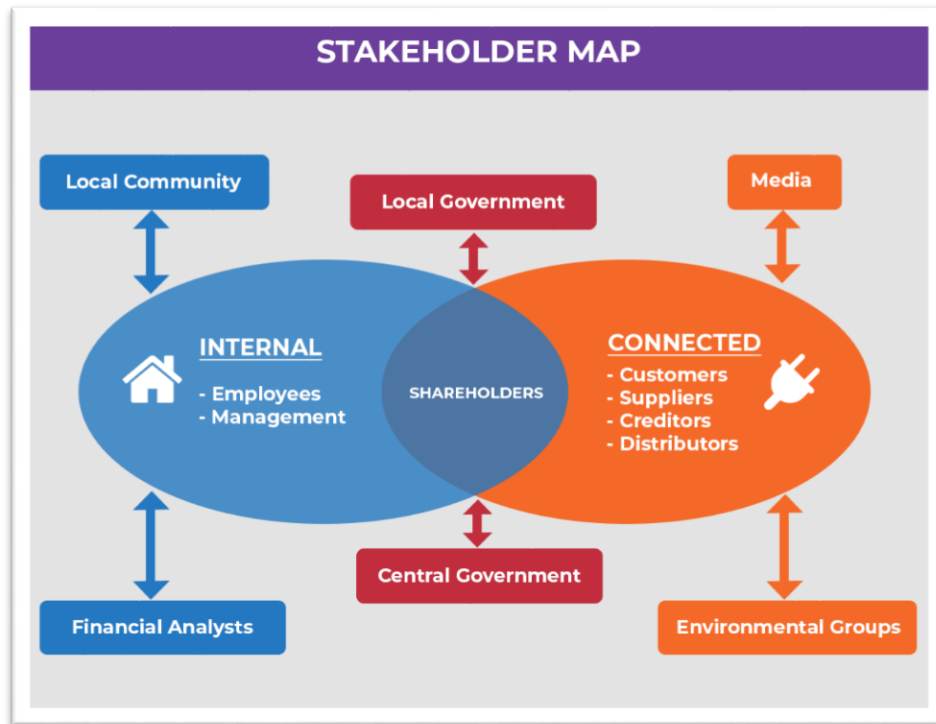


Figure 2.4: Stakeholder map (Wason 2019: 3)

2.11 Worksite readiness for interventions

Organisational readiness for implementing change (ORIC) is a critical component of a successful policy, the programme, and practice implementation (Shea *et al.* 2014a: 2). Implementing new plans, practices or policies in organisations repeatedly fails because leaders create insufficient organisational readiness for change. Organisational readiness is defined as the degree to which individuals of an organisation are psychologically and behaviourally equipped to undertake change. When organisational readiness is high, change is more likely to be initiated by members who will demonstrate cooperative behaviour, leading to the successful implementation of the suggested change. If organisational readiness is low, members would probably see the change as unwelcome or oppose participation in the process (Shea *et al.* 2014a: 4)

Change is essential and should be continuous in order for businesses to thrive and remain competitive (Abdel-Ghany 2014: 298). Managing organisational change is about managing aspects related to the people involved in the process. This refers to individuals who form part of organisations as they are the source required for change. Employees will either agree or disagree with change. In order for a business to improve successfully, the employees must also embrace change. Therefore, employee collaboration with organisational change efforts is linked to the initiative's eventual success or failure.

According to Iqbal (2011: 87), changes in an organisation's environment, structure, culture, technology or people is referred to as organisational change. Intentional change is projected to create a more operative and competent organisation although employees' struggle to change is anticipated. The negative reaction of employees is due to the increased pressure, stress and uncertainty that change brings with it. Hence, it is necessary for businesses to increase their capability to improve employees' willingness to embrace proposals about change, as well as their support or acceptance of change efforts (Choi 2011: 479). Therefore, workers are required to have a good attitude towards organisational change. They must be encouraged to see that the change would have a positive impact on themselves and the wider organisation.

According to a study conducted by Haslam, Kazi and Duncun (2019: 254), participants indicated the outcomes of an intervention on many practices regarding health. Several changes at their place of employment and household were determined. One of the main findings was the realisation of the huge amount of time spent on worksites. This resulted in a changed behaviour in corporal action at the workplace. Participants indicated that interventions created more awareness of the importance of incidental physical activity opportunities such as using the stairs instead of using a lift. The daily step count recommendations encouraged employees to do more working in order to reach their target.

2.12 Canteen interventions at worksites

The worksite offers a natural social context. Many workers consume at least one, if not more meals during working hours, therefore it is likely to influence a huge number of individuals, including individuals who are not willing to participate in preventive health behaviour (Lassen *et al.* 2010: 18). In addition to improving dietary intake at work, worksite interventions can positively impact employees and their families outside the work environment by secondary improvements in lifestyles (Ni Mhurchu, Aston and Jebb 2010: 5). It can also have a long-term impact on social norms surrounding food choices and physical activity.

Worksites offer a wide range of options for increasing the availability and accessibility of healthy meals. For example, providing subsidised good quality fruit, offering healthy food and beverages at the eatery, during conferences, and at vending machines, establishing healthy lunch clubs for employees, and removing structural barriers to healthy eating such as providing staff refrigerators and microwaves in kitchens.

Food pricing has been identified as a key factor in determining an individual's diet. A discount on the price of fresh fruits and vegetables was established successfully at a worksite canteen (Lassen *et al.* 2010: 24). This is in line with a study that compared nutritional intake between customers who consumed lunch in worksite canteens (buffet serving) and canteens that served many different types of meals at a fixed price (*à la carte*). According to the data, employees who ate lunch at buffet style canteens consumed 76 grams more fruit and vegetables than those who ate lunch *à la carte*. As a result, when these items were included in the buffet pricing, more employees were motivated to incorporate different options, such as fruit and vegetable snacks.

The key determination of a continuing sustainability study was that after five years, worksite canteens participating in the study were still able to support greater fruit and vegetable intake (Thorson *et al.* 2010: 1649). The project has indicated that certain worksites have been successful and some were not. This was concluded as a substantial increase from start to follow-up was seen in four out of five worksites. In designing, planning and implementing interventions, the technique established relied on partnership between a consultant and canteen workers and management. It also concentrated on generating concepts for greater fruit and vegetable consumption for lunch, creating environmental change in canteens by introducing healthy and tasty food options, as well as decreasing the accessibility of unhealthy food choices. It is believed that the main components for sustaining interventions are management involvement, motivating and encouraging canteen staff, being proactive with all members in the canteen and allowing interaction opportunities for canteen managers (Thorson *et al.* 2010: 1650).

The factors relating to greater sustainability were examined in an evaluation of the long-term viability of health-related programmes in the United States and Canada (Walugembe *et al.* 2019). Some factors were identified as significant when it came to determining the level of sustainability. This included the possibility of improving a programme in the future, a programme that was incorporated with the organisation's task and process, employees and or customers who could willingly identify the benefits and support from stakeholders within other organisations.

According to a comprehensive analysis conducted by (Naicker *et al.* 2021b), workplace canteen interventions and related non-canteen interventions encourage healthy eating and have an impact on individuals' health-related behaviours. There is evidence that worksite canteen and other related multi-component interventions enhance dietary habits and health outcomes and increase sales of healthier foods at the worksite.

2.13 Physical environment interventions at worksites

The physical components of the worksite, such as the premises, roads, and infrastructure, make up the built environment., which can have an impact on the health of employees (CDC 2019). These components are considered as the pattern of land usage, transportation networks, and design elements. As most South Africans spend a significant amount of time at work, worksites can be used to advance, assess and disseminate intervention programmes to large groups of people from various socioeconomic and ethnic backgrounds (Chutel and Kopf 2018: 2).

Employees may become overweight or obese as a result of environmental variables such as the availability of energy-dense foods, insufficient access to nutritious meals, and an increase in sedentary behaviour with insufficient physical exercise (Lemon and Pratt 2014: 3). However, many worksite characteristics may provide multi-component intervention procedures that link environmental and individually targeted strategies. This includes pre-existing communication systems as well as the physical surroundings (for example, in-house canteens and areas for exercising), and current social relationships among employees. Interventions that consist of ecological frameworks, with the consideration of worksite features and every

person within the setting of their social and physical surroundings, have remarkable potential for delivering easy, accessible, and healthy food options to change workers' eating and physical activity habits.

Seven single studies were conducted with a total of 114 worksites (approximately 48 000 employees). Hotels, infirmaries, manufacturing complexes, enterprises, schools and bus garages were among worksite environments, which were situated around the United States (Pratt *et al.* 2010: 2171). The interventions which were presented to all staff included approaches at environmental and individual level to increase physical activity and encourage the consumption of healthy food options. Environmental strategies comprised of reducing portion sizes, altering canteen recipes to reduce fat content, and increasing the accessibility of equipment for physical activity at the workplace. After two years of intervention, the primary outcome was a change in body mass index (BMI), or body weight. Secondary results consisted of waist circumference, independently reported measures of physical activity, improved nutritional consumption, and variations in vending machines and food options at canteens, increased performance at work, healthcare utilization, and return on investment. The study findings had important implications for the design and execution of overweight and obesity reduction programmes at work (Pratt *et al.* 2010: 2175).

2.14 Lifestyle education at worksites

The work environment and structure of several occupations have health-diminishing facets. Factors including psychosocial job stress, different working shifts, and undue physical work load are associated with employee behaviours such as smoking and lack of physical activity (Quist *et al.* 2013: 43). As a result, the workplace should be constructed to discourage these factors in order to reduce pressures that can sabotage healthy habits.

If the worksite structure, policies, and practices continue to encourage poor eating habits and behaviours, educational interventions will be ineffective (Ryan *et al.* 2019: 2). Through worksite health promotion (WHP) initiatives, certain companies realize their responsibility in developing workplace policies and practices that safeguard workers and improve their protection, health and well-being. Health education, physical and social environments that are supportive, inclusion of the worksite programme into the organisation's structure, affiliation with related programmes, and worksite screening programmes and corresponding services are examples of good practice in comprehensive workplace wellness programmes.

Workers prefer multi-component interventions, according to studies, which boosts the chances of success (Meng *et al.* 2017: 120). Changes to the worksite environment to promote physical activity and a healthy diet can aid and enhance the education and consultation components of these interventions. However, additional elements to interventions can increase the cost.

As a result of the proliferation of mobile device apps and internet connections, the number of technology-based WHP interventions has increased (Muntaner, Vidal-Conti and Palou 2016: 2). This can assist to decrease common obstacles to participation, for example, location, and cost. Telephonic health instructors and online modules and mediums should be considered as intervention delivery choices for workplaces

with employees who find it difficult to participate in face-to-face interventions as a group or individuals who do not have regular lunchtimes. Such tactics could also be used in current workplaces where people work in virtual teams and via telecommunication. Furthermore, providing incentives to encourage healthy behaviours and participant retention is common in WHP treatments (Meng *et al.* 2017: 122).

2.15 Conclusion

Worksite health and well-being interventions aim to promote individuals' change in behaviour through strategies which promote healthy food choices, exercise and stress management. Many of the programmes have been successful by indicating positive, inexpensive health results. Evidence recommends that interventions to enhance and modify psychosocial work conditions can also be favourable for health. It is vital to ensure that interventions are accessible to all members that are part of the organisation. Workers should be advised of the prospects through effective communication and every employee should be taken into consideration during the development of the intervention.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

An overview of the research design and methodology of this research project is given in this section. The context of the research, the study design, the study population and the sample design, in addition to the developmental process, validity and reliability, and lastly, ethical considerations will be discussed in detail.

3.2 Study design

This formative study used a mixed methods approach to design the food and physical environmental intervention for the South African Pioneer Worksite Study. The qualitative method consisted of IDIs and FGDs. In-depth interviews are meant to obtain knowledge from a diverse community of individuals. This involves elected officials, experts or people who have experience of the community first-hand. These community experts can provide insight into the nature of problems and make recommendations for solutions based on their extensive expertise and understanding (Guest, Namey and Mitchell 2013: 58). Group interaction is vital as it provides an insight into how people think about an issue, different opinions and ideas of individuals, and the inconsistencies and variation that exist (Nardi 2018: 22).

3.3 Worksite selection

The Principal Investigator (PI) and research team of the South African Pioneer WMLIS developed a worksite characteristic checklist to recruit eligible worksites for the study; however, it is not described in this study. Worksites were selected according to organisational size, gender (male and female), canteen characteristics, canteen interventions, willingness of management and canteen staff to participate, and lifestyle interventions.

3.4 Study population and sampling

The study was conducted at six Unilever SA worksites, three in the KwaZulu-Natal (KZN) province and three in Gauteng province (Figure 3.1). The worksites included five factories and one Head Office, Unilever Maydon Wharf (Personal care and Homecare), Unilever Indonsa (Savoury dry food plant - Knorr, Robertson's and Rajah brands), Unilever Khanyisa (Homecare), Unilever Boksburg (Homecare) and Unilever Lordsvlei (Ice cream – Ola brand) and La Lucia Head Office (Head Office). The study was also conducted at Retailability Head Office, a fashion apparel brand, which borders on the Unilever Head Office, making a total of seven worksites (Figure 3.1).

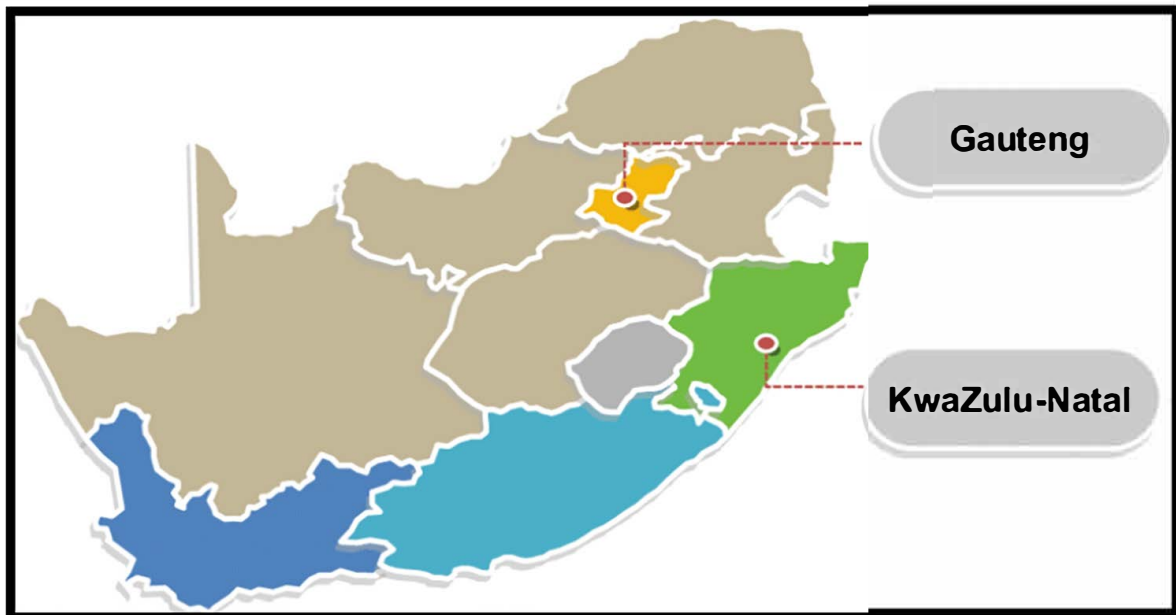


Figure 3.1: Map of SA illustrating the KwaZulu-Natal and Gauteng provinces (Matahela 2019)

3.4.1 Unilever

The international Unilever headquarters is based in London. Unilever has had two offices, one in Rotterdam and the other in the Netherlands for the previous nine decades but decided to consolidate its corporate structure into a single international headquarters in London (de la Merced 2020: 1).

Unilever is an international consumer goods corporation that manufactures food, beverages, cleaning products, and cosmetics and personal care items. Since 2020 the corporation has employed about 149,000 employees worldwide (STATISA 2020: 1). In 1929, a margarine manufacturer and a soap manufacturer merged to form Unilever. Unilever now has more than 400 brands in the food and beverage, personal care, and home care categories. Knorr, Dove, Axe and Lipton are among some of the company's most well-known brands.

Despite the additional COVID-19 expenses, Unilever's 2020 profitability was strong (Unilever 2021a: 1). There was a 9.4 billion euros underlying operating profit decrease of 5.8% but an increase of 0.7% at current currency rates. Gross margin decreased by 50 basis points (bps), resulting in a 60bps drop in underlying operating margin. Covid-19 had a negative impact of 90bps, highlighting extra costs associated with supply chain adaptation and an unfavourable mix (Unilever Annual Report and Accounts 2020 2020: 32).

However, the primary focus on cash protection and an effective operations system resulted in a free cash flow of 7.7 billion euros. This 1.5-billion-euro gain was driven by favourable working capital movements, as the company increased its emphasis on customer payments (receivables) and re-phased capital spending in view of COVID-19. In 2020, the firm increased underlying sales by 1.9%, with volumes increasing by 1.6

% and pricing increasing by 0.3%. The state of lock-down regulations influenced category and demand trends throughout the year and by market (Unilever Annual Report and Accounts 2020 2020: 36).

The turnover was reduced by 2.4%, largely due to a 5.4% negative currency effect, offset by a 1.2% positive impact from acquisitions net of disposals. As a result of increased demand in online channels, Unilever's e-Commerce sales increased by 61%, accounting for 9% of total sales (Rigby 2021: 2). In six categories, Unilever SA has unambiguous worldwide leadership positions; in a seventh, they dominate in terms of volume sold but not yet in terms of value. More than half of the company's worldwide revenue is generated by its 13 most valuable brands, each of which generated more than 1 billion Euros in sales in 2020 (Ridder 2020: 2).

Unilever has strong brand and category positions in major markets such as the United States (US) and China, as well as market leadership in India (Business Chief 2021: 1). These three countries account for nearly 35% of Unilever's current turnover and are expected to account for more than half of the international GDP growth by 2030. Beyond these three key markets lies much opportunity in key growth markets of the future – for example, their strong operating businesses in Brazil, Indonesia, Philippines, Thailand and Mexico each deliver more than 1 billion euros in sales every year – and they're continuing to build on their unrivalled route-to-market strength in these and other expanding markets. There is significant opportunity in future growth markets, besides the three main markets – for instance, their robust operational businesses in Brazil, Indonesia, Philippines, Thailand and Mexico each generate over 1 billion euros in annual sales – and they continue to brace their unrivalled route-to-market forte in these and other growing markets (Unilever Annual Report and Accounts 2020 2020: 36).

Unilever provides a number of health interventions for its workers to implement a pleasant work environment, support employees' physical, mental and emotional well-being, and assist them in achieving their unique goals (Unilever 2021c: 1). They assist their workers and their business grows by empowering them to be the greatest version of themselves. Below is a list of current interventions:

Well-being Framework – A Well-being Framework was developed by the company to promote their workers' health and well-being which includes physical (taking care of health, fitness, diet, sleep and energy levels so that they can take on difficulties with enthusiasm), purposeful (discovering what means most to them and linking it as often as possible to everything that is done), mental (controlling thoughts, feelings and reactions to diversions, pressures, obstacles and difficulties) and emotional (developing strategies for feeling upbeat and confident in the face of life's obstacles) programmes (Rajgopal 2019: 51).

Discover your Purpose workshop – This workshop was created to assist individuals to discover their own purpose and place it at the centre of their development and profession (Kerr, Billaud and Hjortshoej 2020: 2). It has been witnessed that people who bring their own purpose to work are more engaged and optimistic about their well-being and growth at Unilever. Thus far, they've assisted over 54 000 employees in discovering their unique calling.

Providing assistance to employees and their families – It is accepted that everyone who works for Unilever (and their families) should be able to get help with just one chat, one phone call, or one mouse click. The worldwide Employee Assistance Programme (EAP) provides help around the clock, every day of the year, and may be reached via phone, text, or online chat (LifeWorks 2020: 2). Counselling services, insight meditation stress management classes, personal training, financial wellness, and resilience training are all available through the programme.

Mental health initiatives – Unilever implemented a number of initiatives to foster frequent, authentic mental health conversations and address the behaviours at the root of poor mental health (Unilever 2021b: 4). For instance, they have expanded their Mental Health Champions network across their global operations. This enables employees to have peer-to-peer mental health conversations. It also emphasises the ‘Team Energy’ approach, which aims to build psychologically strong, high energy teams. Employees are urged to include 20 minutes of physical activity in their everyday routine and to take regular breaks during working hours to maintain their mental energy. To preserve social ties and develop virtual means of staying in touch on a regular basis, video calls and regular team check-ins are also encouraged.

Physical well-being support – Unilever want their workers to be fit and healthy at the workplace as well as at home. Their Global Health team intervention is essential in attaining this goal. The Global Health team is made up of a varied collection of well-trained and experienced medical experts based worldwide (Unilever 2021c: 8). Their mission is to create and maintain a safe and healthy workplace. When necessary, the team also offers proactive pre-employment screenings, yearly health assessments, and access to market-leading medical care. Periodic health examinations for health concerns such as hypertension, diabetes, and cardiovascular diseases, for example, might benefit all employees. Employees have been protected against COVID-19 through the Global Health team's efforts. They've been able to maintain the number of COVID-19 cases at work locations proportionally lower than population prevalence and infection numbers due to rigorous early testing, robust contact tracing methods, and providing early access to medical care. They also keep up with the most recent scientific data and technology to guarantee that employees have access to the best testing and treatment choices available.

Lamplighter – The Lamplighter programme encourages proactive effort to safeguard employee health in addition to addressing illnesses. Lamplighter gives its local teams structure and direction on how to start local physical health projects (Guharajan 2018: 2). It also includes detailed instructions for evaluating and modifying risk variables, for example, exercise, smoking, nutrition, and alcohol use. Unilever anticipate to have healthier and more productive staff as a consequence of these initiatives, as well as decreased levels of sick leave. Long term, they anticipate that their efforts to promote workers' health will lead to a workplace that is even more resilient and motivated (Rajgopal 2019: 53).

HIV and AIDS programmes – Unilever is intent on fighting HIV and AIDS. The United Nations (UN) high-level meeting on HIV and AIDS and the International Labour Organisation's principles and recommendations are included in the HIV and AIDS policy. In line with the UN high-level meeting on HIV and AIDS, Unilever's HIV and AIDS programmes are founded on human rights ethics and programme are

an important part of their global health strategy and a top priority for the company. They've been working to combat HIV and AIDS in the workplace and in society for more than three decades through collaborations. Behaviour-change initiatives, for example, have greatly assisted (Unilever 2021c: 9).

Keeping track of work-related diseases – Unilever monitors occupational ailments in addition to taking steps to combat specific diseases. The Occupational Health and World Class Manufacturing teams collaborate to make factories and offices healthier environments in which to operate at Unilever. The programmes address ergonomics, environmental health, noise and enzyme protection, as well as the avoidance of work-related sickness and occupational illnesses. The Occupational Illness Frequency Rate (OIFR), which counts the number of work-related ill health cases per million hours worked, is used to track improvement (Unilever 2021d: 20).

3.4.2 Retailability

Retailability, with its headquarters in Durban, SA, operates in the retailing of fashion clothes, delivering elegant in-house and branded labels at affordable pricing aimed at individuals with a low to middle income in Southern Africa (Metier 2022: 1-2). Beaver Canoe, Style, and Legit are the three retail divisions owned and run by Retailability in SA, Namibia, Botswana, Zambia, Lesotho and Swaziland. Beaver Canoe deals in men's fashion apparel, Style deals in family fashion apparel, and Legit is concerned with young female fashion apparel. The company has more than 440 outlets with more than 2000 employees with most of its stores located near a low-to-middle income target demographic and situated away from main urban hubs, Retailability primarily operates on a cash-only basis. Cliff Lines, the company's founder and principal stakeholder, is the company's director. He is a businessman with more than 25 years' expertise in Southern African fashion apparel retailing.

3.5 Inclusion and exclusion criteria

Table 3.1: Inclusion and exclusion criteria for IDIs, FGDs, ORIC Questionnaire and Intervention Rating Scale

	IDIs	FGDs	ORIC questionnaire	Intervention rating scale
Inclusion	<ul style="list-style-type: none"> - Canteen managers - Worksite managers - Both male and female employees - Full time staff in a management or supervisory position 	<ul style="list-style-type: none"> - Permanent employees - Blue and white collar employees - Both male and female employees - Employees who consume at least one meal from the canteen per day 	<ul style="list-style-type: none"> - Permanent employees - Blue and white collar employees - Canteen managers - Worksite managers - Both male and female employees - Employees who consume at least one meal from the canteen per day 	<ul style="list-style-type: none"> - Canteen managers - Worksite managers - Both male and female employees - Full time staff in a management or supervisory position
Exclusion	<ul style="list-style-type: none"> - Blue and white collar employees - Part time staff in a management or supervisory position 	<ul style="list-style-type: none"> - Non-permanent employees - Employees who do not consume meals from the canteen 	<ul style="list-style-type: none"> - Non-permanent employees - Employees who do not consume meals from the canteen 	<ul style="list-style-type: none"> - Blue and white collar employees - Part time staff in a management or supervisory position

3.6 Research tools and techniques

This study formed part of and represented Phase 2 of the SA Pioneer WMLIS involving formative work to contextually adapt and design the worksite intervention considering the characteristics of the setting and the views of workers, managers and supervisors on the design and format of delivery of the intervention (figure 1.1). This was a cross-sectional study using both qualitative and quantitative data. The capacity of the built environment was explored through structured observations of the food and physical environment to offer healthy food and promote physical activity. The researcher conducted structured observations using the worksite observation checklist. The checklist was completed during the observation.

The global epidemic of COVID-19 has had a profound influence on researchers, limiting face-to-face interaction through mandated lockdown and social distancing. This has led qualitative researchers to the transition from traditional face-to-face interviews to advanced technological methods, such as the use of Zoom, WhatsApp and Microsoft Teams. As a contingency plan, qualitative data was collected using multimodal methods. As stipulated by the worksite, employees were given the choice to either have the interviews done in person or online based on their availability, accessibility to devices and literacy in digital communications.

3.6.1 Structured observations – the physical and food environment

The researcher assessed the ability of the built environment to provide nutritious meals and stimulate physical activity by conducting structured observations of the physical and canteen environment at seven worksites (Appendix E and F). Six canteens were included from the worksites (La Lucia Head Office and Retailability, Unilever Maydon Wharf, Unilever Indonsa, Unilever Khanyisa, Unilever Boksburg). La Lucia Head Office has two canteens, the main canteen and a coffee shop. Unilever Lordsvue does not have a canteen; however, they have a dining area with packaged foods provided by the vending machine.

3.6.2 In-depth interviews (face to face)

Fourteen semi-structured IDIs were conducted with worksite managers (ten) and canteen managers (four) to assess the appropriateness, acceptability and feasibility of changes at worksites, and to explore the perceptions, provisions, facilitators of and barriers to healthy eating at the worksite environment. In-depth Interviews were guided using a semi-structured IDI guide (Appendix G and H). Purposive snowballing sampling was used to recruit worksite managers and canteen managers for the IDIs. Participants included full-time staff in a management or supervisory position. A stakeholder map was also used to identify participants. The purpose of a stakeholder map is to identify, assess and prioritise individuals and organisations interested in the functionality and success of the project (Kloosterman 2017: 2). Initially, stakeholder mapping can help the researcher define project criteria and ultimately help to better manage and engage with stakeholders.

The researcher explained the study objectives, risks and benefits to the participants, and the time contributions required from participants. Informed written consent was obtained from participants. Privacy

and confidentially were assured during and after the interview and data was de-identified. The interviews were scheduled at a place and time convenient to the participants and the time contribution from participants was estimated as 30 to 45 minutes. The IDs for worksite managers and canteen managers were conducted during a quieter period of the daily running of the canteen. The interview was conducted by trained interviewers using a semi-structured interview guide. The researcher developed a fieldworkers' training manual (Appendix N) and trained all research assistants (RAs) prior to conducting data collection. A digital recorder was used to record all interviews. The recordings were used for quality checks, transcription and translation, and for the iterative process of data collection. The audio records were planned to be deleted after one year of completion of the study.

3.6.3 Focus Group Discussions (face to face)

Five FGDs were conducted, each group comprising of 4-6 employees, until data saturation was reached, to understand the appropriateness, acceptability and feasibility of a range of possible changes at the worksite. An empirically based study conducted by Coenen *et al.* (2012: 365) found that five FGDs were enough to reach saturation for inductive thematic analysis. The research team created focus group questions which were reviewed by researchers for quality and readability. FGDs were guided using a semi-structured FGD guide (Appendix I). Flyers (Appendix K) were distributed strategically at the canteen sites requesting individuals interested in participating to contact the researcher. Participants were purposively recruited with the goal of identifying information-rich individuals who represented diverse groups at the worksite (different genders, age groups, positions). The researcher explained the study objectives, risks and benefits to the participants, and also the time contributions required from participants, which was an estimated time of one hour. Written consent was obtained from participants. Privacy and confidentially was assured during and after the interview and data was de-identified. Trained moderators used the semi-structured FGD guide to conduct the FGDs. A digital recorder was used to record the FGD, and a note-taker transcribed the conversation. The recordings were used for quality checks and for transcription and translation and were to be deleted after one year of completion of the study.

3.6.4 In-depth interviews and focus group discussions (online)

These were conducted using Microsoft Teams. Consent was obtained via email prior to the qualitative data collection. Email lists were obtained from the Human Resources department of the company. Participants were given refreshments by the occupational health nurse at the worksite in the same way they would be provided for the face-to-face meetings. Scheduling of online data collection activities was done via email. Participants were reminded by email about the interview a week before, a day before and on the day of the interview. The moderator of the interviewer was assisted by the note-taker who also managed written chats and questions during the call.

3.6.5 Organisational Readiness for Implementing Change (ORIC) questionnaire

The worksite readiness to implement change was determined through the ORIC questionnaire (Appendix J). The researcher contacted canteen management to gain permission and schedule appropriate days to administer the questionnaires to employees. The questionnaires were administered face-to-face at the canteen during the lunch breaks as it was the most suitable time for employees to complete the questionnaire. The ORIC questionnaire was also administered online by means of emails sent to employees. This was undertaken to accommodate employees following the hybrid model of work following the advent of COVID-19. For the ORIC questionnaire, the sample size was calculated using 95% confidence and a 5% margin of error to give $n=388$.

3.6.6 Intervention rating scale

The researcher approached canteen managers that took part in the IDIs and canteen staff to rate possible intervention components for the purpose of tailoring the evidence-based intervention and identifying the best way to deliver the intervention (Appendix K). The interventions were rated by canteen managers or canteen staff on a scale from one to five with regard to the feasibility of implementing different components of the intervention: with one (1) being impossible to implement and five (5) being easy to implement. To select the intervention components, the resources and time needed by the worksite to implement the intervention were considered. Below is a list of areas that were evaluated for intervention in the food environment of the worksite:

- Interventions targeting food quality and/or quantity: removing or reducing the use of trans fat, saturated fat, sugar and salt; increasing fresh fruit and vegetable choices; substituting refined carbohydrates with whole grains; reducing portion sizes; offering smaller portion sizes with proportionate pricing; offering ready-to-eat healthy meals; reducing carbonated soft drinks, providing free clean cold water, and adding a salad bar.
- Interventions targeting price: a discount for whole fresh fruit; providing free fruit and/or vegetables; reducing the price of healthier foods; increasing the prices of unhealthy foods.
- Interventions aimed at influencing food choices at the point of sale: the use of traffic light labelling [green (healthy), yellow (less healthy) or red (unhealthy)]; strategic positioning of healthier alternatives to make healthy items more accessible such as keeping fruits at eye level; a healthy option station; using a nutrition logo or a specific symbol on healthy foods to help people recognize which foods are healthy; display the number of calories in a product converted into the number of minutes needed to complete a specific physical activity at work.
- Interventions aimed at improved supply: training canteen managers to increase the availability of healthy food choices in their worksite canteen and providing culinary workshops to train canteen workers to provide healthy meals.
- Interventions targeting clients' information, education, and/or motivation: offering healthy lunchtime clubs; food workshops to discuss healthy foods and taste demonstrations of healthy food options;

informational materials; monthly news magazine with information on healthy food options; distribution of educational materials with messages encouraging fruit and vegetable consumption; a nutrition resource kiosk with trained personnel available to discuss a healthy diet and provide resources; posters, napkins, and a self-evaluation brochure.

- Interventions targeting organisation policies: develop and/or modify organisational health policy on the promotion of healthy eating; develop a manual on the workers' food programme directed at canteen managers; nutritional guidelines, the significance of a healthy diet that emphasizes the main role of fruit and vegetables; establish an employee advisory board to guide the planning and implementation of change to help make the canteen healthier.

3.6.7 Grade canteen food into categories of healthfulness

A scoping review was carried out to gather data from empirical findings on the categorisation of healthy foods through FOP labelling schemes (Appendix N). The reporting of this analysis was influenced by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for Scoping Reviews (PRISMA-ScR) guidelines. The search strategy included keywords such as “endorsement logo”, “categorising food”, “front-of-package labelling”, “nutrient profiling”, “traffic light labelling”, “Nutri-score”, “food choice”, “canteen”, “worksite”, “countries”, and “food symbols”. PubMed, Scopus, and Google Scholar were the three databases used to search for relevant articles. All papers, including titles and abstracts, were imported into an endnote database and duplicates were removed. One independent reviewer screened the article’s titles and abstracts using a pre-specified inclusion criterion. The inclusion criteria included population group (adults and employees, both males and females), type of environment (food environment, worksites, and canteens), language (English), and effectiveness of the grading system. Further information was extracted based on studies that have previously used FOP symbols/logos to categorise food into degrees of healthfulness. The studies included were not confined to the worksite and canteen but also included studies reporting on the effectiveness of FOP labelling. Studies based on FOP labelling targeting children (below the age of 18 years), unpublished articles, studies that include FOP labelling that has not been implemented or adopted by the country, and non-English articles were excluded from the review.

Table 3.2: Overview of data collection (Formative Work)

Aim	Participant type	Tool	Sample size	Topics by the outcome
To assess the appropriateness of changes at the worksite	Worksite managers	IDI	10	Appropriateness <ul style="list-style-type: none"> Anticipated barriers and facilitators for the participation in lifestyle classes. Anticipated barriers and facilitators to losing weight and improving diet and physical activity behaviours Perceived support for the programme by management
	Canteen managers	IDI	4	Appropriateness <ul style="list-style-type: none"> Barriers and facilitators to healthy eating at the worksite. Perceived support of the canteen intervention by employees and management.
	Canteen users: all employees	FGD	5 (4-6 participants)	Appropriateness <ul style="list-style-type: none"> Perceptions of healthy food at the worksite. Barriers and facilitators to making changes at the worksite. Support for the programme.
	Canteen managers and staff	Intervention Rating Scale	12	Appropriateness <ul style="list-style-type: none"> Barriers and facilitators to healthy eating at the worksite. Perceived support of the canteen intervention by employees and management.
	Canteen managers and staff	Training: canteen manual	6	Appropriateness <ul style="list-style-type: none"> Barriers and facilitators to healthy eating at the worksite. Perceived support of the canteen intervention by employees and management.

Table 3.3: A summary of the specific roles of individuals that was included in the research team

Researchers	Specific Roles and Responsibilities
The PI /Supervisor	<ul style="list-style-type: none"> • To oversee the study • Recruited the worksite to conduct the study • At the start of the study, the PI scheduled meetings with management and the research team to explain the study and gain permission to conduct data collection at the various worksites. • Assisted with communication between management at the worksites and the research team • Aided with data collection such as structured observations of the physical and food environment on the first worksite visit. • Co-ordinated the canteen training with the researcher • Quality checks of qualitative data
The Researcher	<ul style="list-style-type: none"> • Recruited RAs with the help of the supervisor • Developed tools and trained RAs • Planned and scheduled meetings with management at the worksites to conduct data collection • Conducted data collection at all worksites • Communicated with the research assistants to inform them of the various tasks required to complete on specific days. • To ensure all the necessary equipment was tested, questionnaires were printed and organised prior to conducting the data collection. • Co-ordinated the canteen training with supervisor • Transcription and coded the FGDs and IDIs
The Research Assistant	<ul style="list-style-type: none"> • Assisted with conducting the data collection at the worksites such as: <ul style="list-style-type: none"> - conducting structured observations of the physical and food environment - note taking of the FGDs and IDIs - completing the ORIC questionnaires with employees at the worksite canteens - completing the intervention rating scale with canteen staff • Assisted with transcription of the FGDs and IDIs
Occupational health nurses	<ul style="list-style-type: none"> • The key contact at each worksite • Assisted in scheduling meetings and recruitment of participants

3.7 Data analysis

The results from the canteen and the physical and environment observational checklist were summarised to identify emergent canteen and physical activity promotion strategies. The analytical strategy for the IDIs and FGDs used assisted us to understand which intervention components were more likely to be implemented successfully, both at the physical and food environment. Qualitative data consisted of translated verbatim transcripts of the IDIs and FGDs. A theme analysis technique was employed for data

analysis based on Braun and Clarke (2006) six-phase technique of thematic analysis. This method involves having knowledge, generating initial codes, searching for topics, defining and naming topics, and producing the report. Inductive coding was used to allow results to emerge from the frequent, dominant or essential themes inherent in the data. Each collection of qualitative data had its own codebook, which was generated, verified for inter-coder reliability, and used to code the transcripts. Coding enabled us to identify emergent thematic elements that could inform the intervention. The emergent themes were related to our research questions as to which canteen intervention and physical activity strategy was most likely to be implemented successfully:

FGDs:

- Perceptions of healthy and unhealthy eating.
- Facilitators and barriers to eating healthily at work.
- Barriers to healthy eating at the workplace.

The emergent themes were related to our research questions as to how the behavioural intervention strategy was most likely to be implemented successfully:

- Organisation of the lifestyle classes (location, time of day, composition of groups).
- The facilitators and barriers to employee participation in the lifestyle classes.

IDIs:

- Suggested topics regarding healthy eating or the physical activity that most employees may be interested in.
- Motivators and barriers to employee participation in health classes.
- Changes that can be made to the workplace and canteen(s) at the workplace to help employees eat healthier.
- Managers' involvement to encourage employees to eat healthier.

The emergent themes were related to our research questions as to how the behavioural intervention strategy was most likely to be implemented successfully:

- The organisation of the lifestyle classes (location, time of day, composition of groups).
- The motivators and barriers to employee participation in the lifestyle classes.
- Changes that can be made at the workplace to help employees be more physically active.
- Managers' involvement, or the involvement of any other individuals identified to encourage employees to be more physically active.
- Factors to consider when designing the healthy lifestyle programme for the workplace and employees.

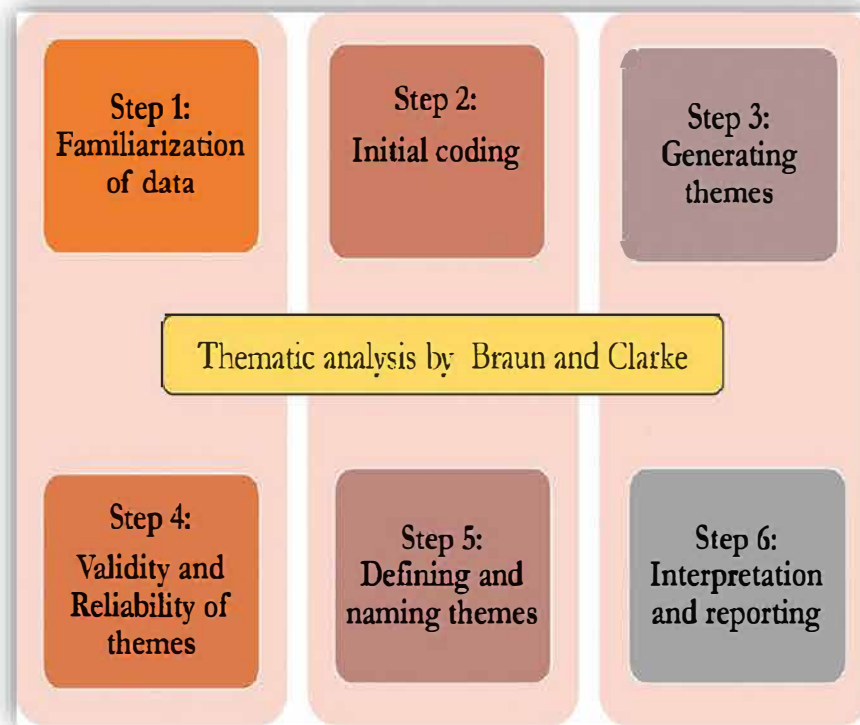


Figure 3.2: Thematic analysis (Braun and Clarke 2006)

The quantitative data, including the overall readiness for implementing change and intervention rating scale was analysed using the Statistical Package for Social Sciences (SPSS) 28 (IBM Corporation 2012: 1). The statistic tests used to analyse the quantitative data was descriptive statistics including means and standard deviations, where applicable. Frequencies were represented in tables or graphs. The connection between variables in a sample or population is described using descriptive statistics, which are used for the orderly summarising of data (Kaur, Stoltzfus and Yellapu 2018: 48). Conducting inferential statistical comparisons should not take place without calculating descriptive statistics, which is an essential initial step in carrying out research.

Factor analysis (FA) enables the researcher to simplify a set of complex variables or items by using statistical techniques to investigate the fundamental dimensions that account for the relationships between the various variables/items (Tavakol and Wetzel 2020: 246). The correlation between the factor and the item is measured by the factor loading; a factor loading of more than 0.30 typically denotes a moderate correlation between the factor and the item.

A one sample t-test which tests whether a mean score is significantly different from a scalar value (3) was used to analyse the quantitative data. When a researcher intends to determine if there is a significant difference between the means of two distinct groups or between the means of a sample and the population, they frequently employ the t-test in statistics (Kumar 2022: 1-2). The one-sample t-test is a statistical method for comparing a sample's mean to a hypothesised value, such as the mean of the population (Hoare

and Hoe 2013). When the population standard deviation is unknown and the sample size is small, the t-test is employed to test the hypothesis of the one-sample mean. T-distribution with a few degrees of freedom is the distribution that is employed. A sample is considered to be small if it has less than 30 observations.

3.8 Validity

According to Sullivan (2011: 119) validity describes how accurately a study answers the study question or the reliability of its findings. Validity also describes the accuracy of measurement for outcome measures such as surveys and tests. For the results of research to be credible, assessment tools must be both valid and reliable. Each assessment instrument used to evaluate outcomes must therefore have its reliability and validity examined, reported, or supported by references. Reliability refers to whether an assessment instrument provides the same findings each time it is used in the same setting with the same type of subjects (Surucu and Maslakci 2020: 2694). Reliability primarily refers to consistent or dependable findings. To ensure that the data is accurate and reliable, each step of this research was validated using a variety of methods such as content and construct validity tests. The content of the questionnaires, IDI guide and FGD guide was evaluated by the supervisor and experts from the Yale and Harvard University. The researcher conducted training with the RAs and explained the research tools used in the study. Test re-test reliability was carried out during the structured observations of the physical and food environment. The researcher and RA conducted structured observations of the physical and food environment on two different days at each worksite. The types of food listed in the worksite observational checklist for the food environment was contextualised to the South African population. The ORIC questionnaire and intervention rating scale are adapted questionnaires to suit the target group.

3.9 Ethical considerations

In gathering, reviewing, reporting and publishing information on research participants, specifically the right to privacy, confidentiality and informed consent, research ethics includes applying moral rules and professional standards of conduct (Oxford University Press 2019: 1). This study followed a normal protocol for approval by the DUT Institutional Research Ethics Committee (IREC 078/20) (Appendix A). The PI of the project approached industry (Gatekeeper letter) (Appendix B) to participate in the study through in-person and online meetings. Employees were briefed about the study and the various phases of the study (Information letter) (Appendix C). All participants who were willing to participate in the study completed an informed consent (Appendix D). Participants were advised that there was no financial gain and that they would also incur no costs for participating in the study. All information collected from the participants will be kept confidential and participants were made to understand that their participation in this study was on a voluntary basis with the right to withdraw at any time. Permission to record the IDIs and FGDs was gained from participants. Participants were told that the dialogue was anonymous in spite of being taped and that There was no information in the transcribed notes of the IDIs and FGDs which would allow individual subjects to be connected to particular statements. The audio records would be deleted after one year of completion of the study. Data collected would be stored in a storeroom for five years in the Department of Consumer Sciences: Food and Nutrition and thereafter would be shredded.

3.10 Conclusion

Every attempt was made to ensure that research conducted was ethical, scientific and carried out according to an academic approach. The researcher also used a systematic approach which assisted in obtaining information in a uniform style. Chapter 3 has provided an insight into the data collection processes undertaken by researchers. The next chapter will provide the results of the study and a discussion thereof.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The results, findings and discussion of the study's qualitative and quantitative data are presented in this chapter. The qualitative data collected from the IDIs and FGDs were tabulated into a narrative summary to understand the appropriateness, acceptability and feasibility of a range of possible changes at the worksite whilst the ORIC questionnaire and canteen intervention rating scale data were analysed quantitatively. The study's results and findings aligned with the objectives of the study are presented in this chapter, followed by a comprehensive discussion of the findings.

4.2 Worksite description

Worksites were recruited for the study according to a worksite characteristic checklist in Phase one of the study. Gatekeeper permission to conduct the study was obtained from the recruited worksites (Appendix A). Table 4.1 provides an overview of the worksites recruited for the study and an employee profile.

Table 4.1: Worksite description and employee profile

Worksite	Type of worksite	Number of permanent employees	Gender	
			Male	Female
Unilever: La Lucia Head Office, KZN	Administration: Head Office	800	270	530
Unilever: Maydon Wharf, KZN	Manufacturing: Personal Care Home Care	340	240	100
Unilever: Indonsa, KZN	Manufacturing: Savoury dry food plant - Knorr, Robertson's, Rajah brands	543	384	159
Unilever: Khanyisa, Gauteng	Manufacturing: Home Care	179	115	64

Worksite	Type of worksite	Number of permanent employees	Gender	
			Male	Female
Unilever: Lordsview, Gauteng	Manufacturing: Ice cream (Ola)	139	81	58
Unilever: Boksburg, Gauteng	Manufacturing: Home Care	261	189	72
Retailability, KZN	Fashion apparel company (Edgars, Legit, Beaver Canoe and Style)	447	140	307

The study included six Unilever SA worksites, three based in KZN and three in Gauteng. White collar employees dominate at the Head Office whilst each manufacturing worksite has a small proportion of white collar employees in positions of administration and the remaining employees are production employees. Unilever SA employs a total of 2262 permanent staff of which 56.5% are male and 43.5% are female employees. Retailability, housed in the same building as Unilever Head Office, also participated in the study. Retailability is a fashion apparel company with the following retail brands; Edgars, Legit, Beaver Canoe and Style. A total number of 447 white collar employees are employed at Retailability; (n=425 permanent employees) (n= 22 contract employees) of which 31% are male and 69% are female employees.

4.3 Structured observations of the built environment

Objective 1 of the study was to determine the capacity of the built environment through structured observations of the canteen and physical environment to offer healthy food and promote physical activity. Observations were conducted in duplicate by the researcher, research assistants and supervisors at each worksite. Table 4.2 represents the environmental assessment of the physical environment.

4.2.1 The physical environment

Table 4.2: Environmental assessment of the physical environment

Physical environment characteristic	Unilever La Lucia Head Office	Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Boksburg	Unilever Lordsview
General location	Decentralised urban office park area.	Decentralised urban office park area.	Decentralised urban industrialised area.	Decentralised urban industrialised area.	Decentralised urban industrialised area.	Decentralised urban industrialised area.	Decentralised urban industrialised area.
Pedestrian Infrastructure	Footpaths were wide enough for pedestrians to walk in both directions with direct access from the office to public	Footpaths were wide enough for pedestrians to walk in both directions. There were no vendors located	Footpaths were wide enough for pedestrians to walk in both directions. There was a vendor selling unhealthy	Footpaths were wide enough for pedestrians to walk in both directions. There was a vendor selling healthy (fruits	Footpaths were wide enough for pedestrians to walk in both directions. There were no vendors located	Footpaths were wide enough for pedestrians to walk in both directions. There were no vendors located	Footpaths were wide enough for pedestrians to walk in both directions. There were no vendors located

Physical environment characteristic	Unilever La Lucia Head Office	Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Boksburg	Unilever Lordsvue
	<p>transport. There were no vendors located outside the building. There was a buffer between the pavement and the road. Sidewalks were in good condition. There was no bicycle infrastructure; however, public transport was within a 1-</p>	<p>outside the building. There was a buffer between the pavement and the road. Sidewalks were in good condition. There was no bicycle infrastructure; however, public transport was within a 1-minute walking distance from the worksite.</p>	<p>snacks such as a variety chips located outside the building. There was no buffer between the pavement and the road. Sidewalks were in average condition. There was no bicycle infrastructure; however, public transport was within a 2</p>	<p>such as bananas) and unhealthy snacks (chips, sweets and carbonated drinks) located outside the building. There was a buffer between the pavement and the road. Sidewalks were in good condition. There was no bicycle infrastructure; however,</p>	<p>outside the building. There was no buffer between the pavement and the road. Sidewalks were in good condition. There was no bicycle infrastructure; however, public transport was within a 1-minute walking distance from the worksite.</p>	<p>outside the building; however, there was a fast food outlet located outside the worksite. There was a buffer between the pavement and the road. Sidewalks were in good condition. There was no bicycle infrastructure; however, public</p>	<p>outside the building. There was a buffer between the pavement and the road. Sidewalks were in good condition. There was no bicycle infrastructure; however, public transport was within a 1-minute walking distance from the worksite.</p>

Physical environment characteristic	Unilever La Lucia Head Office	Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Boksburg	Unilever Lordsview
	minute walking distance from the worksite.		minute walking distance from the worksite.	public transport was available within the worksite parking area and within 2 minutes walking distance from the worksite.		transport was within a 1-minute walking distance from the worksite.	
Worksite Infrastructure	There were walking tracks within the premises. The site had an open plan structure with two floors,	There were walking tracks within the premises. The site had an open plan structure with two floors.	There were walking tracks within the premises. The site had an open-plan structure. There were	There were walking tracks within the premises. The site had a flat structure with three buildings and two floors.	There were walking tracks within the premises. The site had a flat structure. There were four buildings	There were walking tracks within the premises. The site had a flat structure. There were three buildings	There were walking tracks within the premises. The site had a flat structure. There were three buildings

Physical environment characteristic	Unilever La Lucia Head Office	Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Boksburg	Unilever Lordsview
	staircases and elevators. Stairs were visible from the main entrance which was easily accessible and positioned ahead of the elevator. There was visible directional signage indicating the location of stairs. Stairs were wide	There were staircases and elevators. Stairs were visible from the main entrance which was easily accessible and positioned after the elevator. There was visible directional signage indicating the location of stairs. Stairs	four buildings with two floors. Stairs were visible from the main entrance which was easily accessible. There was visible directional signage indicating the location of stairs. Stairs were wide enough to accommodate people walking	Stairs were visible from the main entrance which was easily accessible and positioned before the elevator. There was visible directional signage indicating the location of stairs. Stairs were wide enough to accommodate	with two floors. Stairs were visible from the main entrance which was easily accessible. There was visible directional signage indicating the location of stairs. Stairs were wide enough to accommodate people walking in both	with two floors. Stairs were visible from the main entrance which was easily accessible. There was visible directional signage indicating the location of stairs. Stairs were wide enough to accommodate people walking in both	with three floors. Stairs were visible from the main entrance which was easily accessible. There was visible directional signage indicating the location of stairs. Stairs were wide enough to accommodate people walking in both

Physical environment characteristic	Unilever La Lucia Head Office	Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Boksburg	Unilever Lordsview
	enough to accommodate people walking in both directions. The stairwells were well-lit, clean and well decorated; however, there were no signs promoting the use of stairs	were wide enough to accommodate people walking in both directions. The stairwells were well-lit and clean; however, there were no signs promoting the use of stairs.	in both directions. The stairwells were well-lit and clean; however, there were no signs or markings promoting the use of stairs.	people walking in both directions. The stairwells were well-lit and clean; however, there were no signs or markings promoting the use of stairs.	directions. The stairwells were well-lit and clean; however, there were no signs or markings promoting the use of stairs.	directions. The stairwells were well-lit and clean; however, there were no signs or markings promoting the use of stairs.	directions. The stairwells were well-lit and clean; however, there were no signs or markings promoting the use of stairs.
Worksite building	There was a gym with changing facilities. There were water facilities	There was a gym with changing facilities. There were water	There was no gym or any other designated physical activity areas.	There was no gym, though there were showers and changing facilities.	There was no gym, although there were showers and changing facilities.	There was no gym although there were changing facilities. There were	There was no gym although there were changing facilities. There were

Physical environment characteristic	Unilever La Lucia Head Office	Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Boksburg	Unilever Lordsview
	and water fountains at designated areas such as the pause areas. The coffee and tea stations, known as pause areas, are positioned at every department and canteens were within a 1-2-minute walking distance from working spaces.	dispensers at designated areas such as the pause areas. The tea and coffee station, pause areas and canteens were within 2 minutes' walking distance between working spaces.	There were changing facilities. There were water dispensers and water fountains at designated areas such as the pause areas and the canteen. The two canteens were within 5 minutes walking distance between	There were water dispensers at designated areas such as the entrance of the reception, at the canteen and pause areas. There were pause areas within the office environment. The tea and coffee stations and canteen were within 5 minutes'	There were water dispensers at designated areas such as the pause areas and clinic. There were pause areas within the office environment. The tea and coffee station and canteen were within 5 minutes' walking distance between	water dispensers at designated areas such as the pause areas. The canteen was within 5 minutes' walking distance between working spaces.	water dispensers at designated areas such as the pause areas. The dining area was within 5 minutes' walking distance between working spaces.

Physical environment characteristic	Unilever La Lucia Head Office	Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Boksburg	Unilever Lordsvue
			working spaces.	walking distance between working spaces.	working spaces.		

The worksites in this study were mainly situated in an urban decentralised area. Numerous significant geographic considerations, such as the availability and accessibility of raw materials, energy sources, water, labour, markets, and transportation infrastructure, have a role to play where specific industries are located (Chand 2016: 1). All worksites had good outside pedestrian infrastructure. It was observed that there were no cycling paths to the worksites; however, public transport was easily accessible to employees. The economical transportation of employees to and from their place of employment is adequately facilitated by the taxi industry (Gobind 2018: 2). The most frequent reason for household members to travel was to educational institutions, followed by their place of employment, according to a nationwide study on household travel conducted by Statistics SA (STATS SA) in 2020 (STATS SA 2021: 2). The predicted total number of employees using public transportation to get to work decreased significantly from 5.4 million in 2013 to 4.7 million in 2020. The majority of individuals who used public transportation travelled by taxis, with employees accounting for 80.2% of the total number of people transported. In general, all manufacturing sites were constructed on a flat surface. Walking tracks were demarcated within the worksites; however, there are no signage prompts to encourage walking. Stairwells were clean, well lit, easily visible and accessible at each building; however, the health benefits of using the stairs were not displayed. According to Pescud *et al.* (2015: 642), from the employer's perspective, promoting physical activity is recognised to increase employee morale, enhance attitudes toward the workplace, and minimise absenteeism. Therefore, lifestyle interventions promoting the use of stairs through positive messages and prompts may be a useful tool. Staff at Unilever Head Office and Retailability have a fully equipped gym whilst the manufacturing sites only have changing facilities. However, in SA, worksite gyms are not very prominent. The Centre for Disease Control and Prevention (CDC) highlights that workplace wellness initiatives that encourage physical activity can help develop a healthy workforce (CDC 2022a: 3). One approach to encourage physical activity and enhance health is to alter the physical environment; it was therefore essential to conduct an environmental assessment of the internal and external physical environment in order to design practical and contextualised interventions to promote physical activity at the worksites.



Figure 4.2: The main source of public transport at Unilever Indonsa (Singh 2022)



Figure 4.1: Signage indicating public transport at Unilever Indonsa (Singh 2022)

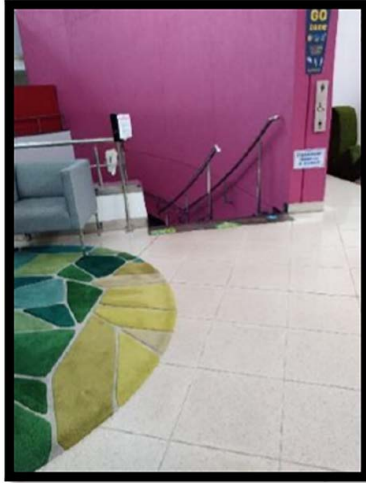


Figure 4.3: Staircase within the building at Unilever Head Office (Singh 2022)



Figure 4.4: Stairwell at Unilever Lordsvue (Zikalala 2022)

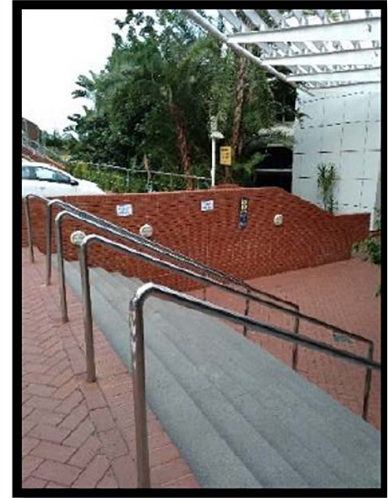


Figure 4.5: Staircase visible from the entrance at Unilever Head Office (Singh 2022)



Figure 4.6: Buffer between the pavement and road at Unilever Head Office (Singh 2022)



Figure 4.7: Walking tracks demarcated at Unilever Maydon Wharf (Singh 2022)



Figure 4.8: Vendor located outside Unilever Indonsa (Singh 2022)



Figure 4.9: Vendor located outside the Unilever Maydon Wharf worksite (Singh 2022)

4.2.2 The food environment

Table 4.2 outlines the assessment of the food environment at all worksites.

Table 4.3: Assessment of the food environment

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsvew	Unilever Boksburg
Provisioning of food in the canteen	The canteen offered pre-made and pre-packaged options (croissants, muffins, sandwiches). The vending machine carried lines of packaged nuts (cashew, chocolate coated peanuts, almonds and mixed nuts).	The canteen offered pre-made and pre-packaged options (biscuits, cakes, sandwiches). A large number of menu (more than 15) options made in-house were available. The menu or food options offered in the canteen	The canteen offered pre-made and pre-packaged options (biscuits, cakes, sandwiches). A large number of menu (more than 15) options made in-house were available. The menu or food options offered in the canteen	The canteen offered pre-made and pre-packaged options (biscuits, cakes, sandwiches). A large number of menu (more than 15) options made in-house were available. The menu or food options offered in the canteen	The was no canteen at the worksite. The worksite had a dining area and pause stations where employees consumed their meals. At the dining area there were vending machines with unhealthy snacks and beverages	The canteen offered pre-made and pre-packaged options (biscuits, cakes, sandwiches). A large number of menu (more than 15) options made in-house were available. The menu or food options offered in the canteen

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsview	Unilever Boksburg
	A large number of menu (more than 15) options made in-house were available. The menu or food options offered in the canteen changed every four weeks. There were pause stations and dining areas at the worksite.	changed every four weeks. There were pause areas and dining areas at the worksite.	changed every four weeks. There were pause areas and dining areas at the worksite.	changed every four weeks. There were pause areas and dining areas at the worksite.	such as packaged crisps, chocolates and cold drinks.	changed every four weeks. There were pause areas and dining areas at the worksite.

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsvue	Unilever Boksburg
Food options	Whole grains and refined grains were available. Popular whole grains were brown bread, low glycaemic index (GI) bread, couscous and whole wheat rolls. Refined grains included maize meal, white rice and white bread. Legumes such as beans, lentils, soya and peanuts were offered at the canteen.	Whole grains and refined grains were available. Whole grains such as brown bread, couscous and brown rice were served less frequently. Refined grains included maize meal, white rice and white bread. Legumes such as beans, lentils and soya were offered at the canteen. There was a variety of	Whole grains and refined grains were available. Whole grains such as brown bread, couscous and brown rice were served less frequently. Refined grains included maize meal, white rice and white bread. Legumes such as beans, lentils and soya were offered at the canteen. There was a variety of	Whole grains and refined grains were available. Whole grains such as brown bread, couscous and brown rice were served less frequently. Refined grains included maize meal, white rice and white bread. Legumes such as beans, lentils and soya were offered at the canteen. There was a variety of	Tea and coffee were served at the pause areas. Sugar was provided to employees to add. Hot and cold water was available at pause areas.	Whole grains and refined grains were available. Whole grains such as brown bread, couscous and brown rice were served less frequently. Refined grains included maize meal, white rice and white bread. Legumes such as beans, lentils and soya were offered at the canteen. There was a variety of

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsvue	Unilever Boksburg
	There was a variety of vegetables including green vegetables, red and orange vegetables and starchy vegetables. Common vegetables included potatoes, sweet potatoes, spinach, green beans, cabbage, butternut, lettuce, carrots, sweetcorn, mushrooms and	vegetables including green vegetables, red and orange vegetables and starchy vegetables. Common vegetables included potatoes, sweet potatoes, cabbage, spinach, lettuce, carrots, peppers and mushrooms. Preparation methods consisted of raw, stewed, and	vegetables including green vegetables, red and orange vegetables and starchy vegetables. Common vegetables included potatoes, spinach, peppers, lettuce, tomato, mushrooms and cabbage. Preparation methods consisted of raw, stewed, steamed and deep fried.	vegetables including green vegetables, red and orange vegetables and starchy vegetables. Common vegetables include potatoes, spinach, lettuce, peppers, tomato, mushrooms and cabbage. Preparation methods consisted of raw, stewed, baked or grilled, stir fried and deep fried.		vegetables including green vegetables, red and orange vegetables and starchy vegetables. Common vegetables included potatoes, lettuce, spinach, cabbage, peppers, tomato, mushrooms and cabbage. Preparation methods consisted of raw, stewed, baked or

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsvew	Unilever Boksburg
	peppers. Preparation methods consisted of raw, steamed, baked or grilled, stir- fried, deep-fried, roasted and stewed. The most common animal- based foods were beef, chicken and processed meats such as sausages. The meat was either baked or grilled, stir-fried, deep- fried or stewed. There was no	deep-fried. The most common animal -based foods were beef, chicken and processed meats such as sausages. The meat was either stewed, steamed, baked or grilled, stir-fried or deep- fried. There was no visible oil on the animal- based foods. Whole fresh fruits were available. The	The most common animal - based foods were beef and chicken. The meat was either stewed, baked or grilled, or deep fried. There was visible oil on the vegetables and animal-based foods. Whole fresh fruits were available. The most common types of fat and oils used were palm oil,	The most common animal- based foods were beef and chicken. The meat was either stewed, baked or grilled, stir fried or deep fried. There was visible oil on the vegetables and animal-based foods. Whole fruits were available. The most common types of fat and oils used were palm oil and		grilled, stir fried and deep fried. The most common animal- based foods were beef and chicken. The meat was either stewed, baked or grilled, stir fried or deep fried. There was visible oil on the vegetables and animal-based foods. Whole fruits were available. The most common types of fat and oils were palm oil

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsview	Unilever Boksburg
	visible oil on the vegetables and animal-based foods. Fruit salad was served with yoghurt or with muesli. The most common types of fats and oils used were palm oil, olive oil and butter. Pastries and cakes such as croissants, crunchies, and muffins were available. There were full-fat and low-fat dairy products	most common types of fat and oils used were palm oil, olive oil and butter. Cakes such as Chelsea buns, snowballs and doughnuts were available. There were full-fat and low-fat dairy products available. The beverage section consisted of carbonated drinks, canned juices, packaged water. Tea and	sunflower oil and butter. Cakes such as Chelsea buns and snowballs were available. There were only full-fat dairy products available. The beverage section consisted of carbonated drinks, canned juices, packaged water. Tea and coffee were offered at the canteen; and were also served	butter. Cakes such as Chelsea buns, scones and snowballs were available. There were full-fat dairy products available. The beverage section consisted of carbonated drinks, packaged juices and bottled water. Tea and coffee were not sold at the canteen; however, they were served at the pause areas.		and butter. Cakes such as Chelsea buns and snowballs were available. There were full-fat dairy products available. The beverage section consisted of carbonated drinks, packaged juices and bottled water. Tea and coffee were not sold at the canteen; however, they were served at the pause areas.

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsview	Unilever Boksburg
	available. The beverage section consisted of carbonated drinks, packaged juices and bottled water. There was a variety of teas and coffees. Sugar and milk: brown and white and low-fat and full- fat was provided at pause stations. Hot and cold water was available at the pause stations. Salt was not available on the	coffee were not sold at the canteen; however, they are served at the pause areas. Sugar and milk: brown and white and low-fat and full-fat was provided at pause stations. Hot and cold water was available at the pause stations. Salt was not available on the dining tables. Condiments such as tomato sauce	at the pause areas. Sugar: brown and white was provided to employees to add.	Sugar: brown and white was provided to employees to add.		Sugar: brown and white was provided to employees to add. Hot and cold water was not available at the canteen, although it was available at the pause areas.

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsview	Unilever Boksburg
	dining tables. Condiments such as tomato sauce were available at the canteen.	were available at the canteen.				
Portion sizes	Portion control spoons were not used; instead serving spoons were used to portion meals. Meals were served either on a fish plate or in a takeaway container. During COVID-19, meals were pre-packed and sold. Sugar	Portion control spoons were not used; instead serving spoons were used to portion meals. Meals were served either on a fish plate or in a takeaway container. Sugar was available for hot beverages at the pause areas.	Portion control spoons were not used; instead serving spoons were used to portion meals. Meals were served either on a fish plate or in a takeaway container. Sugar was available for hot beverages at the pause areas.	Portion control spoons were not used; instead serving spoons were used to portion meals. Meals were served either on a fish plate or in a takeaway container. Sugar was available for hot beverages at the pause areas.	Sugar was available for hot beverages at the pause areas. Sugar was stored and served from a canister with no limitations to the number of servings	Portion control spoons were not used; instead serving spoons were used to portion meals. Meals were served either on a fish plate or in a takeaway container. Sugar was available for hot beverages at the pause areas.

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsview	Unilever Boksburg
	was served separately from hot beverages. Sugar was available in 2 gram (g) sachets with no limitations to the number of servings. There was more than one portion size option for packaged food and beverage items.	Sugar was stored and served from a canister with no limitations to the number of servings. At the canteen, there was more than one portion size option for packaged food and beverage items.	Sugar was stored and served from a canister with no limitations to the number of servings. At the canteen, there was more than one portion size option for packaged food and beverage items.	Sugar was stored and served from a canister with no limitations to the number of servings. At the canteen, there was more than one portion size option for packaged food and beverage items.		Sugar was stored in and served from a canister with no limitations to the number of servings. At the canteen there was more than one portion size option for packaged food and beverage items.
Point of choice	There was a display board with the menu; however, there	There was a display board with the menu; however, there	There was a display board with the menu; however, there	There was a display board with the menu; however, there	In the vending machine, unhealthy snacks such as packets	There was a display board with the menu; however, there

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsview	Unilever Boksburg
	was no nutrition information provided. There were no posters and table tents on healthy eating at the canteen. There was a system in place to identify healthier items in the canteen including a “get balanced” healthy meal option on the menu. There were no price discounts for healthier foods. Healthier food	was no nutrition information provided. There were no posters and table tents on healthy eating at the canteen. There was a system to identify healthier items in the canteen such as a “get balanced” healthy meal option on the menu. There were no price discounts for healthier foods. Healthier food options were not	was no nutrition information provided. There were no posters and table tents on healthy eating at the canteen. There was a system to identify healthier items in the canteen such as a “get balanced” healthy meal option on the menu. There were no price discounts for healthier foods. Healthier food options were not	was no nutrition information provided. There were no posters and table tents on healthy eating at the canteen. There was a system to identify healthier items in the canteen such as a “get balanced” healthy meal option on the menu. There were no price discounts for healthier foods. Healthier food options were not	of crisps were placed at eye-level.	was no nutrition information provided. There were no posters and table tents on healthy eating at the canteen. There was a system to identify healthier items in the canteen such as a “get balanced” healthy meal option on the menu. There were no price discounts for healthier foods. Healthier food options were not

Criteria	Unilever La Lucia Head Office/ Retailability	Unilever Maydon Wharf	Unilever Indonsa	Unilever Khanyisa	Unilever Lordsview	Unilever Boksburg
	options were not positioned closer to the employees when making purchasing decisions. Certain healthier foods and beverages such as bottled water were placed at eye level in the fridge. Healthier food options were not promoted at the canteen.	positioned closer to the employees when making purchasing decisions. Certain healthier foods and beverages such as bottled water were placed at eye level in the fridge. Healthier food options were not promoted at the canteen.	positioned closer to the employees when making purchasing decisions. Certain healthier foods and beverages such as bottled water was placed at eye level in the fridge. Healthier food options were not promoted at the canteen.	positioned closer to the employees when making purchasing decisions. Certain healthier foods and beverages such as bottled water were placed at eye level in the fridge. Healthier food options were not promoted at the canteen.		positioned closer to the employees when making purchasing decisions. Certain healthier foods and beverages such as bottled water were placed at eye level in the fridge. Healthier food options were not promoted at the canteen.

4.2.2.1 Types of food

The canteen offered five contract subsidised meals and followed a four-week menu cycle. The contract meals served on the menu were cost-effective. The average price of a meal at the Unilever canteens cost R26.00. For example, a “local flava” meal (such as chicken curry served with dumplings and salad) was priced at R32.50 whilst the “get balanced” healthy meal option, which included oven baked fish with sweet potato wedges and salad cost R29.50. The price of the healthy meal option (“get balanced” meal) varies depending on the type of meal served at the canteen. The increased cost of healthful foods is one of the main barriers to healthy eating (Tamrakar *et al.* 2020a: 7). The results of a study conducted by FAO (Herforth *et al.* 2020: 2) indicated the relatively high price of healthier foods, which quintupled the price of energy dense meals. The price of nutrient-dense meals exceeded the poverty threshold and did not account for the required quantities of each food group. The study also highlighted that billions of individuals could not afford the minimum price of a healthful meal. Supporting this, a study from Tanzania also indicated that high costs, availability, and pessimistic perceptions are the main barriers to consumption of healthful foods (Muhihi *et al.* 2012: 5). According to research, discounts for healthier foods suggestively boost consumers' purchases and consumption of healthful foods (An 2013: 1216). Pre-made and pre-packaged food options were sold at the canteens and displayed closer to the point of sale. Packaged foods were available at the vending machines at Unilever Head Office and Unilever Lordsvue. Implementing interventions that encourage low-kilojoule options in vending machines is a viable way to reduce kilojoule intake through snacking since vending machine use is linked to unhealthy eating habits (Bos *et al.* 2018: 248). There were several pause areas and tea stations at the worksite. The pause area is known as a location that functions as a company's outpost but has a completely distinct atmosphere from the majority of the working environment (All Office 2021: 1). Employees use it as a break room, but more significantly, it allows them to escape from their daily routine. The pause areas include the tea and coffee stations. Employees generally prepared complimentary hot beverages at the tea and coffee stations. The tea station also had a microwave and fridge that employees could use to warm or store their lunches. Energy drinks and sweetened tea and coffee are examples of sugar-sweetened beverages that are often regarded as a contributor of added sugar in the diet (CDC 2022: 2). A study conducted by Sánchez-Pimienta *et al.* (2016: 1888) to determine the amount of added, intrinsic, and total sugars consumed in the Mexican diet highlighted that aguas frescas, homemade SSBs, and coffee and tea (12.7%) were additional significant sources of added sugar consumption. South Africans consume between 12 and 24 teaspoons of sugar per day of which four to eight teaspoons are from SSBs (University of Witwatersrand Johannesburg 2016: 2). Environmental interventions, also known as interventions that change the social or physical context in which people acquire beverage decisions, have been promoted as a strategy to lower SSB consumption (Von Philipsborn *et al.* 2020: 397). A method that has demonstrated potential in reducing excessive kilojoule consumption is to substitute water for SSB (Duffey and Poti 2016: 2).



Figure 4.10: Contract dishes displayed at the canteen at Unilever Head Office (Naicker 2022)

4.2.2.2 Food options

The canteen offers whole grains (couscous, brown rice, whole wheat bread) and refined grains (maize meal, rice, white bread). Whole grains are more popular among employees at Head Office rather than employees at manufacturing sites who prefer a larger portion of refined grains with meat in their meal. An employee's dietary habits may be associated with several factors at the worksite such as job pressures, working hours, shift work and physical labour (Tanaka *et al.* 2019: 139). Food choice and dietary behaviours of cultural groups are influenced by sociocultural factors (Chen and Antonelli 2020: 1898). SA is often known as a "rainbow nation" as it is made up of a number of diverse cultures and religions. According to a report on the Plate of the Nation, currently, meat and starch make up a significant amount of South African plates, while vegetables are limited (Unilever Food Solutions 2021: 1-2). The current plate has 41% starch and 26% meat. It is therefore significant to take cultural factors into account when developing interventions for modifying dietary habits at worksite canteens. Employees at Unilever Head Office preferred healthier foods compared to employees at the manufacturing sites. Employees conducting manual labour are more likely to purchase and consume energy dense foods from the worksite canteen compared to office employees as they have a greater physical demand. According to the findings from a study conducted by Stern *et al.* (2021: 973), employees perceived healthy eating to be linked to physical job intensity. For instance, some manual labourers claimed that healthy eating is mostly for office employees who spend more time sitting down, but more physically active employees need foods that would make them feel full, such as foods high in carbohydrates and fat. There were a variety of vegetables available at the canteen. Fruits and vegetables are key elements of a healthy diet since they are low in kilojoules, and rich in fibre, antioxidants, and micronutrients (Cena and Calder 2020: 2). The World Health Organisation (WHO) encourages consuming a minimum of 400g per day, or five portions a day (WHO 2020b: 3). Supporting evidence indicates that employees who were introduced to interventions encouraging the intake of fruit and vegetables in various meals increased their fruit and vegetable consumption by 38%

(Franco, de Castro and Wolkoff 2013: 32). The preparation method of food is equally important as selecting a healthy option. Certain preparation methods are more preferable to others for reducing fat and kilojoules whilst increasing the nutrition content of the meal (American Heart and Stroke Foundation. 2014: 1-2). Cooking methods that require the addition of unhealthy fats such as saturated fats should be limited. The most common cooking methods used at the canteens were stewing, deep frying, stir-frying, baking and grilling. It is essential to understand the factors affecting food choices so that appropriate interventions may be implemented to enhance food choices and effectively alter the food environment.



Figure 4.11: A pre-packaged healthy meal served at Unilever Head Office canteen (Naicker 2022)

4.2.2.3 Portion size

The meals were served using serving spoons. At the canteen, portion sizes were regulated using a fish plate instead of using a meat plate. Portion control utensils such as portion ladles and reduced-size crockery have the capacity to regulate portion size consumption (Vargas-Alvarez *et al.* 2021: 1978). Worksite canteens are an essential intervention setting since it is estimated that at least one third of an individual's daily energy intake is consumed at the worksite. The portion sizes of meals that are accessible for selection, purchase, and consumption is an important environmental stimulus to consumption and a prospective target for interventions in physical environments (Hollands *et al.* 2018: 78). The results of a Cochrane study (Hollands *et al.* 2015: 3) and other systematic and narrative studies (Zlatevska, Dubelaar and Holden 2014: 150; Steenhuis and Poelman 2017) consistently emphasise the significant impact of portion size on consumption. According to a study conducted by LaCaille *et al.* (2016: 171) interventions targeting portions sizes included reducing the size of serving spoons and offering half portions at half price.

These modifications were implemented to improve perceptions of healthy food accessibility and convenience and to make selecting healthier choices the norm.

4.2.2.4 Point of choice

There was a menu board displayed at every canteen; however, no nutrition information was provided. Certain healthier foods and beverages such as bottled water were placed at eye level in the fridges. Unhealthy snacks like packets of potato crisps were displayed in the vending machine at eye level at Unilever Khanyisa whilst healthy snacks such as mixed nuts were only contained in the vending machine at Unilever Head Office. Food choice architecture refers to the way a food option is displayed and how it affects subsequent dietary choices (Ensaff 2021: 196). According to the findings of a recent study, various worksites can benefit from a wide range of choice architectural interventions targeting healthful dietary habits and physical activity. The approach should be contextualised to the worksite to increase the viability and effectiveness (Rantala *et al.* 2021: 3592). Choice architecture interventions include strategic positioning of healthier food alternatives such as repositioning certain healthy foods within the canteen to prompt consciousness. For example, in a study conducted by Geaney *et al.* (2016: 78) among random employees who consumed at least one main meal in the hospital staff canteen daily in Ireland, healthy snacks like fresh whole fruit and nuts were substituted for baked goods at point of sale and in the vending machines.

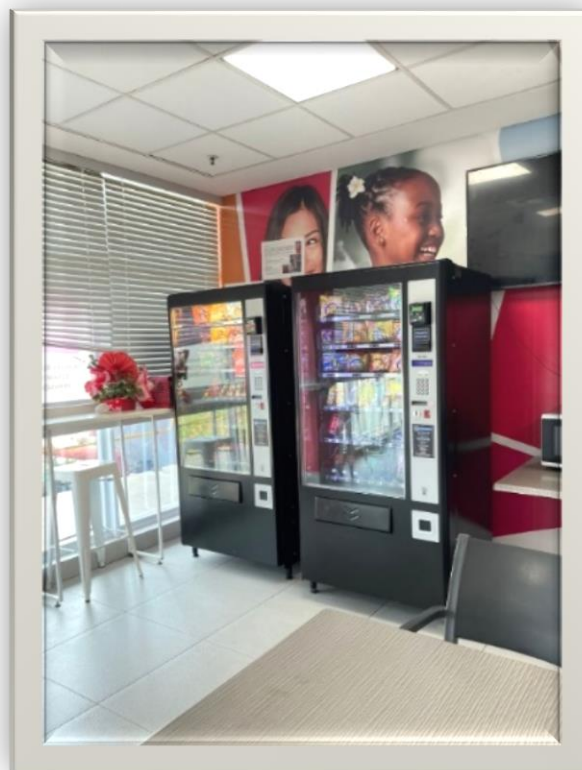


Figure 4.12: Vending machine in the dining area at Unilever Lordsvue (Zikalala 2022)

4.3 In-depth interviews

In-depth Interviews were conducted with worksite managers and canteen managers to assess the appropriateness, acceptability and feasibility of changes at worksites and explore the perceptions, provisions, drivers and barriers of healthy eating at the worksite environment. The interviews were guided using a semi-structured IDI guide. Participants included full-time staff in a management or supervisory position. When transcribing IDIs, codes are used to identify each individual who participates in the interview. For example, IDI 1 stands for in-depth interview participant 1.

Table 4.4: Summary of resulting themes and representative quotes from Unilever and Retailability worksite managers participating in IDIs about successful implementation of a lifestyle programme

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 1, 2 - Unilever La Lucia Head Office</p> <p>IDI 3, 4 - Unilever Khanyisa</p>	<p>What would be the best times to hold lifestyle classes at your workplace?</p>	<p>Availability</p> <p>Peak production periods</p>	<p>Best times will depend on employees' schedules, their mode of work and preference for lifestyle classes at the end of the day.</p> <p>Tea time and lunch time. The day that the programme would be implemented should be planned at least one week in advance. Depends on production. Very early in the morning or after hours for office workers. The afternoon is preferred since it is not too hot. During stock count towards the end of the month.</p>	<p>IDI 1, 2: "Different departments and individuals will have different work schedules."</p> <p>IDI 1 "It will depend on COVID-19 level restrictions as staff work online from home during certain levels."</p> <p>IDI 2: "After meetings."</p> <p>IDI 2: "Preferably at the end of a work day."</p> <p>IDI 3: "Tea times or lunchtime."</p> <p>IDI 3,4: "The best times are production driven."</p> <p>IDI 4: "It would either be very early in the morning or after hours and that only speaks to the office workers."</p> <p>IDI 4: "Normally afternoon is better because it is not too hot."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 5, 6 - Unilever Indonsa</p> <p>IDI 7, 8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Unilever Retailability</p>			<p>During the day, before lunch or in the morning, or the afternoon. Communicate with production managers.</p> <p>Before or after work.</p> <p>Towards the end of the week, in the mornings.</p>	<p>IDI 4: "But if you do get a stock count within that time of the month, then that is a good opportunity."</p> <p>IDI 5: "During the day."</p> <p>IDI 5: "Before lunch, in the morning."</p> <p>IDI 5: "For others, it is in the afternoon."</p> <p>IDI 6: "Engage with production for their input."</p> <p>IDI 6: "Before or after the end of a shift."</p> <p>IDI 7, 8: "Before or after work time."</p> <p>IDI 9: "Most likely it would be towards the end of the week."</p> <p>IDI 9: "If you are talking about a day. And in terms of timeline, the best time would actually be mornings."</p> <p>IDI 10: "We are a very diverse company and every department works at a different pace and it all depends on the flexibility of</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 5, 6 - Unilever Indonsa</p> <p>IDI 7,8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Unilever Retailability</p>				<p>IDI 3, 4: "In December. We only have one week shut down."</p> <p>IDI 4: "Tea time or just after lunch."</p> <p>IDI 4: "Peak period in every month is the last week of the month."</p> <p>IDI 5, 6: "It would depend on production."</p> <p>IDI 5: "This should be communicated well in advance, maybe 6 weeks before to the production manager."</p> <p>IDI 6: "Shut down is around the 15th of December."</p> <p>IDI 7, 8: "Lunch breaks and tea time because it is employees' "me" time. "</p> <p>IDI 9: "And I would say lunch time. So, between 11:30 and 2:30pm is when the canteen is open and you would never find anyone or catch anyone for that time."</p> <p>IDI 9, 10: "Vacation period is generally that December period."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>IDI 9: "And then financial year end is very hectic, especially for finance."</p> <p>IDI 9,10: "The other thing is that we have our post seasonals. I know generally that is what affects the Tuesdays."</p> <p>IDI 9,10: "Peak would be beginning of the month for merchandise and end of the month for finance."</p> <p>IDI 10: "The mornings is definitely not going to work."</p>
<p>IDI 1, 2 - Unilever</p> <p>La Lucia Head Office</p>	<p>What would be a good location for the lifestyle classes at your workplace?</p>	<p>Worksite resources</p>	<p>The training room and gym area is well ventilated and spacious.</p>	<p>IDI 1, 2: "The training room for the educational component of lifestyle classes and gym (includes a studio) for physical activity. It is well ventilated and spacious."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 3, 4 - Unilever Khanyisa</p> <p>IDI 5, 6 - Unilever Indonsa</p> <p>IDI 9, 10 - Retailability</p>			<p>The canteen, outside the clinic area.</p> <p>Outside the Unilever building, in an open space.</p> <p>The gym and space can be arranged for lifestyle classes.</p>	<p>IDI 3: "The canteen is a great location because it is big enough space-wise."</p> <p>IDI 3,4: "We have quite a lot of space in front (outside the clinic area) to conduct the physical activity."</p> <p>IDI 5,6: "There is a good location for physical space outside on the other end. It is a very big open space."</p> <p>IDI 5: "However, we do need covering because we cannot do it in the open in case there is rain or too much heat."</p> <p>IDI 9,10: "We do have an on-site gym."</p> <p>IDI 9: "Second to that, if you need somewhere outside then we can organise outside for a room or there's even a training room downstairs. It all depends on how much space is needed."</p>
IDI 1, 2 - Unilever	How do you think staff would feel about participating in online	Multimodal	Both online and face to face.	IDI 1, 2: "Face-to-face and online."

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>La Lucia Head Office</p> <p>IDI 3, 4 - Unilever Khanyisa</p> <p>IDI 5, 6 - Unilever Indonsa</p> <p>IDI 7, 8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Retailability</p>	<p>classes compared to face-to-face lifestyle education classes?</p>			<p>IDI 3, 4: "Face-to-face and online."</p> <p>IDI 5, 6: "Face-to-face and online."</p> <p>IDI 7,8: "Face-to-face and online."</p> <p>IDI 9, 10: "Face-to-face and online."</p>
<p>IDI 1, 2 - Unilever La Lucia Head Office</p> <p>IDI 3, 4 - Unilever Khanyisa</p>	<p>Do you think participation in lifestyle classes would be affected by gender, type of job position?</p>	<p>Group dynamics</p>	<p>Participation would not be affected by gender; however, employees may feel uncomfortable in groups with senior management.</p>	<p>IDI 1,2: "No problem with gender. Some employees prefer privacy and may not feel comfortable in a group."</p> <p>IDI 3:" I don't think participation would be affected by gender or the manager. We have managers that are influencers."</p> <p>IDI 3: "No, I don't think so because we do have groups whereby everyone here that is on</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 5, 6 - Unilever Indonsa				<p>site would meet up and there hasn't been any issues. So, I don't think there will be any issues with that."</p> <p>IDI 4: "It depends on the employee's preference."</p> <p>IDI 4: "From experience, I don't think that they would be comfortable if I am their manager and I am part of the group."</p> <p>IDI 4: "They sometimes tend to be shy, not as free as they would be when they are with their peers."</p> <p>IDI 5: "There wouldn't be a problem as far as I know."</p> <p>IDI 5: "They are comfortable because even during their breaks, they sit together"</p> <p>IDI 6: "Maybe or maybe not. I don't know any conflict dynamics between them."</p> <p>IDI 6: "You will find employees that always feel inferior or get intimidated if there is a manger."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 7, 8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Retailability</p>				<p>IDI 7, 8: "No, they would be fine."</p> <p>IDI 9, 10: "No. It shouldn't be affected but like I've been saying, if people have the time, then everyone would be fine."</p>
<p>IDI 1, 2 - Unilever La Lucia Head Office</p>	<p>What topics about healthy eating or physical activity do you think will most interest your employees?</p>	<p>Healthy lifestyle</p>	<p>Healthy eating and healthy lifestyle including practical tips. Topics of interest should be the same for all employees.</p>	<p>IDI 1: "Weight control, maintenance of cholesterol, high blood pressure, diabetes, healthy eating, healthy lifestyle and lifestyle modification."</p> <p>IDI 2: "Eating plans for employees. Planned meals by a dietician delivered to employees for lunch (which was practiced pre-COVID-19."</p> <p>IDI 2: "Videos on preparing healthy and easy meals can be sent to employees."</p> <p>IDI2: "Employees eat with their eyes, healthy meals should be appealing, convenient and simple to prepare."</p> <p>IDI 2: "Demonstrate different methods and techniques of using various equipment such as preparing a meal in the air fryer versus oven."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 3, 4 - Unilever Khanyisa				<p>IDI 2: "Topics will be the same for all employees. Unilever has a diverse culture and caters for everyone."</p> <p>IDI 3: "For females, it is always weight loss and maintenance and with males, it is mostly about diabetes."</p> <p>IDI 3: "Others just have a general interest in being healthy."</p> <p>IDI 3,4: "People really do want to know the type of diets and what's good to eat and what's not good to eat."</p> <p>IDI 3: "I've heard recently people speaking about blood groups and what types of food that you need to eat depending on your blood type."</p> <p>IDI 4: "Wellness"</p> <p>IDI 3,4: "The topics should be the same for all employees."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 5, 6 - Unilever Indonsa</p> <p>IDI 7, 8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Retailability</p>				<p>IDI 5: "They are interested in aerobics."</p> <p>IDI 5: "Nutrition, nothing in particular."</p> <p>IDI 6: "Obesity, portion sizes, healthy food options, create awareness."</p> <p>IDI 7,8: "Balanced diet, healthy meals."</p> <p>IDI 7: "Healthy foods that I can eat to avoid taking medication."</p> <p>IDI 8: "Depression and signs on how to recognise depression to actually help somebody, try and rescue them."</p> <p>IDI 9: "I would think the nutritional side behind things. So, when a person is choosing the food, what are they actually choosing."</p> <p>IDI 9: "The food categories, your nutrition elements as to like how many calories are in a meal and the amount of exercise needed to burn what you consumed."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>IDI 9: "Health tips like I know turmeric helps with headaches."</p> <p>IDI 9: "If you have interesting facts, our employees would love that."</p> <p>IDI 9, 10: "In terms of lifestyle, I would also say tips for easy exercises that employees could do at their desk or walk around the worksite."</p> <p>IDI 10: "A balanced diet. We could talk about a balanced lifestyle."</p> <p>IDI 9, 10: "One topic for everyone."</p>
<p>IDI 1, 2 - Unilever</p> <p>La Lucia Head Office</p>	<p>What would encourage your employees to participate in the lifestyle classes and why?</p>	<p>Incentivisation, worksite support and engaging lessons</p>	<p>Reward employees, interesting educational tools, support from management and peers, and fun lessons.</p>	<p>IDI 1: "Trying to reward them or create attractive leaflets."</p> <p>IDI 1,2: "Managers are unaware of employees' medical conditions, but they may support them; however, it is an individual's choice."</p> <p>IDI 1: "Type of classes and how they are conducted."</p> <p>IDI 1: "Support from co-workers."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 3, 4 - Unilever Khanyisa</p> <p>IDI 5, 6 - Unilever Indonsa</p>				<p>IDI 2: "The main aim is to create awareness to encourage employees to participate."</p> <p>IDI 3,4: "Gifts, rewards and incentives."</p> <p>IDI 3,4: "Unilever is very health driven so managers will definitely buy in."</p> <p>IDI 4: "If you want to encourage people, show them the benefits."</p> <p>IDI 4: "I am thinking to give them free time as a form of support."</p> <p>IDI 4: "Support is always important whether it comes from friends or family members."</p> <p>IDI 5, 6: "Reward or an incentive so no matter how small the incentive is, they will come."</p> <p>IDI 5: "Support from the managers in terms of how do we get these people at the same time."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 7, 8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Retailability</p>				<p>IDI 6: "Make it fun, have a team leader, engage with staff, know their interests, have competitions, offer support and motivate staff, create health awareness."</p> <p>IDI 7: "The motivation and what is in it for me as an individual."</p> <p>IDI 7: "Communication."</p> <p>IDI 8: "Self-driven, the need for change as an individual to be healthier so you can look good and walk around feeling better."</p> <p>IDI 8: "Colleagues, because if we are on the same journey then we can discuss how they are coping, the challenges and how they are overcoming it."</p> <p>IDI 9,10: "Rewards and incentives."</p> <p>IDI 9,10: "Make employees aware of the benefits of participating in the programme."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>IDI 9: "And third, definitely a big one, is changes to the canteen. Introducing a variety of meal options."</p> <p>IDI 9: "Our guys love competitions."</p> <p>IDI 9: "If you have support from all angles, you are going to fly high."</p> <p>IDI 10: "Time for me... if I get authorization from my manager or my line manager and she is completely fine with it then only I would not mind doing it."</p> <p>IDI 9,10: "Managers won't really have a problem, but depending on how busy they are."</p>
<p>IDI 1, 2 - Unilever</p> <p>La Lucia Head Office</p>	<p>What might be the challenges for your employees to participate in the health classes?</p>	<p>Barriers to participation</p>	<p>Production deadlines, fear of maintaining confidentiality, feeling uncomfortable in participating in a group, connectivity challenges for online classes and support from managers.</p>	<p>IDI 1, 2: "Time, maybe due to workload, but that'll depend on when it's conducted."</p> <p>IDI 1: "Exposure, the concern of maintaining confidentiality, therefore not wanting to share their personal experiences."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 3, 4 - Unilever Khanyisa</p> <p>IDI 5, 6 - Unilever Indonsa</p>				<p>IDI 3: "Production issues."</p> <p>IDI 3: "Some of them will feel embarrassed to exercise in front of other people."</p> <p>IDI 3: "Others won't be comfortable changing into their comfortable gym clothes in front of other people."</p> <p>IDI 4: "Time."</p> <p>IDI 4: "Online classes might have connectivity issues."</p> <p>IDI 5: "This is a food factory so cleanliness and hygiene is very important."</p> <p>IDI 5: "They can't walk with their overalls outside so they need to change into their personal/gym clothes."</p> <p>IDI 5: "They should do the physical activity, come back, take a quick shower or refresh themselves and go back and change into their white overalls."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 7, 8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Retailability</p>				<p>IDI 5,6: "Time."</p> <p>IDI 6: "Support from managers."</p> <p>IDI 7: "Change within yourself."</p> <p>IDI 8: "Time."</p> <p>IDI 9,10: "Time management."</p> <p>IDI 9: "If somebody is in the programme and they are not seeing progress, then they might want to step off."</p> <p>IDI 10: "Management."</p>
<p>IDI 1, 2- Unilever La Lucia Head Office</p>	<p>What else should we consider when designing the healthy lifestyle programme for your workplace and employees?</p>	<p>Barriers to participation</p>	<p>The lifestyle programme should be open to all staff, should include healthy eating, take into account cultural practises, classes should be repeated and there must be open communication.</p>	<p>IDI 1: "Include all employees in the wellness programme."</p> <p>IDI 1: "Avoid stigmatism by using a general term to name the programme, for example, wellness programme."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 3, 4 - Unilever Khanyisa</p> <p>IDI 5, 6 - Unilever Indonsa</p>				<p>IDI 2: "Ensure the interventions are implemented within the canteen environment."</p> <p>IDI 2: "Employees bring homemade meals for lunch; therefore, they should be made aware that their portion size should be similar to meals served at the canteen."</p> <p>IDI 3: "I think we should consider likes and dislikes of employees."</p> <p>IDI 3: "And a variety of healthy menu options."</p> <p>IDI 3: "Take employees' cultural backgrounds into consideration."</p> <p>IDI 4: "I think you should open it up to even more people, not only the people who you think are at risk because you will find that there are people who feel that they also need it."</p> <p>IDI 5: "In terms of food, try to accommodate every person, everybody, all cultures."</p> <p>IDI 6: "Mental health, social eating."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 7,8 - Unilever Maydon Wharf</p> <p>IDI 9, 10 - Retailability</p>				<p>IDI 7: "The cultural background of employees."</p> <p>IDI 9: "Main thing would be the timelines. Do multiple classes instead of just one class a week to accommodate all employees."</p> <p>IDI 9: "Speak to people that are joining to see what their preferences are."</p> <p>IDI 9: "Keep the lines of communication going."</p> <p>IDI 9: "Find out which medium of communication the participant would prefer (calls, emails, Teams, etc.)."</p> <p>IDI 10: "Apart from the nutritional food and physical activity, I think group sessions. it could be something totally diverse and how people deal with their pressures and stressors every single day. So, I would say more of a group session of motivation."</p>

The key themes that emerged from the IDIs for the best times to hold lifestyle classes at the workplace was availability, whilst the theme that emerged for bad times to hold lifestyle classes at the workplace was peak production periods. The key theme for good locations to conduct lifestyle classes at the workplace was worksite resources, whilst the key theme that emerged for participants' understanding of how staff would feel about conducting classes online compared to face-to-face lifestyle education classes was multimodal classes. The key theme that emerged about whether participation in lifestyle classes would be affected by gender or type of job position was group dynamics. The key theme that emerged from participants' understanding of which topics about healthy eating or physical activity would most interest employees was healthy lifestyle. Key themes that emerged about what would encourage employees to participate in the lifestyle classes were incentivisation, worksite support and engaging lessons, whilst the theme that emerged about what would prevent employees to participate in the lifestyle classes was barriers to participation.

4.4.1.1 Availability and peak production periods

Participants highlighted that the best times to facilitate lifestyle classes would depend on availability whilst the poor times would be peak production periods. Due to shift work, there is a variance in staff availability, which makes it challenging to plan and implement the health classes. Multiple sessions should be held and repeated to accommodate all personnel in order to overcome these difficulties. According to McHugh *et al.* (2020: 1060), 12-hour shifts and shift work are common in the manufacturing sector. In the US, 20% of employees work shifts, which means that at least half of their time is spent working beyond the regular 8 am to 6 pm workday (Messenger 2018: 33). During peak production, the demand for goods is significantly high (O'Sullivan *et al.* 2019: 133). In order to meet these demands, manufacturing sites must maximize their productivity, therefore lifestyle classes should not be scheduled during peak production periods.

4.4.1.2 Worksite resources

Participants suggested that the training room and/or gym area should be used as it is well ventilated and spacious and would be an ideal location to conduct the lifestyle classes. Ventilation is vital for good indoor air quality. According to a study conducted on ventilation intervention in the classroom, it was believed that poor indoor air quality affected children's health and performance (Rosbach *et al.* 2013: 110). The lifestyle classes would be conducted in a similar setting; therefore, it would be important to have a well ventilated and spacious environment.

4.4.1.3 Multimodal

Participants indicated that a multimodal approach should be used to conduct the lifestyle education classes. According to Parker *et al.* (2019: 5), providing a variety of alternatives, such as face-to-face group health coaching from nursing staff, has the potential to increase participant involvement and motivation even though online programmes are economical and convenient and can be administered virtually (McGuire *et al.* 2019: 2). In a study conducted by Jakobsen *et al.* (2017: 798), group exercise sessions with co-workers

during work hours proved to be more beneficial than home-based exercise. Due to COVID-19, there was a sudden migration of employees from the office, which spurred the development and adoption of technology that enabled a large number of individuals to work remotely and remain productive (Aloisi and De Stefano 2022: 289).

4.4.1.4 Group dynamics

Group dynamics can affect participation in the lifestyle classes and accomplish the goals established by the group when there is a positive dynamic involved (Fapohunda 2013: 2). Ineffective group dynamics can have a negative impact on performance, which can lead to a negative outcome on the collective purpose. According to a study by Nackers *et al.* (2015: 1568), the results indicated that group dynamics were related to adherence, attendance and successful weight reduction. Communication is vital to ensure good group dynamics as there is a higher possibility of conflict, stress and misunderstandings in the workplace (Lacerenza *et al.* 2018: 517).

4.4.1.5 Healthy lifestyle

Participants highlighted that healthy lifestyle would be a topic of interest to employees at the worksite. This could be as a result of misinformation. Over the past 20 years, internet users have been utilising digital platforms such as social media to discuss and search for health information (Chou, Oh and Klein 2018: 2417). Despite the fact that these networks have shown to be helpful for promoting health, recent research has indicated that false or misleading health information may disseminate more readily via social media than scientific knowledge (Vosoughi, Roy and Aral 2018: 1146). It is important to establish a healthy workplace and to motivate employees to adopt healthy behaviours (Golden and Earp 2012: 365). Cultural and societal differences have an impact on health behaviour (Ozurmaz and Mandiracioglu 2017: 406). Health promotion alters behaviours and allows individuals to have more control over their health. Nutrition, diet, physical activity and stress management are indicators of health promotion.

4.4.1.6 Incentivisation and worksite support and engaging lessons

The two main motivators for employees to participate in the lifestyle classes were incentivisation and worksite support and that classes should be engaging. According to a survey conducted in 2012, 35% of organisations in California with more than 50 employees offered financial incentives to promote participation in wellness initiatives (Crespin, Abraham and Rothman 2016: 92). In two studies conducted in China and America, employees' preferences for workplace participation were highly associated with their perceptions of how it would influence their views on productivity, job satisfaction and work-related conflict (Wu, Yuhuan Mei and Cervantez 2022: 5). Support from managers and colleagues could have a significant impact on employee participation (Lier, Breuer and Dallmeyer 2019: 268). It is important to have engaging lessons as it leads to positive emotions and motivation to participate in a group. Engaging lessons are important because they allow participants to interact with each other, promote positive experiences, enable active learning and drive group engagement.

4.4.1.7 Barriers to participation

There are several barriers to participation in physical activity classes at the worksite. These include production deadlines and fear of maintaining confidentiality. Participants also highlighted that these barriers should be considered when designing the lifestyle programme. According to Safi *et al.* (2022: 2), the most frequently reported barriers to workplace physical activity participation include time constraints, lack of management support, inadequate facilitation, work imbalances, and cultural factors. These barriers must be considered in the design and implementation of any worksite wellness intervention to be successful.

Table 4.5: Summary of resulting themes and representative quotes from Unilever and Retailability canteen managers participating in IDIs about successful implementation of a lifestyle

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 11 - La Lucia Head Office and Retailability	What changes can be made at your workplace to help employees eat and drink healthier?	Healthy food environment	<p>There are healthy food and beverage options currently available on the menu which is also served at meetings.</p> <p>The removal of salt has previously posed a challenge.</p> <p>Company executive chefs and dieticians can assist to plan menus.</p> <p>Structured information dissemination would enable change at the canteen. Given that</p>	<p>IDI 11: “Currently, there’s a 4-week menu cycle which comprises of a healthy option known as the balanced meal.”</p> <p>IDI 11: “The grab-and-go section consists of healthy, easy meals. This is the pure (healthy) option which includes vegetable salads (couscous, chickpeas, grilled brinjal, etc.) or health rolls with cheese, cucumber, basil pesto and chicken salad as well.”</p> <p>IDI 11: “Water and juices are always readily available. Examples: Sir juice, smoothies and vegetable juices.”</p> <p>IDI 11: “Pre COVID-19, there was a full-on salad bar. An employee could build their salad with protein</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 12 - Khanyisa			<p>sugar is popular, an alternative choice should be provided.</p> <p>Introduce a salad bar option and healthy grab-and-go options; however, healthy eating is expensive.</p> <p>Include water dispensers to promote consumption of water and minimise cool drink consumption.</p> <p>Reduce portion sizes of meals</p> <p>Increase the variety of fruits available.</p>	<p>options such as grilled chicken or chicken strips or soya patty."</p> <p>IDI 11: "The meal is made up of a main protein and a starch or vegetable side selected by the employee."</p> <p>IDI 11: "Event catering has been curbed due to COVID -19, therefore meals that are served at the canteen are used for meetings and events."</p> <p>IDI 11: "Introduce educational tools to employees that are purchasing the meals."</p> <p>IDI 11: "Previously salt was removed, resulting in unhappy employees complaining."</p> <p>IDI 11: "Healthy menus can be planned with guidance from company executive chefs and dietitians. This may lead to an increased cost in the meal due to ingredients."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 13 - Indonsa				<p>IDI 12: "We have implemented minimum oil usage at our canteen so right now with our chips, we don't deep fry them, we bake them."</p> <p>IDI 12: "We do offer fruit on a daily basis, but it is not free of charge to the people."</p> <p>IDI 12: "We do offer salad, we offer a chicken salad, like a pre-made chicken salad. It is called a salad bowl. It just does not sell."</p> <p>IDI 12: "Even with the fruit, it just depends on what fruits it is. If it is peaches or naartjies then it would sell. Banana should sell but if it is apple or orange, then it would not sell."</p> <p>IDI 12: "These interventions, obviously the no oil, the fruits but that is about it."</p> <p>IDI 12: "Instead of giving them something sweet, we can offer them fresh fruit or freshly cut fruits, that's just a suggestion, you know. Maybe dried fruits..."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>IDI 12: "We offer a lot of non-sugary drinks but we don't sell them."</p> <p>IDI 13: "Beverages, especially with sugar, is very popular here so that would be a huge challenge to get rid of it but we can slowly try implementing different options."</p> <p>IDI 13: "I'm also talking about the cool drinks, hot and cold beverages which is hugely popular here."</p> <p>IDI 13: "Because there's beverages at each pause station, we don't really provide hot beverages at meetings, but cold beverages are a must. It's compulsory and everyone goes for the normal sugar, very few go for water."</p> <p>IDI 13: "It's always hot plated lunches or it's finger lunches which is not particularly healthy."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 14 - Maydon Wharf				<p>IDI 13: "We can have the salad bar option."</p> <p>IDI 13: "Healthy eating cost a bit more so that will impact people and their budgets."</p> <p>IDI 13: "Grab-and-go items with grab-and-go salads and you know those cold meats, cold chicken and things like that."</p> <p>IDI 13: "And maybe putting up water dispensers around to minimise the cool drinks with water."</p> <p>IDI 14: "We can start with their meals."</p> <p>smaller portions of phuthu and pap, because their portion is actually very big, it's like three spoons."</p> <p>IDI 14: "And also advertising signage would also help."</p> <p>IDI 14: "The only fruits currently sold are bananas, oranges and apples, if you have a variety like plums, nectarines, then it entices people when they see this..."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 11 - La Lucia Head Office and Retailability</p> <p>IDI 12 - Khanyisa</p> <p>IDI 13 - Indonsa</p>	How can managers such as yourself encourage employees to eat and drink healthier?	Information dissemination	<p>Employees can be encouraged during daily meetings and toolbox talks and through awareness - table tents, healthy meal options.</p> <p>Eye-catching promotional material, live cooking demonstrations to employees.</p>	<p>IDI 11: "Encourage employees through daily meetings and toolbox talks where topics regarding health, mental issues, workplace challenges, safety and hygiene are discussed."</p> <p>IDI 12: "Maybe awareness? I think that is something that can be done. But like I said we obviously started with the no oil and then again, whatever we do depends on the contract itself. So, what I do here would not be with what I do in one of the other contracts. So, it would vary."</p> <p>IDI 12: "Table talkers, offering a healthy meal."</p> <p>IDI 13: "Promotional material. It must be eye-catching."</p> <p>IDI 13: "The live cooking as well."</p> <p>IDI 14: "Have like pop-ups or display information on the television screen."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 14 - Maydon Wharf				<p>IDI 14: "It's also about advertising."</p> <p>IDI 14: "...and displaying the food."</p> <p>IDI 14: "The problem here is that people want to see it first and then buy."</p>
IDI 11 - La Lucia Head Office and Retailability	What factors do you think are important when developing a canteen menu?	Employee preference and canteen enablers	<p>Employee preference and cost of the meals.</p> <p>Minimal to no wastage.</p> <p>Seasonal availability.</p>	<p>IDI 11: "Stress is a driving factor, leading to employees looking for comfort food such as chocolates and healthy food is not going to comfort you."</p> <p>IDI 11: "Wastage does not affect healthy eating because our menus are set menus; the items that we provide are all contractual."</p> <p>IDI 11: "We know our cost factor on a day-to-day basis, because we have an estimation of employees before lunch time. We batch cook meals and once that is almost sold out, we add a few more items, so there's</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 12 - Khanyisa</p> <p>IDI 13 - Indonsa</p>				<p>minimal to no wastage as the canteen staff also get a meal.”</p> <p>IDI 12: “A canteen menu is based on the contract itself. The clientele that we are servicing. For example, this is a blue collar site, they want pap and meat, that is non-negotiable.”</p> <p>IDI 12: “Instantly, employee preference.”</p> <p>IDI 12: “Price is very important.”</p> <p>IDI 12: “It will, yes. But remember with products like for example if you don’t have a red apple this month, then you would probably use a green apple this month. So, it’s the alternatives.”</p> <p>IDI 13: “The dietary nutritional value is most important.</p> <p>IDI 13: “Cost, people like the concept of eating healthy but believe that it is too expensive. To counteract this,</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 14 - Maydon Wharf				<p>plan menus that include cost effective healthy meal options.”</p> <p>IDI 13: “Yes, seasonal availability would be an issue but obviously the menu engineering would be in such a way that you’re going to work around it.”</p> <p>IDI 13: “In terms of getting the staff to prepare and have their meals ready on time, I don’t think there would be a challenge because the staff are familiar [with the process] and we do have a production plan in place for that.”</p> <p>IDI 14: “People still want their starch (pap, phuthu and rice); we do [also] make couscous and brown rice.”</p> <p>IDI 14: “... but then we also need to have a variety of vegetables.”</p> <p>IDI 14: “A portion of veg is R6 and the prices are rocketing [sky] high, so it’s the cost.”</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				IDI 14: "It's also the employee's cost because the majority of them go and buy the R19 meal which is phuthu, chicken and salad because it is the cheapest."
<p>IDI 12 - Khanyisa</p> <p>IDI 13 - Indonsa</p> <p>IDI 14 - Maydon Wharf</p>	What facilitates healthy eating and drinking at the worksite canteen?	Provisioning of healthy food options and promotions	Employee preference, larger variety of healthy foods and a smaller variety of unhealthy foods. Promotional health days.	<p>IDI 12: "Employee preference."</p> <p>IDI 13: "Having more of the healthier food options instead of unhealthy ones is like having a smaller section with grills [rather] than having a bigger variety for them to choose from so they got no choice."</p> <p>IDI 13: "Promotional, yes."</p> <p>IDI 14: "I think it's the people. It's just you, yourself."</p> <p>IDI 14: "We do have those days which is held by sister in the parking lot with fruits and in the canteen we try and coincide with the meals."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 12 - Khanyisa</p> <p>IDI 13 - Indonsa</p> <p>IDI 14 - Maydon Wharf</p>	What prevents healthy eating and drinking at the worksite canteen?	Cost of healthy food, self-efficacy and canteen staff capability	Employee preference, food wastage, cost, employee habits, a qualified and trained personnel in the kitchen.	<p>IDI 12: "Okay, again, this is personal preference."</p> <p>IDI 12: "Wastage is always a concern but obviously we are preparing a healthy meal, but we are only preparing 4 a day."</p> <p>IDI 13: "Cost"</p> <p>IDI 13: "Employee habits."</p> <p>IDI 13: "Yes, that would definitely be. You have to have someone who is trained, knows how to prepare and engineer the menu, cook the menu and understand the nutritional background behind it."</p> <p>IDI 13: "Yes, in terms of our business side of it because if we prepare it, it doesn't come through or obviously the cost behind the more expensive ingredients, it doesn't sell, it gets wasted."</p> <p>IDI 14: "It's cost."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>IDI 14: "The individuals themselves, it's all about their mind set."</p> <p>IDI 14: "Also we are open from 6 am to 9 pm because you know of the temperatures, if it is not sold by 9pm, it's kept out for too long so then I have to dispose of the food. I can't really use it."</p>
<p>IDI 12 - Khanyisa</p> <p>IDI 13 - Indonsa</p>	Are there any healthy eating programmes implemented at the worksite canteen?	Enabled healthy food environment	A healthy meal option is served daily.	<p>IDI 12: "We offer a healthy meal every day which is called a vital meal, we offer salads and we offer fruit and non-sugary cold drinks. The sandwiches, brown bread sandwiches."</p> <p>IDI 13: "We do have a balanced menu option at the moment that we are following."</p> <p>IDI 13: "We got grab-and-go salads and we got like grab-and-go dark seeded rolls and things like that."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 14 - Maydon Whar				<p>IDI 13: "Everyday it varies, sometimes we do a Greek salad with a piece of chicken or we will do like couscous or that type of thing."</p> <p>IDI 14: "I would say the get balanced diet from the menu. With the get balanced diet, all the skin is removed from the chicken, the fat is cut off, the food is healthier, it is boiled."</p> <p>IDI 14: "We do have specials as well. like last week, we had spare ribs and I didn't add chips, I put vegetables and salads. I put creamy spinach and salad."</p>
IDI 11 - La Lucia Head Office and Retailability	Pre- and post COVID-19, did you notice any changes with food and beverage consumption?	Changes induced through emergency situations	<p>Changes were noticed. The options were limited on the menu, there was an increase in unhealthy snacks and beverages with a decrease in water sales.</p> <p>Limited changes amongst the blue collar workers at the</p>	<p>IDI 11: "Yes, there were changes. There were limited food options on the menu, reducing the consumption of unhealthy meals."</p> <p>IDI 11: "I noticed the Coke zero, chocolate and Super M were our biggest sellers,"</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 12 - Khanyisa</p> <p>IDI 13 - Indonsa</p> <p>IDI 14 - Maydon Wharf</p>			<p>worksite. People were more interested in eating healthier.</p> <p>Water consumption increased.</p>	<p>IDI 11: "I noticed a decrease in water sales."</p> <p>IDI 12:" If you are in an area where you have blue collar workers, they don't want to eat healthy."</p> <p>IDI 13: "People tended to change their food, their habits, the way they eat their meals and what they put in their bodies."</p> <p>IDI 14:" They continued to eat what they did. They were drinking a lot of water."</p>
IDI 11 - La Lucia Head Office and Retailability	What else should we consider when designing the healthy lifestyle programme for your workplace and employees?	Employee and canteen acceptance	<p>Acceptability and willingness from employees to purchase the meals. Design a healthy menu that appeals to the palate.</p> <p>Affordability and profitability.</p>	<p>IDI 11: "You have to get the buy-in from employees that they are going to purchase meals that are tasteful because they are very finicky."</p> <p>IDI 11: "If you want to design a healthy menu, it should appeal to your palate because you eat with your eyes first."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>IDI 12 - Khanyisa</p> <p>IDI 13 - Indonsa</p>				<p>IDI 11: "Affordability and profitability."</p> <p>IDI 12: "I don't think people can afford it. Veganism is quite an expensive game."</p> <p>IDI 13: "Take into consideration the time that it takes to prepare a meal."</p> <p>IDI 13: "The calibre of staff that we have to prepare those meals... not all sites have qualified chefs."</p> <p>IDI 13: "The ingredients as well, whether we can buy them because we don't just go to the shop and purchase things. We've got an online ordering system and we are just restricted."</p> <p>IDI 13: "What would people like, I mean we have different types of people and preferences in the work area."</p> <p>IDI 13: "Look at a meal that is filling."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
IDI 14 - Maydon Wharf				<p>IDI 13: "...and also sensory."</p> <p>IDI 13: "By explaining and giving them material to look at."</p> <p>IDI 14: "Cost."</p>

Key themes that emerged from the IDIs for “changes that can be made at the workplace to help employees eat and drink healthier” were a healthy food environment, whilst the key theme that emerged for “participants to encourage employees to eat and drink healthier” was information dissemination. The key themes that emerged from “participants’ understanding of factors that are important when developing a canteen menu” were employee preference and canteen enablers. Key themes that emerged for “factors that facilitate healthy eating and drinking at the worksite canteen” were provisioning of healthy food options and promotions, whilst key themes that emerged for “factors that prevent healthy eating and drinking at the worksite canteen” were cost of healthy food, self-efficacy and canteen staff capability. The key theme that emerged for “healthy eating programmes implemented at the worksite canteen” was an enabled healthy food environment. The key theme that emerged from “participants’ observation of changes with food and beverage consumption during pre- and post COVID-19” was changes induced through an emergency situation, whilst the themes that emerged for “what else should be considered when designing the healthy lifestyle programme for the workplace and employees” were employee and canteen acceptance.

4.3.1.1 Healthy food environment

There are healthy food and beverage options currently available on the menu at all canteens such as the get balanced meal, chicken wraps, whole wheat rolls and bottled water. Worksites may help employees eat healthily during working hours by providing healthier alternatives in the canteens, restricting access to sugary beverages, adopting healthful food policies and providing affordable healthy meal options. Providing healthful food at canteens and vending machines, assuring the availability of clean water, and lowering the cost of fruits and vegetables are some of the specific techniques that are advised for developing a healthy food environment at worksites (Dodson *et al.* 2016: 288) According to a systematic review conducted by Niebylski *et al.* (2014: 2615), policies for healthy food procurement which make sure that food which is bought or distributed is healthy may significantly boost the availability and purchasing of healthful foods. Additionally, other studies indicate decreasing the cost of low-fat snacks in vending machines boosts sales without affecting profits (Kirchoff, Abadia and Palacios 2021: 2).

4.3.1.2 Information dissemination

The participants stated that through disseminating information, they can encourage employees to consume healthier foods and beverages. According to a study on restaurant-based interventions, management stated that table tents were appealing to consumers; however, it was recommended that table tents be more durable so that they could endure frequent customer handling, and that the amount of text be reduced to improve message retention (Thayer *et al.* 2017: 18). A table tent is a convenient, self-standing promotional tool created from printed and folded cardstock (Xavier 2021: 5).

4.3.1.3 Employee preference and canteen enablers

Participants highlighted that employee preferences and canteen enablers were the two primary elements that were significant when developing a canteen menu. Seasonal availability of ingredients affects menu

planning. Fruits and vegetables that are locally sourced and in season are more cost-effective, fresh, appetising and sustainable (Charlebois *et al.* 2022: 2059).

4.3.1.4 Provisioning of healthy food options and promotions

Provisioning of healthy food options and promotions such as employee preference for a larger variety of healthy foods and a smaller variety for unhealthy foods, and promotional health days facilitated healthy eating and drinking at worksite canteens. According to a study conducted in Nepal, the provision of relatively affordable healthful food choices in canteens, a commitment to such promotion by the canteen management, operators, employees and healthcare administrators, as well as the degree of education of the personnel, were highlighted as the main determinants for encouraging healthy eating (Tamrakar *et al.* 2020b: 3).

4.3.1.5 Cost of healthy food, self-efficacy and canteen staff capability

The cost of healthy food, self-efficacy and canteen staff capability were factors that prevented healthy eating and drinking at the worksite canteen. A qualitative study found that one of the primary barriers to healthy eating in an office environment was the high cost of healthy meals relative to unhealthy foods (Clohessy, Walasek and Meyer 2019: 1771). The provisioning and availability of healthy foods and drinks is limited due to the lack of demand, poor sales of healthy foods and the waste generated from unsold items. Minimising food waste in the food-service industry is challenging because it includes customers and their relationship with food, each of which might change daily. According to Pires *et al.* (2022: 1324), employees' motives for wasting food vary depending on their food preferences, mood and appetite at lunchtime. As a result, the amount of food wasted might fluctuate and be unpredictable.

4.3.1.6 Enabled healthy food environment

A healthy meal option is served daily at the worksite canteens. Food environments can reduce the negative effects of an individual's dietary choice through a number of factors, such as food labelling, food promotion, cost of food, availability, nutritional quality and taste (Grace 2016: 8). These characteristics have varying effects on various individuals in the same food environment. For instance, some individuals would be more attentive to food labels whilst others would be more receptive to food promotions. The price that an individual is willing to pay for a meal also influences preferences (Drewnowski *et al.* 2020: 745).

4.3.1.7 Changes induced through an emergency situation

There were substantial differences in terms of food and beverage consumption during pre- and post COVID-19; however, there were limited changes amongst blue collar employees at the worksite. Dietary habits were impacted by the COVID-19 pandemic and were linked to alterations in work and daily routines. According to an online survey conducted by Sato *et al.* (2021: 1), working from home was linked to higher consumption of dairy products, fruits, vegetables, and snack foods but lower consumption of animal protein and alcoholic beverages.

4.3.1.8 Employee and canteen acceptance

Participants indicated that employee and canteen acceptance such as designing a healthy menu that appeals to the palate should be considered when designing the lifestyle programme. Food preferences have been found to be substantially influenced by visual aesthetics (Paakki *et al.* 2019: 5).

4.4 Focus group discussions

Focus Group Discussions were conducted to explore the perceptions, provisions, drivers and barriers of healthy eating at the worksite. Focus group questions were developed by the research team and reviewed for content and readability by the researchers. The discussions were guided using a semi-structured FGD guide. Management from the worksites assisted in recruiting employees who were interested in participating. When transcribing the FGDs, codes were used to identify each participant and worksite. KP1 represents Unilever Khanyisa participant 1, MP1 represents Unilever Maydon Wharf participant 1, LP1 refers to Unilever Head Office and represents La Lucia Head Office participant 1, RP1 represents Retailability participant 1 and IP1 represents Unilever Indonsa participant 1.

Table 4.6: Summary of resulting themes and representative quotes from Unilever and Retailability employees participating in FGDs about healthy eating

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Khanyisa	What do you understand by healthy foods and beverages?	Meaning: Nutrient-dense foods and water	Foods that are that nutrient-dense, fruit and vegetables, foods cooked using healthy cooking methods and consumed in correct portion sizes. Beverages should include mainly water and contain reduced sugar.	<p>KP3, KP1, KP4: "Healthy food and beverages is basically eating food that have all the nutrients and vitamins that the body needs."</p> <p>KP3, KP1: "Vegetables and fruit - An example of vegetable is green vegetables (spinach) and the benefit is that it prevents constipation."</p> <p>KP3, KP2: "Orange for vitamin C."</p> <p>KP2: "Vegetables help the body to function."</p> <p>KP4: "Carrots, broccoli and other vegetables that are sources of vitamins to ensure that you have a balanced diet."</p> <p>KP4: "You can have pumpkin with the skin on which helps with roughage - makes your stomach more regular"</p> <p>KP4: "A healthy diet should contain all the elements which makes it a balanced diet"</p> <p>KP3: "Meat for protein - beef"</p> <p>KP4, KP1: "White meat such as chicken with the skin off, fish grilled, boiled, baked"</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>without introducing extra oil that will raise your cholesterol.”</p> <p>KP2: “Boiled food.”</p> <p>KP4: “Also the way you prepare food. You find that the meat is healthy but the manner in which you prepare it makes it very unhealthy for you. Healthy methods are baking, steaming or grilling, make sure you do not put in a lot of salt because it results in hypertension and oedema.”</p> <p>KP4: “Healthy beverages are something that does not contain a lot of sugar because it would change into fat and lead into chronic issues.”</p> <p>KP4: “Water would be the best beverage to drink, it is good for your body and cleans out the toxins.”</p> <p>KP4: “There are different categories in terms of which you can have your starches. You can have your pap. Instead of having pap, you can have your low GI bread, instead of white rice, you can have brown rice or basmati rice”</p> <p>KP4: “The portion size is very important.”</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Maydon Wharf				<p>MP1: "Beverages have to be healthy with no alcohol."</p> <p>MP1: "Unprocessed foods, more fruits and vegetables, less starch such as potatoes and rice, less foods that are processed."</p> <p>MP2: "Healthy food is like the opposite of fatty, sugary foods (lasagne, pies, sugar drinks, Coke and Sprite, fast foods like MacDonald's, processed foods)."</p> <p>MP2: "Brown rice, your veggies like broccoli, cauliflower, like fresh vegetables."</p> <p>MP2: "It's usually unprocessed foods."</p> <p>MP2: "Healthy organic foods"</p> <p>MP3: "To eat vegetables with your meat."</p> <p>MP3: "You can eat starch (such as potatoes) but not a lot of starch and also not too much of oil."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Retailability				<p>you can have like the junk food but it has to be in moderation.”</p> <p>IP2, IP6, IP1: “More of a balanced diet, eating fruits more often, having boiled or steamed food rather than fried or foods that are cooked with a lot of oil.”</p> <p>IP1: “Healthy eating is something that will be good for your body and give you all sorts of vitamins as well.”</p> <p>RP1, RP4: “Balanced diet. There has to be a balance with all the food groups in your diet.”</p> <p>RP4: “Knowing how much of calories we are putting onto our plate.”</p> <p>RP1: “It’s not that you can’t have sugar but you should have a limited amount of sugar.”</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>RP1: "Chicken fillet prepared in an air fryer, broccoli and cauliflower in an air fryer or steamed in the microwave."</p> <p>RP2: "Balance in terms of what you are putting into your body versus what you should put in your body."</p> <p>RP2, RP3. RP1: "Foods prepared in an air fryer"</p> <p>RP3: "Reduce fizzy drinks with sugar completely."</p> <p>RP3: "Water is the best."</p> <p>RP3: "Preparing food with olive oil."</p>
Unilever Khanyisa	What do you understand by unhealthy foods and beverages?	Meaning: Nutrient-poor foods and energy-dense beverages.	<p>Fast food, and processed food. Foods high in fat, salt and sugar and energy consumed in excessive amounts.</p> <p>Sugar-sweetened beverages and alcohol.</p>	<p>KP4: "Foods like McDonalds, French fries and burgers."</p> <p>KP4: "Drinks like cold drinks."</p> <p>KP3: "Spicy food and energy drinks."</p> <p>KP1: "Alcohol."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Maydon Wharf				<p>MP1: "Junk food, chocolates, cold drinks, fruit juices have too much sugar so it is not healthy."</p> <p>MP1: "Biscuits, sweets, those kinds of things."</p> <p>MP2: "It is foods that are likely to make you gain weight, not good for you, like too much sugar causes diabetes."</p> <p>MP2: "Eating fast food."</p> <p>MP3: "Unhealthy food leads to diseases like high blood pressure, diabetes and obesity."</p> <p>MP3: "Eating a lot of starch such as potatoes."</p> <p>MP4: "Eating chips, cookies, too much sugar, too much salt, red meat - Shisanyama."</p>
Unilever				<p>LP1. LP2: "Foods high in starch."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
La Lucia Head Office				<p>LP1, LP3: "Excessive consumption of food."</p> <p>LP1, LP4: "Drinking Coke and sugar sweet and beverages. Juices are high in sugar."</p> <p>LP4: "Take-aways and skipping of meals."</p> <p>LP4, LP3: "Excessive alcohol intake."</p> <p>LP2: "Burgers, pizzas, foods that are greasy and oily, less protein, less greens in it."</p> <p>LP2: "We are trying to lose weight, but Mr Delivery was our best friend when we were working at the office during COVID-19 because the canteen was closed."</p> <p>LP2: "The employees at the factory sites prefer meals with a large portion of starch, for example, phuthu, pap, rice, pasta and samp as it is their comfort foods."</p> <p>LP2: "Fizzy drinks are fast sellers, but water is our way forward for everyone."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>RP2: "Also how you prepare a meal depends on the healthiness of it."</p> <p>RP4: "Large portion sizes."</p> <p>RP4: "Sugary and fatty foods, eating these would cause heart disease at a very young age."</p>
Unilever Khanyisa	What are the factors that determine your food and beverage choices?	<p>Food environment</p> <p>Healthy longevity</p>	Convenience, cost of meals, taste, environment, promotions, family influence, culture, stress/ mood.	<p>KP4: "Time. if you don't have time to carry a lunchbox to work then you would go to the canteen because you are hungry and need something to eat."</p> <p>KP4: "The prices, healthier meals are much more expensive than the unhealthy meals which is a difficult decision to make and I would choose the lower priced meal."</p> <p>KP1: "The surrounding area that you are in."</p> <p>KP1, KP2, KP3, KP4: Personally, yes, if there was a coupon or discount then we would purchase healthy meal options."</p> <p>KP3: "Unhealthy foods taste better than healthy foods. If I had to choose boiled</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
<p>Unilever Maydon Wharf</p> <p>Unilever La Lucia Head Office</p>				<p>meat compared to the braaied meat, the braaied meat would taste better with all the spices."</p> <p>MP1: "Taste."</p> <p>MP2: "Finance and sometimes convenience but most of the time will be finance."</p> <p>MP3: "Because I need to stay healthy all the time and to avoid getting any diseases. Some people die from obesity because they do not manage their diets."</p> <p>MP4:" My wife prepares the meals."</p> <p>MP4:" The children influence meal choices."</p> <p>LP3: "Your medical conditions would determine what is good or bad for you."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Indonsa				<p>LP1, LP4: "Type of environment, family and cultural factors."</p> <p>LP5: "I'm a Hindu so I don't eat beef or pork, I eat vegetables three times a week."</p> <p>LP1: "When I'm staying by myself, its more convenient because I'm always on the go."</p> <p>LP1: "It's my time that predicts what I'm going to eat or how I plan my menu for the week ahead."</p> <p>LP5, LP4, LP3: "I agree with P1. It's your mood, location, how much money you have, whether you are at family functions or a friend's home, calorie count determines the amount that I consume."</p> <p>LP4: "Also determinants like hunger and appetite."</p> <p>IP6: "Mood."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>IP2: "It would depend if I'm consuming alcohol."</p> <p>IP3: "I think for me it is what my body can tolerate and what it can't."</p> <p>IP4: "I think it would be the same as P6 said, my mood, cravings you know as well as celebrations."</p> <p>IP3: "Stress levels."</p> <p>IP1: "For me, it depends where I am."</p> <p>IP1: "And also what is available at that point in time."</p> <p>IP2, IP4, IP5: "Cost."</p> <p>IP4: "When I lived with my parents, the whole household was eating what was prepared. I was vegan for 6 months. It was difficult, not because it was time consuming but when they went grocery shopping, they didn't account for certain things."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Retailabiliy				<p>RP3, RP2, RP1: "Convenience."</p> <p>RP4: "Time."</p> <p>RP2: "Affordability."</p> <p>RP1: "What gets advertised out there, for example, people are always at KFC and McDonald's but you'd never see a deal at Woolworths, for your vegetables or healthy meals."</p> <p>RP4: "Wanting to see a change within yourself."</p> <p>RP4: "The meals are already prepared when I get home so I eat whatever is there."</p> <p>RP4, RP2, RP3: "Stress, boredom, mood."</p> <p>RP1: "Taste and satisfaction."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Khanyisa	What prevents you from choosing healthy food and beverages?	Barriers to healthy food access	Availability, affordability, convenience, mood, skill to prepare meals, limited variety of healthy meals, poor sensory appeal of healthy meals.	KP4: "Availability." KP3: "Affordability."
Unilever Maydon Wharf				MP2: "Affordable ingredients, if I can't cook it myself. I usually make rice and curry because that is cheap."
Unilever Indonsa				MP3: "Where you are staying because I'm staying alone. I do whatever I feel that is healthy for me. Sometimes, I have cereal (cornflakes) in the morning and the next meal is maybe at 6pm because I am busy which is unhealthy for me." MP4: "Time to prepare meals." IP3. IP2: "Cost".
Retailability				IP3: "I work overtime so meal preparation is so time consuming whereas with the quick junk meal, you can just do something that is easy."

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>RP2: "Same menu repeated, there's no variety."</p> <p>RP2: "Taste and texture."</p> <p>RP1: "Healthy foods always look the same no matter which place you're eating at."</p>
Unilever Khanyisa	What would be the best way to organise lifestyle classes at your worksite (location, time of day, composition of groups)?	Scheduling and mode	Multimodal lifestyle classes with proper scheduling from managers; the best time would be during the day around shift change; staff on leave must be accommodated; size of class will depend on training venue size; communicate lesson time in advance.	<p>KP3: "It has to be onsite."</p> <p>KP4: "Face-to-face under supervision instead of online because people cheat."</p> <p>KP3: "Get time allocated from production so that I know I have this one specific hour that I have apart from our lunch breaks, after all we still need our lunch breaks."</p> <p>KP3: "The number of people that we have in a group does not matter but it would depend on the space that we have."</p> <p>KP2: "Management should be included."</p> <p>KP2: "During the break because we cannot come in the morning, get tired and work."</p> <p>KP1: "Take into consideration public transport."</p> <p>KP3: "It should be during the day."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Maydon Wharf				<p>MP1: "The admin staff should do it on their own because admin is busy Mondays to Fridays."</p> <p>MP1: "It would depend on the shifts because usually the employees working the 2pm to 10pm shift is always here early and can do something but for the employees that are here at 6am and leave at 2pm it would be a challenge."</p> <p>MP1: "Morning shift is always hectic, because they are always covering up for lost time at night."</p> <p>MP1: "I prefer face-to-face, online is just over-rated."</p> <p>MP2: "I think you are most likely to get the employees during work time so you know they are already at work and it is easier to access them."</p> <p>MP2: "I would say in the beginning of the week on a Monday or Tuesday because everyone is still fresh. If you get someone</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever La Lucia Head Office				<p>to come in on a Friday, they would be less likely to do it."</p> <p>MP2: "Also in the mornings, around 10am is a good time to start or between 8-10am are good hours, 12-2pm is going to be hard."</p> <p>MP2: "Yes, I'd be comfortable in a group, because we are all in it for the same goal."</p> <p>MP3: "If it is online, I would have to be on my phone so I can take my lunch time to do it."</p> <p>MP3: "Anytime, we can plan time aside when I am working on either one of my three shifts."</p> <p>MP3: "Anyone in a group is fine."</p> <p>LP5: "No, I wouldn't be comfortable in a group. I'm a very reserved person. To me, my condition is personal, that I need to self-correct. I wouldn't want the spotlight on me."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever				<p>LP5: "I'm not too happy with doing physical activity at work due to sweating and having to go back to work. I do go to the gym".</p> <p>LP2: "Employees prefer one-on-one sessions as they have a private lifestyle".</p> <p>LP2: "Throughout the year so you take your leave as you want".</p> <p>LP2: "There is a structured one-hour lunch break, but employees sometimes work through the breaks."</p> <p>LP2: "Lifestyle classes should be scheduled according to the employees' availability."</p> <p>LP3: "From the morning until 2pm is my busiest time of the day and I would not be available. I'm quite happy to participate in any physical activity that you may plan after 2pm".</p> <p>IP1, IP2, IP3, IP4, IP5, IP6: "Onsite, where everyone is."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>RP3: "I don't mind because you would get to meet people from other departments and you might just gel with them, it would be diverse."</p> <p>RP2: "Provide notices/communicate in advance."</p>
<p>Unilever Khanyisa</p> <p>Unilever Maydon Wharf</p> <p>Unilever Indonsa</p>	What would facilitate your participation in lifestyle classes?	<p>Healthy longevity</p> <p>Scheduling of lifestyle classes</p>	<p>Individuals drive and mind-set, support and motivation, weight control,</p> <p>Achieving your goals, the need to live healthy and reduce the risk of developing chronic diseases, health status, the outcome and benefits,</p> <p>The need for change, sharing of information with family members and multiple classes to accommodate all employees.</p>	<p>KP4, KP3: "My drive and mind-set."</p> <p>KP2: "If there is support and motivation through the process."</p> <p>MP1: "I want to lose weight. Losing weight is my number one goal."</p> <p>MP1: "Healthy living. I don't have any chronic diseases yet, but I don't want them in the near future."</p> <p>MP2: "To achieve the goals, like I know what I want to achieve."</p> <p>MP3: "It's going to be good for my health."</p> <p>IP4: "Your health."</p> <p>IP6, IP3: "The outcome and benefits."</p> <p>IP5: "And also, you see the need to change."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Retailability				<p>IP5: "Whatever you learn here, you can try and take it home."</p> <p>RP2: "Communicate in advance so time can be allocated for employees to participate."</p> <p>RP2: "Multiple classes to accommodate different employee schedules."</p> <p>RP4: "Support from management."</p>
<p>Unilever Khanyisa</p> <p>Unilever Maydon Wharf</p>	What would prevent your participation in lifestyle classes?	<p>Time limitations</p> <p>Self-efficacy</p>	Time limitations due to job responsibilities and self-efficacy	<p>KP4: "Time."</p> <p>KP3: "The feeling of being tired and not wanting to go back to do work."</p> <p>KP2: "Laziness."</p> <p>MP2: "Unachievable goals, if it is something that I don't like or see that it is not benefiting me in any way then I will start to feel detached from it."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Indonsa Unilever La Lucia Head Office Retailability				MP3: "As long as it's not going to affect my job and my time because we are working." IP5, IP4: "Time". IP3: "My mood". IP2: "It would be laziness". IP2: "Maybe job challenges". IP6: "It's the drive for me." LP5, LP2: "Meetings". RP3, RP4: "Time". RP1: "If people have to shower and freshen up after exercising then it would be a challenge."
Unilever Khanyisa	In your opinion, do you consume the same, less or more food and beverage when you	Social eating	More food and beverages are consumed with friends and family, at home and at work.	KP2: "When we have friends, we are eating more junk food". KP2, KP3: "More food consumed at work at the canteen than at home because we

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Maydon Wharf	meet with family and friends?			<p>can ask them to add more starch, not protein.”</p> <p>KP3: “It would depend on where we are”</p> <p>KP4: “I think it would depend”.</p> <p>KP4: “Socially, it would depend. If it is with extended family then there are different varieties and you would consume more but if you with immediate family, I don’t think that it would change.”</p> <p>KP1: “I eat more at home; at work there are small portions or I do not eat at all when I am at work.”</p> <p>MP1: “Family and friends, yes more because I hardly eat a lot on my own.”</p> <p>MP2: “Definitely more.”</p> <p>MP2: “At work, I am less likely to eat more than when I am at home. At work it is difficult because we only have a few breaks and I usually only eat during one break.</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Indonsa				<p>Recently, I have been eating healthier but usually foods that are cheaper and convenient such as chicken pasta.”</p> <p>MP3: “More, I eat a lot when I am with my family.”</p> <p>MP3: “When I’m with my friends depends where we going or when I am going to a braai and there’s a lot of meat, yes, but when I’m by myself I do not eat a lot.”</p> <p>MP4:” Yes, more food is prepared to accommodate family and friends that are over. More fancy meals are prepared.”</p> <p>IP2: “More especially, I consume healthy food at work but if I’m at home I’m not this healthy.”</p> <p>IP1, IP2, IP3, IP4, IP5, IP6: “More.”</p> <p>IP5: “Way more.”</p> <p>IP6: “With the environment and vibes, you end up eating more. There are different types of food.”</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Retailability				<p>IP6, IP1, IP5: "Unhealthy foods, meat, salads"</p> <p>IP3: "And we don't eat a lot of salad, more meat."</p> <p>IP5: "Fizzy drinks, alcohol."</p> <p>IP1, IP2, IP4, IP5: "No, this is not the same whilst at work."</p> <p>IP3: "It is different, unless there's a function or event where we are eating and not working."</p> <p>IP6: "We don't eat with colleagues due to social distancing so it's not more. If we are sitting with friends or eating alone at work, it would be the same quantity."</p> <p>RP3, RP4: "More".</p> <p>RP1: "Definitely more because eating is part of the social aspect. There's snacks, mains and then dessert because maybe someone has a sweet tooth."</p> <p>RP2: "More especially at family gatherings."</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Unilever Indonsa				<p>employees would ask for a larger portion for the same price.”</p> <p>IP1, IP2, IP3, IP4, IP5, IP6: “Yes.” IP6: “Especially the beginning of COVID-19.” IP5: “I was so healthy. During COVID-19, I gained so much weight and I was just eating junk all the way.” IP5: “I was eating anything because remember, you are just confined in one space. You used to work and watch television whilst being busy with chocolates, hot chips, you are buying takeaways all the time because you don’t want to cook.” IP1: “I could eat more. It would be frequent because I felt I could eat all the time. Like I will go and work and then look for something like a chocolate.” IP6: “Or make food because everybody was a chef that time. I was baking, like scones... cooking, because you have the time you know.” IP4: “I’ve gained a lot of weight because of eating and drinking so much. It’s my</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
Retailability				<p>weakness. I had to finish up all the stock that was at home. I was just travelling from work to home, home to work.”</p> <p>IP3: “It was the same. There was no need for me, it was like the same things because I’m in the house, it’s the same food we buy on a weekly basis.”</p> <p>IP6: “It got worse because of the anxiety I was having. I never lived under pandemic conditions, because of the different levels, I buy everything and have it. When they say takeaways or restaurants are opened, I would go and buy and eat. So, each time I get a chance, I would just eat everything.”</p> <p>IP2: “During COVID-19, I was consuming more and post COVID-19, I went back to normal because I was panicking of my health.”</p> <p>RP3: “Yes because everything was closed during lockdown, people were buying lots of groceries and you had time to prepare.”</p>

Worksite	Pre-defined domains	Themes	Summary	Representative quotes
				<p>RP3, RP1: “Overindulging during COVID-19 but post COVID-19, we started getting back to the routine.”</p> <p>RP2: “Yes, I had COVID-19 so I lost my taste and smell and that put me off from eating.”</p> <p>RP4: “Not many facilities were opened to us. We had no access to restaurants, only convenient stores, gyms were also closed. Everyone switched off and turned to food. I lost my appetite when I had COVID-19.”</p> <p>RP3: “I was pregnant when I had COVID-19 and I had to eat to sustain myself.”</p>

Key themes that emerged from the FGDs for participants understanding of healthy foods and beverages were nutrient-dense foods and water, whilst themes that emerged for participants understanding of unhealthy foods and beverages were nutrient-poor foods and energy-dense beverages. Key themes that emerged for the factors that determine participant's food and beverage choices were food environment and healthy longevity. The key themes that emerged for factors that facilitate participants to choose healthy food and beverages were mindful food choices and an enabled healthy food environment, whilst the barriers to eating emerged as a theme that prevents participants from choosing healthy food and beverages. The key theme that described the best way to organise lifestyle classes at the worksite was worksite scheduling and mode. The key theme that emerged for what facilitates participation in lifestyle classes was healthy longevity, whilst the key themes that emerged for what would prevent participation in lifestyle classes was scheduling of lifestyle classes, time limitations and self-efficacy. Social eating was a key theme that emerged for consuming the same, less or more food and beverage when participants met with family and friends. The key theme for changes in participant's food and beverage consumption pre- and post-COVID-19 was mixed eating patterns induced through emergency situations.

4.4.1 Understanding of healthy foods: Nutrient-dense foods and water

Healthy eating and drinking was frequently defined in terms of nutrient-dense foods, and water was described as being healthy. Foods that are rich in vitamins, minerals, and other nutrients (such as fruit and vegetables, legumes and whole grains) that are beneficial to an individual's health but low in added sugars, saturated fat, and sodium are classified as nutrient-dense foods (Drewnowski *et al.* 2019: 2). The healthful foods that were most often mentioned were fruits and vegetables. Foods cooked using healthy cooking methods and consumed in the correct portion sizes were also associated with healthy eating. Similarly, participants among all age categories in a FGD conducted in the United States (US) cited fruit and vegetables as key components of a healthy diet (Tiedje *et al.* 2014: 4). Participants associated water with a healthy beverage as it has several benefits such as it carries oxygen and nutrients to the cells, aids in digestion and prevents constipation, normalises blood pressure, cushions joints and regulates body temperature (Dinka 2018: 163).

4.4.2 Understanding of unhealthy foods: Nutrient-poor foods and energy-dense beverages

Participants identified nutrient-poor foods and energy-dense beverages as unhealthy. Fast foods, processed foods, foods high in fat, salt and sugar, energy drinks consumed in excessive amounts and sugar-sweetened beverages and alcohol were associated with unhealthy eating and drinking among participants. The availability and affordability of processed foods are major contributors to poor nutrition (Swart *et al.* 2022: 9). A study conducted by Horning *et al.* (2017: 67) found that the most commonly reported reasons for purchasing pre-packaged, processed meals included lack of time and family preferences. According to the CDC (2022b: 4-5), the consumption of unhealthy foods and beverages, such as highly processed foods and beverages with added sugar, can lead to weight gain, obesity, and other chronic diseases.

4.4.3 Factors that determine food and beverage choices: Food environment and healthy longevity

The main factors that determined participant's food and beverage choices were the food environment and healthy longevity. Convenience, cost of meals, taste, environment, promotions, family influence, culture, stress or mood are all determinants of food and beverage choices. The processes that govern longevity and life expectancy are influenced by genetic, environmental, behavioural, and dietary variables. The research reported in a review (Caprara 2018: 293) showed that certain diets encouraged the development of a healthy longevity by modifying the biological processes connected to ageing and delaying the start of the major NCDs, thereby lengthening lifespan.

4.4.4 Facilitators of healthy food and beverages: Mindful food choices and enabled healthy food environment

Factors that facilitated participants to choose healthy food and beverages were mindful food choices and an enabled healthy food environment. Mindful eating refers to making thoughtful dietary decisions, becoming aware of the differences between physical and psychological hunger and satiety cues, and eating healthfully in response to those cues (Warren, Smith and Ashwell 2017: 275). According to the findings of a study conducted among students in a demanding atmosphere, raising an individual's consciousness of their eating habits boosts their propensity to choose healthier meals (Dutt *et al.* 2019: 116). Hawkes *et al.* (2015: 2411) defined the food environment as consisting of the daily prompts which impel consumers' food choices in specific directions, and which play a role in dietary habits and preferences that can have long-term effects. Herforth and Ahmed (2015: 506) referred to the food environments as a variety of foods which are accessible, inexpensive, convenient and desirable to individuals in a specific context. Each of these concepts shows a distinct progression from food environments through to diet choices to food systems, with suggestions for nutrition. People are more likely to purchase and consume fruits, for example, in a food environment where nutritious foods such as fruits are readily available and advertised at reasonable prices (Grace 2016: 6).

4.4.5 Barriers to healthy food access

Participants identified the barriers to healthy food access as factors that prevent them from choosing healthy food and beverages. These factors include availability, affordability, convenience, mood, skill to prepare meals, limited variety of healthy meals, and poor sensory appeal of healthy meals. A study conducted among employees in a university setting highlighted that work commitments and lack of time were barriers to healthy eating at the workplace (Lima *et al.* 2021: 165). Several studies indicated that there are three types of barriers to establishing and maintaining a healthy diet (Sun *et al.* 2019: 703). These include external (cost, time and availability of healthy food), individual (lack of knowledge, and taste of food), and social barriers (pressure from family and friends). The most commonly reported barriers were external.

4.4.6 Organisation of lifestyle classes: Scheduling and mode

The best way to organise lifestyle programmes at the worksite was described using the words scheduling and mode. Scheduling was another important facilitator for the lifestyle programme. Participants highlighted that certain factors should be taken into consideration when designing a lifestyle programme such as multimodal lifestyle classes with proper scheduling from managers, accommodation of staff on leave, the size of the class would depend on the size of the training venue, and lesson times should be communicated in advance. Managers are vital stakeholders when a worksite establishes a wellness programme as they make choices which may affect employee involvement, for example, managers must develop wellness policies and programmes and allocate resources to assist the implementation (Mujtaba and Cavico 2013: 2; Goetzel *et al.* 2014). Managers may foster a culture of wellness in their organisations by publicly supporting employee health and approving wellness initiatives. According to previous studies, employees are more inclined to engage if the workplace culture promotes personal health and well-being (Goetzel *et al.* 2014: 930). The lifestyle classes could be conducted face-to-face or online.

4.4.7 Barriers to participation in lifestyle classes: Time limitations and self-efficacy

The two main barriers to participating in the lifestyle programme were said to be time limitations and self-efficacy according to the current study. In a study conducted by Person *et al.* (2010: 151), the common barriers to participation in a worksite wellness programme were inadequate incentives, undesirable location, time constraints, lack of interest in the topics discussed, indistinct objectives, schedule, marketing, unfavourable perspectives on health, and lack of enthusiasm in the programme. Self-efficacy is defined as the confidence of an individual in their ability to plan and conduct the actions that are necessary for achieving desired attainments (Blom *et al.* 2021: 1048). Examples of factors that boost self-efficacy include receiving feedback on an individual's performance and gradual modification in behaviour. The results of a study conducted by Ram and Laxmi (2017: 22) show that perceived self-efficacy is essential for maintaining a healthy lifestyle.

4.4.8 Social eating

Participants highlighted that more food and beverage is consumed when they are with friends and family, at home and at work. The type of food and the quantity consumed depends on the social environment (Higgs and Thomas 2016: 2). The social facilitation of eating is the propensity for individuals to consume more while eating with others than whilst eating alone. The effects of social facilitation on a variety of cognitive and physical activities have been thoroughly studied, and it is believed that the presence of other individuals enhances dominating reactions (the natural reaction when food is available is to eat) (Ruddock *et al.* 2019: 843). There may be cultural differences with regards to social eating at the workplace. Similarly, some cultures place more emphasis on eating with co-workers in the workplace than others, with the African American and Korean societies both supporting this idea (Park *et al.* 2017: 468).

4.4.9 Mixed eating patterns induced through emergency situations

There were mixed eating patterns induced through emergency situations as participants stated that pre- and post-COVID-19 they did not notice any changes in their food and beverage consumption; however, others did. The changes included healthier eating and drinking choices and modification in the quantity of food consumed. In a study conducted among American countries, similar mixed eating patterns were discovered. The majority of participants did not alter their usual eating habits but those who did, consumed smaller main meals and more snacks (Enriquez-Martinez *et al.* 2021: 4). The psychological modifications linked to COVID-19 may have also impacted habits regarding eating. For instance, in Italy, individuals increased their consumption of comfort food through stress-related eating (Bracale and Vaccaro 2020: 1423). Subsequently, this was demonstrated in a survey among South Africans as 36.8% of individuals claimed that the COVID-19 pandemic period had negatively impacted their dietary habits, whereas 34.6% of individuals stated that their eating habits were not altered at all during this time (Naicker *et al.* 2021a: 135).

4.5 Organisational readiness for implementing change (ORIC)

Objective 3 of the study was to determine the worksite readiness to implement change through the ORIC questionnaire. The researcher contacted management from the canteens to gain permission and schedule appropriate days to administer the questionnaires to employees. The questionnaires were administered face-to-face at the canteen during the lunch breaks as it was the most suitable time for employees to complete the questionnaire as well as the busiest time at the canteen. The questionnaires were also administered online through e-mail as many employees did not have sufficient time to complete the questionnaire whilst purchasing or consuming a meal. Several worksite visits were made by the researcher and research assistants until the sample size (n=338) was reached. There were 148 questionnaires administered at Unilever Indonsa, 77 at Unilever Maydon Wharf, 62 at La Lucia Head Office, 13 at Unilever Khanyisa and 38 at Retailability. Table 4.3.1 reports the ranking of the ORIC statements by employees where 1 is the greatest level of disagreement and 5 is the greatest level of agreement.



Figure 4.13: Research Assistant (RA) administering the ORIC questionnaire to employees at the worksite canteen (Singh 2022)

4.5.1 Organisational readiness for implementing change (ORIC): Unilever



Figure 4.14: Level of agreement with ORIC statements by Unilever employees

The ORIC statements that Unilever employees agreed with the most scored 4.51 on the scale: “I believe this change will benefit our worksite”, followed by 4.49 on the scale of “I am committed to implementing this change” and 4.41 on the scale of “I want to implement this change”. The lowest scores (disagreement) were 3.35 for “I have the equipment we need to implement this change”, 3.37 for “I have the resources we need to implement this change” and 3.46 for “I have the expertise to implement this change”.

Table 4.7: One sample t-test of the statements by Unilever employees

Item	Responses as Frequency (%)					n	Mean (SD)	T	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
I am committed to implementing this change.	4 (1.3)	6 (2.0)	29 (9.7)	62 (20.7)	199 (66.3)	300	4.49 (0.852)	30.230	299	<.001*
I am motivated to implement this change.	5 (1.7)	6 (2.0)	33 (11.0)	79 (26.3)	177 (59.0)	300	4.39 (0.883)	27.251	299	<.001*
I will do whatever it takes to implement this change.	3 (1.0)	7 (2.3)	46 (15.3)	82 (27.3)	162 (54.0)	300	4.31 (0.885)	25.639	299	<.001*
I am determined to implement this change.	11 (3.7)	13 (4.3)	59 (19.7)	78 (26.0)	139 (46.3)	300	4.07 (1.078)	17.190	299	<.001*
I want to implement this change.	5 (1.7)	5 (1.7)	32 (10.7)	79 (26.3)	179 (59.7)	300	4.41 (0.870)	28.000	299	<.001*

Item	Responses as Frequency (%)					n	Mean (SD)	T	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
I feel this change is compatible with our values.	5 (1.7)	4 (1.3)	29 (9.7)	70 (23.3)	192 (64.0)	300	4.47 (0.851)	29.842	299	<.001*
I need to implement this change.	5 (1.7)	13 (4.3)	38 (12.7)	88 (29.3)	156 (52.0)	300	4.26 (0.952)	22.853	299	<.001*
I believe this change will benefit our worksite.	4 (1.3)	4 (1.3)	30 (10.0)	60 (20.0)	202 (67.3)	300	4.51 (0.832)	31.365	299	<.001*
I believe it is necessary to make this change.	4 (1.3)	4 (1.3)	42 (14.0)	70 (23.3)	180 (60.0)	300	4.39 (0.872)	27.662	299	<.001*
I believe this change will work.	3 (1.0)	6 (2.0)	57 (19.0)	70 (23.3)	164 (54.7)	300	4.29 (0.910)	24.502	299	<.001*
I see this change as timely.	4 (1.3)	9 (3.0)	62 (20.7)	84 (28.0)	141 (47.0)	300	4.16 (0.945)	21.323	299	<.001*
I believe this change is cost-effective.	15 (5.0)	12 (4.0)	68 (22.7)	73 (24.3)	132 (44.0)	300	3.98 (1.132)	15.050	299	<.001*
I believe this change will make things better.	3 (1.0)	5 (1.7)	47 (15.7)	70 (23.3)	175 (58.3)	300	4.36 (0.876)	26.959	299	<.001*

Item	Responses as Frequency (%)					n	Mean (SD)	T	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
I feel that implementing this change is a good idea.	3 (1.0)	7 (2.3)	38 (12.7)	59 (19.7)	193 (64.3)	300	4.44 (0.873)	28.567	299	<.001*
I value this change.	8 (2.7)	11 (3.7)	48 (16.0)	66 (22.0)	167 (55.7)	300	4.24 (1.024)	21.040	299	<.001*
I know what it takes to implement this change.	13 (4.3)	21 (7.0)	63 (21.0)	77 (25.7)	126 (42.0)	300	3.94 (1.140)	14.276	299	<.001*
I can keep the momentum going in implementing this change.	11 (3.7)	16 (5.3)	68 (22.7)	76 (25.3)	129 (43.0)	300	3.99 (1.097)	15.576	299	<.001*
I can manage the politics of implementing this change.	27 (9.0)	22 (7.3)	66 (22.0)	71 (23.7)	114 (38.0)	300	3.74 (1.282)	10.045	299	<.001*
I can support people as they adjust to this change.	11 (3.7)	12 (4.0)	52 (17.3)	77 (25.7)	148 (49.3)	300	4.13 (1.069)	18.302	299	<.001*
I can get people invested in	17 (5.7)	19 (6.3)	65 (21.7)	84 (28.0)	115 (38.3)	300	3.87 (1.162)	12.965	299	<.001*

Item	Responses as Frequency (%)					n	Mean (SD)	T	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
implementing this change.										
I can coordinate tasks so that implementation goes smoothly.	21 (7.0)	31 (10.3)	68 (22.7)	66 (22.0)	114 (38.0)	300	3.74 (1.259)	10.132	299	<.001*
I can keep track of progress in implementing this change.	23 (7.7)	31 (10.3)	65 (21.7)	70 (23.3)	111 (37.0)	300	3.72 (1.271)	9.767	299	<.001*
I know how much time it will take to implement this change.	37 (12.3)	27 (9.0)	76 (25.3)	56 (18.7)	104 (34.7)	300	3.54 (1.367)	6.886	299	<.001*
I know what resources we need to implement this change.	34 (11.3)	33 (11.0)	74 (24.7)	58 (19.3)	101 (33.7)	300	3.5 (1.352)	6.789	299	<.001*
I know what each of us has to do to implement this change.	31 (10.3)	38 (12.7)	69 (23.0)	61 (20.3)	101 (33.7)	300	3.5 (1.342)	7.013	299	<.001*
I have the equipment we need to	46 (15.3)	38 (12.7)	77 (25.7)	42 (14.0)	97 (32.3)	300	3.35 (1.434)	4.269	299	<.001*

Item	Responses as Frequency (%)					n	Mean (SD)	T	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
implement this change.										
I have the expertise to implement this change.	42 (14.0)	32 (10.7)	69 (23.0)	59 (19.7)	98 (32.7)	300	3.46 (1.401)	5.730	299	<.001*
I have the time we need to implement this change.	36 (12.0)	36 (12.0)	67 (22.3)	61 (20.3)	100 (33.3)	300	3.51 (1.372)	6.438	299	<.001*
I have the skills to implement this change.	35 (11.7)	39 (13.0)	71 (23.7)	56 (18.7)	99 (33.0)	300	4.48 (1.370)	6.112	299	<.001*
I have the resources we need to implement this change.	41 (13.7)	39 (13.0)	81 (27.0)	45 (15.0)	94 (31.3)	300	3.37 (1.395)	4.634	299	<.001*
The timing is good for implementing this change.	8 (2.7)	14 (4.7)	47 (15.7)	62 (20.7)	169 (56.3)	300	4.23 (1.047)	20.406	299	<.001*

Table 4.7 presents the results of the one sample t-test to determine whether a mean score is significantly different from a scalar value (3). All statements were significantly different from '3', on average. All mean values were >3 which indicates there was a significant agreement to all the statements. The p value given as .000 is very small and is reported as $p < .001$. The main reason why the one sample t-test was conducted was to compare if sample mean was different from the scalar value of 3.

In order to reduce the 31 statements to a few manageable latent variables to get a better understanding of the responses, factor analysis was applied. This tool groups items into a few factors/latent variables/constructs such that items within a factor are measuring the same concept.

Factor analysis with promax rotation was applied to the 31 statements. During the process, items 12, 16 and 19 were dropped because they did not load strongly enough onto any factor; while items 17, 21 and 31 were dropped because they cross-loaded (loaded onto more than one factor). Two factors were extracted which account for 65.02% of the variance in the data. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of 0.958 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction. Rotation converged in 3 iterations. The extracted factors showing factor loadings for the items are presented in Table 4.8.

Table 4.8: Organisational readiness for implementing change - Factor loadings

	Factor	
	1	2
8 I believe this change will benefit our worksite.	.851	
14 I feel that implementing this change is a good idea.	.842	
5 I want to implement this change.	.823	
1 I am committed to implementing this change.	.823	
6 I feel this change is compatible with our values.	.820	
9 I believe it is necessary to make this change.	.790	
7 I need to implement this change.	.783	
13 I believe this change will make things better.	.739	
2 I am motivated to implement this change.	.728	
3 I will do whatever it takes to implement this change.	.727	
10 I believe this change will work.	.714	
4 I am determined to implement this change.	.697	
11 I see this change as timely.	.647	
15 I value this change.	.589	

	Factor	
	1	2
26 I have the equipment I need to implement this change.		.968
30 I have the resources we need to implement this change.		.946
24 I know what resources we need to implement this change.		.917
27 I have the expertise to implement this change.		.906
25 I know what each of us has to do to implement this change.		.884
29 I have the skills to implement this change.		.861
28 I have the time I need to implement this change.		.834
23 I know how much time it will take to implement this change.		.817
22 I can keep track of progress in implementing this change.		.633
18 I can manage the politics of implementing this change.		.596
20 I can get people invested in implementing this change.		.565

These factors were tested for reliability using Cronbach's alpha. An alpha value $>.7$ indicates reliability. The factors and their assigned labels are summarised in Table 4.9.

Table 4.9: Organisational readiness for implementing change

Factor	Construct	Statements included	Variance extracted	Cronbach's alpha
1	Commitment (COM)	1-11, 13-15	53.01	0.952
2	Implementation (IMP)	18, 20, 22-30	12.01	0.963

The alpha value for factor 1 and 2 was $>.7$, therefore indicating reliability. Composite variables were formed by calculating the average of the agreement scores for all items included in a variable.

Table 4.10: One-sample t-test to determine significant agreement or disagreement to composite variables

Construct	N	Mean (SD)	T	df	p-value
Commitment (COM)	300	4.34 (0.715)	32.493	299	$<.001^*$
Implementation (IMP)	300	3.55 (1.145)	8.427	299	$<.001^*$

* indicates significant at the 95% level

According to table 4.7, it was observed that there was a significant agreement for commitment (COM) and implementation (IMP) (with agreement that they desire the change and are committed to it being significantly higher than their agreement that they can implement the change). Results from a paired t-test showed agreement that they desired the change and were committed to it are significantly higher than agreement that they can implement the change, $t(299) = 15.229$, $p < .001$. Further analysis to determine differences across worksites was conducted. Analysis from ANOVA showed that there was a significant difference in COM (commitment) across worksites, $F(3, 296) = 5.375$, $p = .001$. Post hoc analysis using Tukey's test indicated that agreement to commitment was significantly higher at Maydon Wharf than at La Lucia Head Office ($p = .043$) and at Khanyisa ($p = .021$); and at Indonsa than at La Lucia Head Office ($p = .031$) and at Khanyisa ($p = .021$). Furthermore, there was a significant difference in IMP (implementation) across

worksites, $F(3, 296) = 9.960$, $p < .001$. Post hoc analysis using Tukey's test indicated that agreement to commitment was significantly higher at Maydon Wharf than at La Lucia Head Office ($p = .029$) and at Khanyisa ($p = .020$); and at Indonsa than at La Lucia Head Office ($p < .001$) and at Khanyisa ($p = .001$).

4.5.2 Organisational Readiness for implementing change (ORIC): Retailability



Figure 4.15: Level of agreement of ORIC statements by Retailability employees

The ORIC statements that Retailability employees agreed with the most scored 4.58 on the scale: “I am committed to implementing this change”, followed by 4.53 on the scale of “I believe this change will make

things better”, 4.50 on the scale of “I feel that implementing this change is a good idea” and 4.50 on the scale of “I feel this change is compatible with our values”. The lowest scores (disagreement) were 3.11 for “I have the equipment we need to implement this change”, 3.24 for “I have the resources we need to implement this change” and 3.46 for “I have the expertise to implement this change”.

Table 4.11: One sample t-test of the statements by Retailability employees

Statements	Responses as Frequency (%)					n	Mean (SD)	t	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
I am committed to implementing this change.	1 (2.6)	-	3 (7.9)	6 (15.8)	28 (73.7)	38	4.58 (0.858)	11.339	37	<.001*
I am motivated to implement this change.	1 (0.26)	4 (10.5)	9 (23.7)	24 (63.2)	38 (100.0)	38	4.45 (0.891)	10.010	37	<.001*
I will do whatever it takes to implement this change.	1 (2.6)	4 (10.5)	10 (26.3)	23 (60.5)	38 (100.0)	38	4.2 (0.889)	9.850	37	<.001*
I am determined to implement this change.	1 (2.6)	2 (5.3)	9 (23.7)	4 (10.5)	22 (57.9)	38	4.16 (1.128)	6.330	37	<.001*
I want to implement this change.	-	-	8 (21.1)	8 (21.1)	22 (57.9)	38	4.37 (0.819)	10.295	37	<.001*
I feel this change is compatible with our values.	-	1 (2.6)	5 (13.2)	6 (15.8)	26 (68.4)	38	4.50 (0.830)	11.138	37	<.001*

Statements	Responses as Frequency (%)					n	Mean (SD)	t	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
I need to implement this change.	-	2 (5.3)	8 (21.1)	7 (18.4)	21 (55.3)	38	4.24 (0.971)	7.854	37	<.001*
I believe this change will benefit our worksite.	-	1 (2.6)	5 (13.2)	9 (23.7)	23 (60.5)	38	4.42 (0.826)	10.601	37	<.001*
I believe it is necessary to make this change.	-	1 (2.6)	9 (23.7)	5 (13.2)	23 (60.5)	38	4.32 (0.933)	8.693	37	<.001*
I believe this change will work.	-	-	8 (21.1)	10 (26.3)	20 (52.6)	38	4.32 (0.809)	10.027	37	<.001*
I see this change as timely.	-	-	9 (23.7)	11 (28.9)	18 (47.4)	38	4.24 (0.820)	9.300	37	<.001*
I believe this change is cost-effective.	-	2 (5.3)	9 (23.7)	11 (28.9)	16 (42.1)	38	4.80 (0.491)	7.068	37	<.001*
I believe this change will make things better.	-	1 (2.6)	1 (2.6)	13 (34.2)	23 (60.5)	38	4.53 (0.687)	13.691	37	<.001*
I feel that implementing this	-	2 (5.3)	-	13 (34.2)	23 (60.5)	38	4.50 (0.762)	12.130	37	<.001*

Statements	Responses as Frequency (%)					n	Mean (SD)	t	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
change is a good idea.										
I value this change.	-	2 (5.3)	3 (7.9)	14 (36.8)	19 (50.0)	38	4.32 (0.842)	9.637	37	<.001*
I know what it takes to implement this change.	-	2 (5.3)	13 (34.2)	11 (28.9)	12 (31.6)	38	3.87 (0.935)	5.726	37	<.001*
I can keep the momentum going in implementing this change.	-	2 (5.3)	14 (38.8)	8 (21.1)	14 (36.8)	38	3.89 (0.981)	5.625	37	<.001*
I can manage the politics of implementing this change.	1 (2.6)	2 (5.3)	13 (34.2)	12 (31.6)	10 (26.3)	38	3.74 (1.005)	4.520	37	<.001*
I can support people as they adjust to this change.	1 (2.6)	1 (2.6)	8 (21.1)	12 (31.6)	16 (42.1)	38	4.08 (0.997)	6.672	37	<.001*
I can get people invested in implementing this change.	1 (2.6)	-	15 (39.5)	12 (31.6)	10 (26.3)	38	3.79 (0.935)	5.207	37	<.001*

Statements	Responses as Frequency (%)					n	Mean (SD)	t	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
I can coordinate tasks so that implementation goes smoothly.	2 (5.3)	4 (10.5)	14 (36.8)	9 (23.7)	9 (23.7)	38	3.50 (1.133)	2.720	37	<.001*
I can keep track of progress in implementing this change.	2 (5.3)	3 (7.9)	15 (39.5)	8 (21.1)	10 (26.3)	38	3.55 (1.132)	3.010	37	<.001*
I know how much time it will take to implement this change.	4 (10.5)	3 (7.9)	13 (34.2)	9 (23.7)	9 (23.7)	38	3.42 (1.244)	2.086	37	<.001*
I know what resources we need to implement this change.	4 (10.5)	6 (15.8)	9 (23.7)	11 (28.9)	8 (21.1)	38	3.34 (1.279)	1.648	37	<.001*
I know what each of us has to do to implement this change.	4 (10.5)	4 (10.5)	13 (34.2)	10 (26.3)	7 (18.4)	38	3.32 (1.210)	1.608	37	<.001*
I have the equipment we need to implement this change.	7 (18.4)	4 (10.5)	12 (31.6)	8 (21.1)	7 (18.4)	38	3.11 (1.351)	0.480	37	<.001*

Statements	Responses as Frequency (%)					n	Mean (SD)	t	Df	p-value
	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree					
I have the expertise to implement this change.	6 (15.8)	4 (10.5)	9 (23.7)	12 (31.6)	7 (18.4)	38	3.26 (1.329)	1.220	37	<.001*
I have the time we need to implement this change.	5 (13.2)	2 (5.3)	12 (31.6)	12 (31.6)	7 (18.4)	38	3.37 (1.239)	1.832	37	<.001*
I have the skills to implement this change.	4 (10.5)	4 (10.5)	11 (28.9)	9 (23.7)	10 (26.3)	38	3.45 (1.288)	2.141	37	<.001*
I have the resources we need to implement this change.	5 (13.2)	4 (10.5)	14 (36.8)	7 (18.4)	8 (21.1)	38	3.24 (1.283)	1.138	37	<.001*
The timing is good for implementing this change.	2 (5.3)	-	11 (28.9)	11 (28.9)	14 (36.8)	38	3.92 (1.075)	5.281	37	<.001*

Table 4.11 presents the results of one sample t-test to determine whether a mean score is significantly different from a scalar value (3). All statements were significantly different from '3', on average. All mean values were >3 which indicates there was a significant agreement to all the statements.

In order to reduce the 31 statements to a few manageable latent variables to get a better understanding of the responses, factor analysis was applied. This tool groups items into a few factors/latent variables/constructs such that items within a factor are measuring the same concept.

Factor analysis with promax rotation was applied to these 31 items. During the process, item 12 was dropped because it did not load strongly enough onto any factor; while items 16, 17, 18, 19 and 31 were dropped because they cross-loaded (loaded onto more than one factor). Two factors were extracted which account for 72.19% of the variance in the data. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .784 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction. Rotation converged in 3 iterations. The extracted factors showing factor loadings for the items are shown in Table 4.12.

Table 4.12: Organisational readiness for implementing change-Factor loadings

	Factor	
	1	2
8 I believe this change will benefit our worksite.	1.007	
6 I feel this change is compatible with our values.	.903	
15 I value this change.	.877	
5 I want to implement this change.	.868	
3 I will do whatever it takes to implement this change.	.854	
10 I believe this change will work.	.846	
4 I am determined to implement this change.	.844	
14 I feel that implementing this change is a good idea.	.806	
2 I am motivated to implement this change.	.761	
7 I need to implement this change.	.719	
9 I believe it is necessary to make this change.	.713	

	Factor	
	1	2
13 I believe this change will make things better.	.712	
11 I see this change as timely.	.637	
1 I am committed to implementing this change.	.595	
30 I have the resources we need to implement this change.		1.009
26 I have the equipment I need to implement this change.		1.009
27 I have the expertise to implement this change.		.947
23 I know how much time it will take to implement this change.		.930
25 I know what each of us has to do to implement this change.		.889
28 I have the time I need to implement this change.		.883
29 I have the skills to implement this change.		.875
24 I know what resources we need to implement this change.		.827
22 I can keep track of progress in implementing this change.		.802
21 I can coordinate tasks so that implementation goes smoothly.		.757
20 I can get people invested in implementing this change.		.637

These factors were tested for reliability using Cronbach's alpha. An alpha value $>.7$ indicates reliability. The factors and their assigned labels are summarised in Table 4.13.

Table 4.13: Organisational readiness for implementing change

Factor	Construct	Items included	Variance extracted	Cronbach's alpha
1	Commitment (COM)	1-11, 13-15	56.90	.962
2	Implementation (IMP)	18, 20, 22-30	15.29	.975

The alpha value for factor 1 and 2 was $>.7$, therefore indicating reliability. Composite variables are formed by calculating the average of the agreement scores for all items included in a variable.

Table 4.14: One-sample t-test to determine significant agreement or disagreement to composite variables

Construct	n	Mean (SD)	t	df	p-value
Commitment (COM)	38	4.38 (0.709)	12.020	37	$<.001^*$
Implementation (IMP)	38	3.39 (1.094)	2.223	37	.032*

* indicates significant at the 95% level

According to table 4.14, it was observed that there was a significant agreement for commitment (COM) and implementation (IMP) (with agreement that they desire the change and are committed to it being significantly higher than their agreement that they can implement the change). Results from a paired t-test show that agreement that they desire the change and are committed to it is significantly higher than agreement that they can implement the change, $t(37) = 6.727$, $p < .001$.

4.6 Intervention rating scale

The intervention rating scale were completed by 12 canteen managers and canteen staff using a scale from 1 to 5 for the feasibility of implementing different components of the intervention, with 1 being impossible to implement and 5 being easily implementable.

4.6.1 Interventions targeting food quality and quantity

Figure 4.16 represents the frequency of the ratings for interventions targeting food quality and quantity by canteen managers and staff.

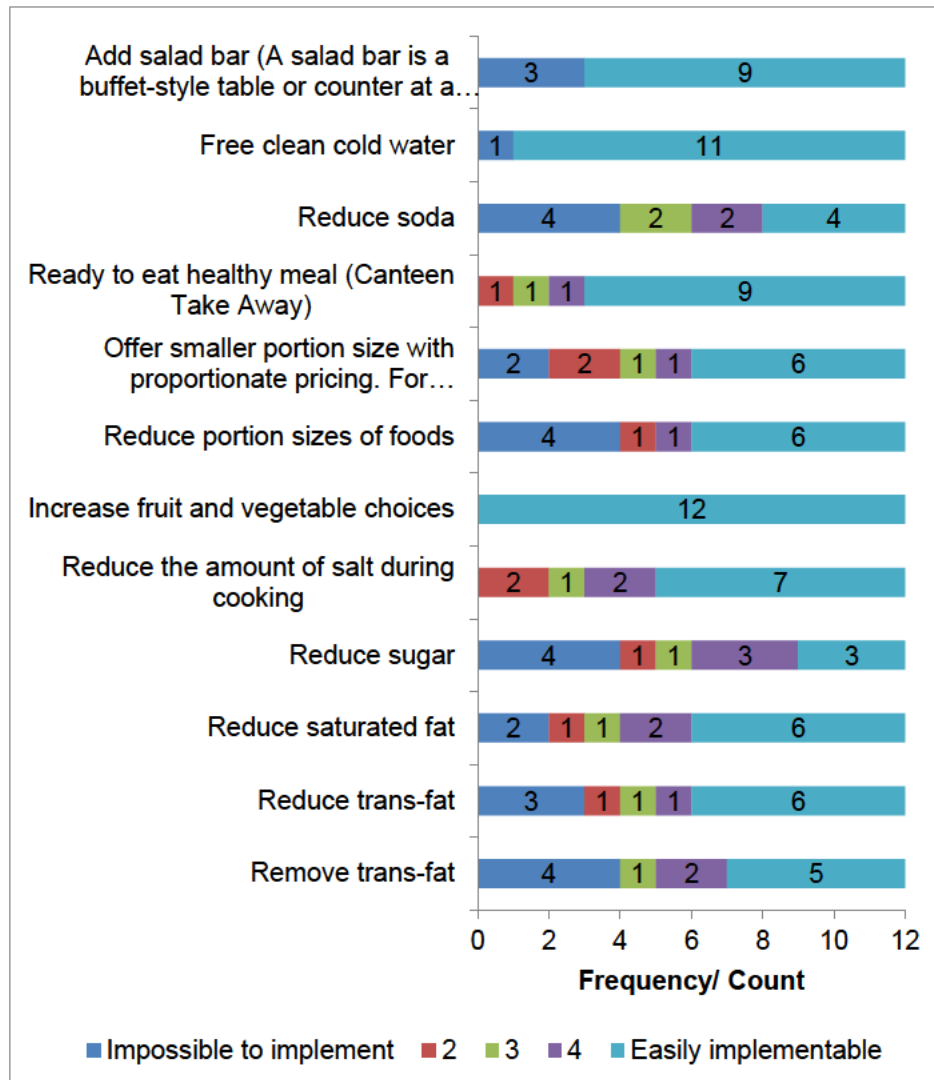


Figure 4.16: Frequencies of the ratings for interventions targeting food quality and quantity

Interventions that were easy to implement were reported by 100% (n=12) of participants for increasing fruit and vegetable choices, 92% (n=11) for the provision of free water, followed by 75% (n=9) for the addition of a salad bar and ready-to-eat healthy meals.

All participants (100%) indicated that the easiest intervention to implement was an increase in fruit and vegetable choices. Existing data demonstrates that reducing the availability of unhealthy alternatives and delivering meals with more fruit and vegetables incorporated into the menu in a workplace canteen resulted in a sustained increase in fruit and vegetable intake over a five-year period in five Danish workplaces that served between 50 and 500 meals daily (Thorsen *et al.* 2010: 1650). Eleven participants (92%) also

indicated that provisioning of free water was easy to implement. Adequate water consumption is a low-cost, non-invasive technique for improving individual health outcomes. It was easy to implement as there could have been cold-water dispensers that were continuously refilled. Seventy-five percent (75%) of the participants also found that adding a salad bar and providing ready-to-eat healthy meals was the easiest to implement. A study by Uglem *et al.* (2013: 21036) among young men in the Norwegian National Guard stated that for lunch, a self-service salad bar with a wide selection of vegetables was added. Vegetables were added to newly designed meals for supper or served as side dishes. At all meals, bread with a 50-100% wholegrain content and a fibre value of 4-7 g/100 g was provided. These interventions are easy to implement as the cost of fruit and vegetables is much cheaper. Thirty-three percent (33%) of participants indicated that the most difficult intervention to implement was to reduce sugar, reduce carbonated soft drinks, remove trans-fat and reduce portion sizes of food. Leidy and Campbell (2011: 155) reported that workplace boredom was positively connected with the consumption of fatty foods and sugary beverages. Therefore, boredom can lead to unnecessary snacking on unhealthy foods and drinks.

Figure 4.17 graphically illustrates the mean of the ratings of the interventions targeting food quality and quantity.

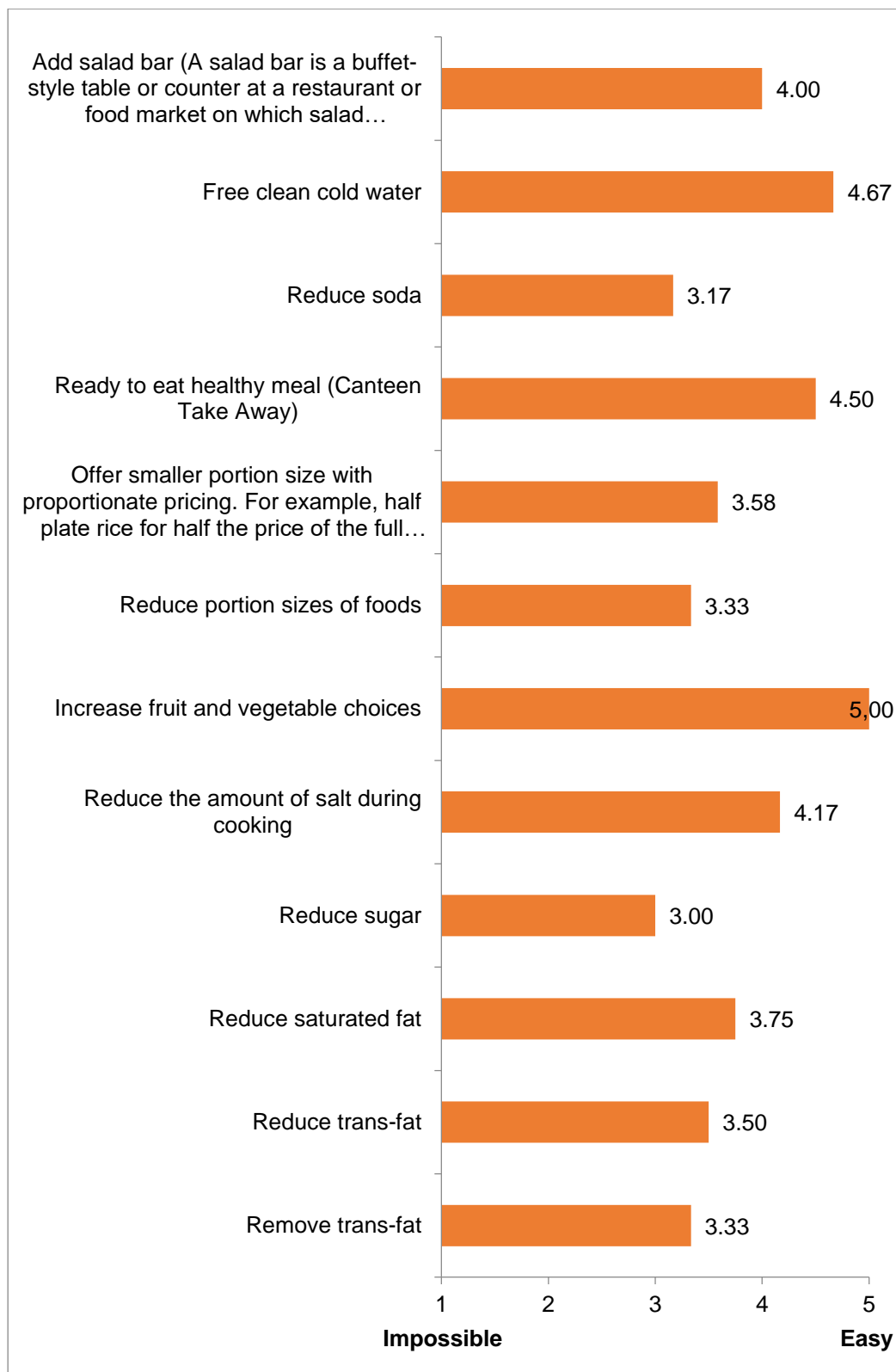


Figure 4.17: Mean rating of interventions targeting food quality and quantity

The highest mean was 5.00 for fruit and vegetable whilst all interventions had a mean >3.

The one-sample t-test was done to determine if the average 'implementability' score differs significantly from the central score of '3'. As the sample size was so small, the non-parametric equivalent Wilcoxon signed ranks test, which tests if the median is significantly different from '3', was used.

Table 4.15: One sample t-test for interventions targeting food quality and quantity

Intervention	n	Median [IQR]	Mean (SD)	T	Df	p-value
1. Remove trans-fat	12	4 [1,5]	3.33 (1.826)	.632	11	.540
2. Reduce trans-fat	12	4.5 [1.25,5]	3.50 (1.784)	.971	11	.352
3. Reduce saturated fat	12	4.5 [2.25,5]	3.75 (1.603)	1.621	11	.133
4. Reduce sugar	12	3.5 [1,4.75]	3.00 (4.17)	.000	11	1.000
5. Reduce the amount of salt during cooking	12	5 [3.25,5]	1.193 (5.00)	3.386	11	.006*
6. Increase fruit and vegetable choices	12	5 [5,5]	5.00 (.000*)	-	11	<0.01*
7. Reduce portion sizes of foods	12	4.5 [1,5]	3.33 (1.923)	.601	11	.560

Intervention	n	Median [IQR]	Mean (SD)	T	Df	p-value
8. Offer smaller portion size with proportionate pricing. For example, half plate of rice for half the price of the full plate	12	4.5 [2,5]	3.58 (1.676)	1.205	11	.253
9. Ready-to-eat healthy meal (Canteen Take Away)	12	5 [4.25,5]	4.50 (1.000)	5.196	11	<.001*
10. Reduce carbonated soft drinks	12	3.5[1,5]	3.17 (1.749)	0.330	11	.748
11. Free clean cold water	12	5[5,5]	4.67 (1.155)	5.000	11	<.001*
12. Add salad bar	12	5[2,5]	4.00 (1.809)	1.915	11	.082

Average ratings for items 5, 6, 9 and 11 are significantly above the central rating of '3'. Thus these interventions are considered to be 'on the easy side' to implement.

4.6.2 Interventions targeting price

Figure 4.18 represents the frequency of the ratings for interventions targeting price by canteen managers and staff.

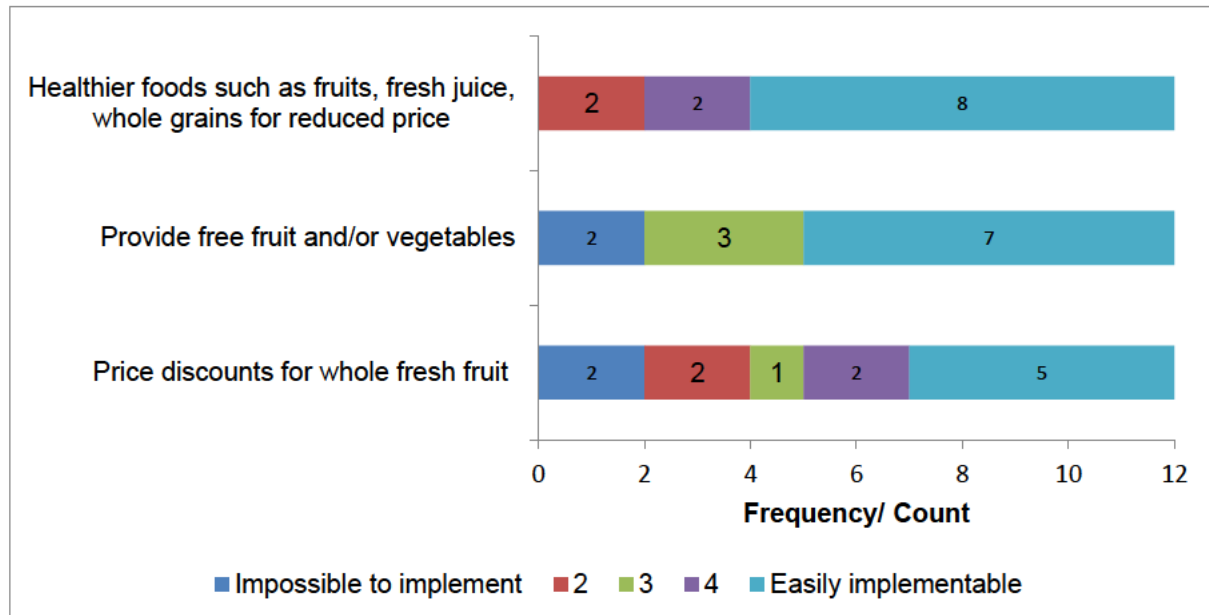


Figure 4.18: Frequencies of the ratings for interventions targeting price

Interventions targeting price that were easy to implement was reported by eight (n=8) participants in favour of healthier foods such as fruits, fresh juice, and whole grains for a reduced price followed by seven (n=7) participants in favour of the provision of free fruit or vegetables and five (n=5) for price discounts on whole fresh fruit.

Figure 4.19 graphically illustrates the mean of the ratings of the interventions targeting price

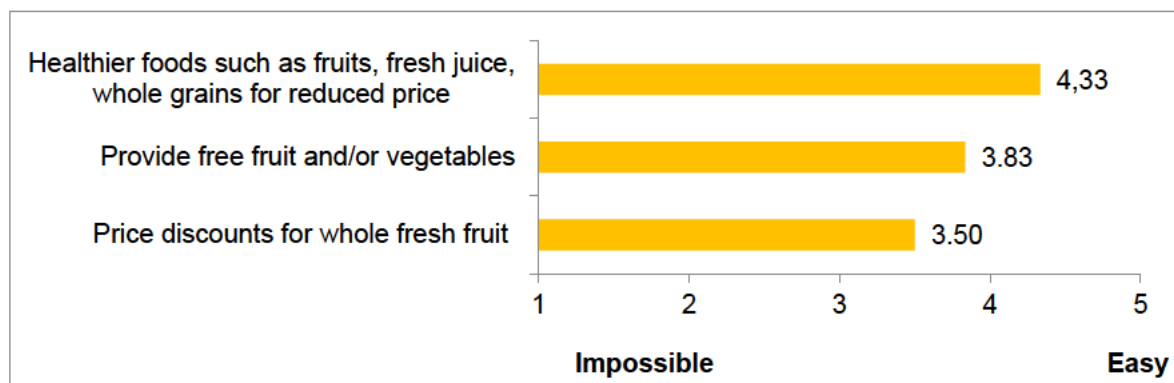


Figure 4.19: Mean rating of interventions targeting price

All interventions had a mean >3 with interventions targeting price for healthier foods such as fruits, fresh juice and whole grains for a reduced price with the highest mean of 4.33. The one-sample t-test was done to determine if the average 'implementability' score differed significantly from the central score of '3'. As the

sample size was so small, the non-parametric equivalent Wilcoxon signed ranks test, which tests if the median is significantly different from '3', was used.

Table 4.16: One sample t-test for interventions targeting price

Intervention	n	Median [IQR]	Mean (SD)	t	df	p-value
Price discounts for whole fresh fruit	12	4[2,5]	3.50 (1.64)	1.067	11	.309
Provide free fruit and/or vegetables	12	5[3,5]	3.83 (1.586)	1.820	11	.096
Healthier foods such as fruits, fresh juice, whole grains for reduced price	12	5[4,5]	4.33 (1.155)	4.000	11	.002*

* Indicates significance at the 95% level

The average rating for item 3 was significantly above the central rating of '3'. Thus, healthier foods such as fruits, fresh juice, whole grains for reduced price' is considered significantly on the easy side to implement.

Eight (n=8) participants indicated that an intervention of healthier foods such as fruits, fresh juice, and whole grains for a reduced price was easiest to implement ($p < 0.002$). According to Franco, de Castro and Wolkoff (2013: 30), providing meal vouchers and selling fruits at a reduced fixed price increased the intake of healthier foods and fruit juices. Roeger and Leibtag (2011: 21) reported that buying fruit and vegetables in bulk can reduce the cost of individual fruits and vegetables. The provision of free fruit and vegetables was also easy to implement according to 58% of participants. A free fruit programme was shown to be successful according to studies by (Franco, de Castro and Wolkoff 2013: 32) and Lassen *et al.* (2011: 970). According to a study by Lake *et al.* (2016: 7), participants who received free fruit during working hours for 18 weeks reported an increase in fruit intake. Two (n=2) participants indicated that price discounts for whole fresh fruit was the most difficult intervention to implement. It is difficult to implement interventions such as price discounts for whole fruits as it would affect profitability (Poelman *et al.* 2022: 4218).

4.6.3 Interventions targeting food choice at point of purchase

Figure 4.20 represents the frequency of the ratings for interventions targeting food choice at point of purchase by canteen managers and staff.

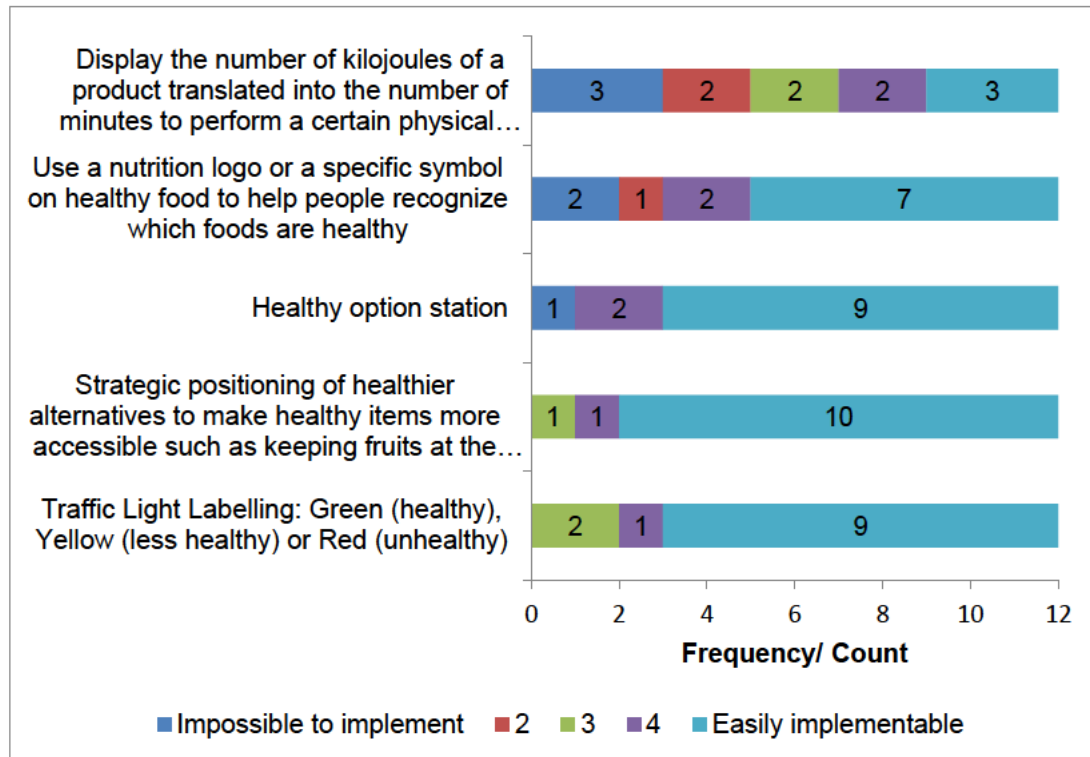


Figure 4.20: Frequencies of the ratings for Interventions targeting food choice at point of purchase

The easiest intervention to implement was reported by ten ($n=10$) participants for strategic positioning of healthier alternatives to make healthy items more accessible, nine ($n=9$) for traffic light labelling and healthy option stations. The most difficult to implement was reported by three ($n=3$) participants for the display of kilojoules of a product translated into the number of minutes to perform a certain physical activity.

Figure 4.21 graphically illustrates the mean of the ratings of the interventions targeting food choice at point of purchase.

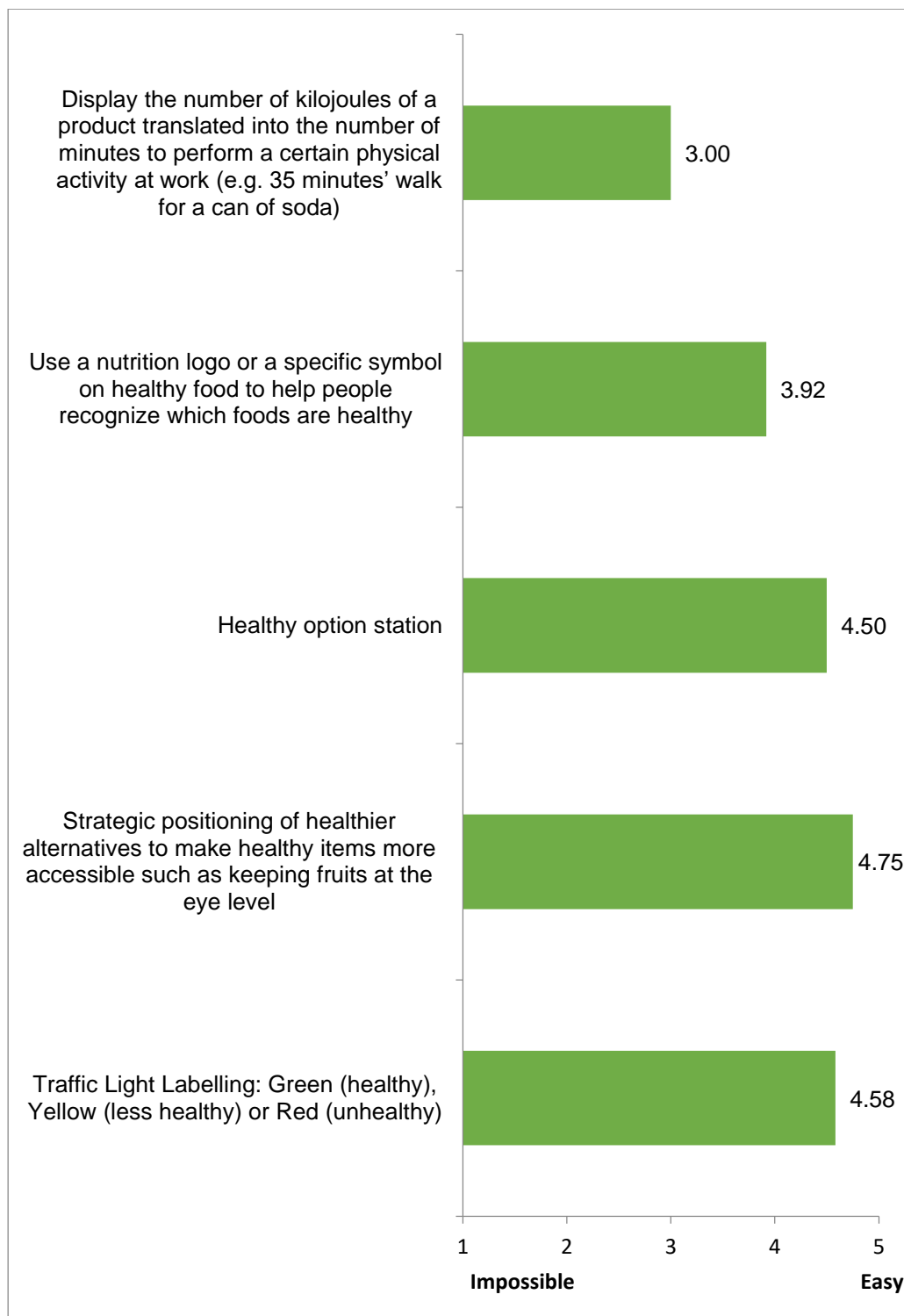


Figure 4.21: Mean rating of interventions targeting food choice at point of purchase

All interventions had a mean >3 with the strategic positioning of healthier alternatives to make healthy items more accessible with the highest mean of 4.75.

The one-sample t-test was done to determine if the average 'implementability' score differed significantly from the central score of '3'. As the sample size was so small, the non-parametric equivalent Wilcoxon signed ranks test, which tests if the median is significantly different from '3', was used.

Table 4.17: One sample t-test for interventions targeting food choice at point of purchase

Intervention	N	Median [IQR]	Mean (SD)	t	df	p-value
1. Traffic Light Labelling: Green (healthy), Yellow (less healthy) or Red (unhealthy).	12	5[4.25,5]	4.58 (.793)	6.917	11	<.001*
2. Strategic positioning of healthier alternatives to make healthy items more accessible such as keeping fruits at eye level.	12	5[5,5]	5 (.622)	9.753	11	<.001*
3. Healthy option station.	12	5[4.25,5]	4.5 (1.1680)	4.450	11	.001*
4. Use a nutrition logo or a specific symbol on healthy food to help people recognize which foods are healthy.	12	5[2.5,5]	3.92 (1.621)	1.959	11	.076
5. Display the number of kilojoules of a product translated into the number of minutes to perform a certain physical activity at work (e.g. 35 minutes' walk for a can of cold drink).	12	3[1.25,4.75]	3 (1.595)	0.000	11	1.000

* Indicates significance at the 95% level

Average ratings for items 1, 2 and 3 are significantly above the central rating of '3'. Thus these interventions are considered to be 'on the easy side' to implement.

Ten (n=10) participants reported that the easiest intervention to implement was the strategic positioning of healthy alternatives to make healthier items more accessible by, for example, keeping fruit at eye level. According to Baskin *et al.* (2016: 246), employers can impact the health of their employees' by changing the style and layout of their snack facilities, because environmental signals have a substantial influence on food consumption. It has been evident that shifting beverages away from snacks may lower snack consumption, gradually encouraging employees to move towards healthier choices as it has been observed that most employees entering a pause area purchased a beverage and being aware of the availability of enticing foods promotes their intake due to its close proximity. Nine (n=9) participants also found traffic light labelling and healthy option stations easy to implement. A study by Levy *et al.* (2012: 93) showed success in the implementation of an intervention where the initial phase was a colour-coded traffic light labelling system, with healthy items (labelled green) and unhealthy items (labelled red). The color-coded scheme to label all items red, yellow, or green was designed on the basis of the United States Department of Agriculture's 2005 My Pyramid healthy eating recommendations (United States Department of Agriculture 2005: 1-11). In the second phase, "choice architecture" was implemented by physically moving specific canteen items to make green-labelled food more accessible. According to Sonnenberg *et al.* (2013: 255), traffic light labelling requires high literacy and numeracy skills. Three (n=3) participants reported that the most difficult intervention to implement was the display of the kilojoules of a product translated into the number of minutes to perform a certain activity level at work. This could be difficult to implement as employees don't know how to do this and they require training. A study by Pridgeon and Whitehead (2013: 87) showed that employees thought canteen food was excessively high in kilojoules and preferred it for physically demanding jobs rather than office jobs.

4.6.4 Interventions targeting improved supply

Figure 4.22 represents the frequency of the ratings for interventions targeting improved supply by canteen managers and staff.

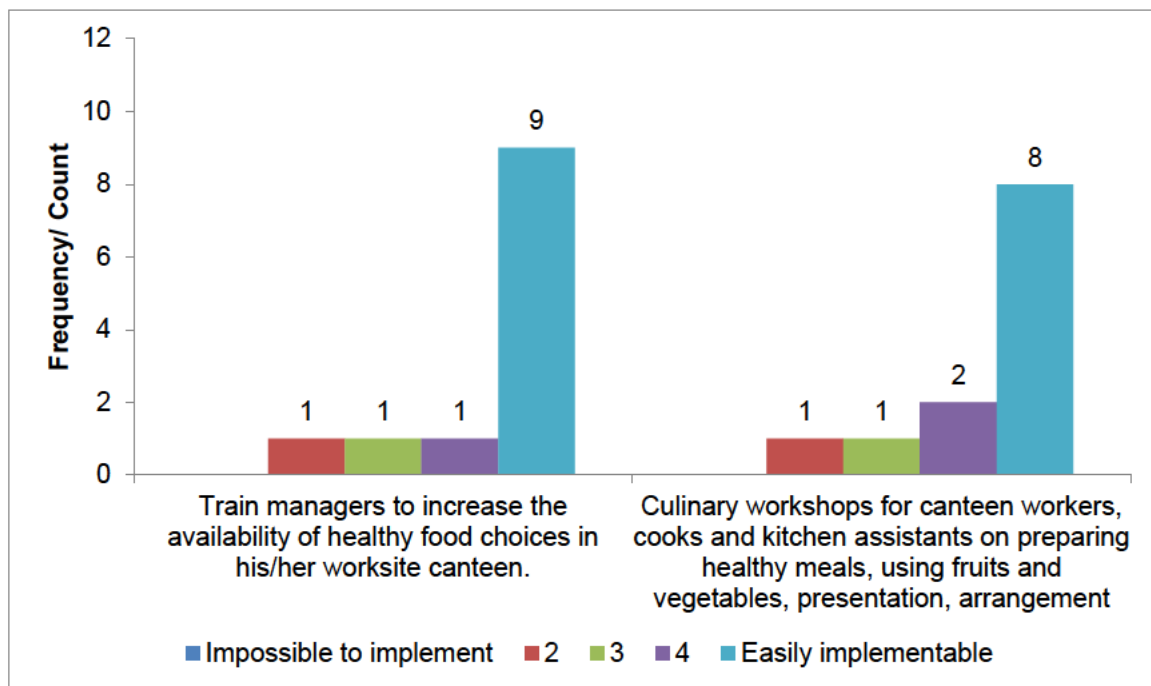


Figure 4.22: Frequencies of the ratings for Interventions targeting improved supply

Nine (n=9) participants reported that interventions to train managers to increase the availability of healthy foods choices in the worksite canteen was easy to implement followed by eight (n=8) who stated that culinary workshops for canteen workers, cooks and kitchen assistants on preparing healthy meals was also easy to implement.

Figure 4.23 graphically illustrates the mean of the ratings of the interventions targeting improved supply.

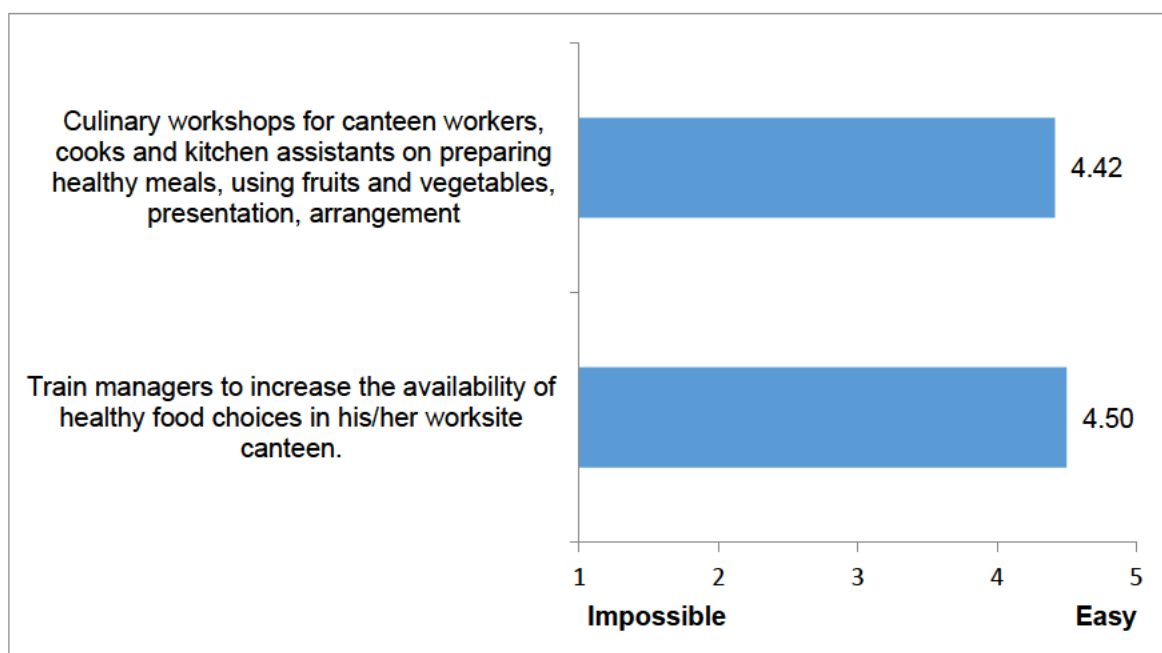


Figure 4.23: Mean rating of interventions targeting improved supply

All interventions had a mean >3 with interventions targeting to train managers to increase the availability of healthy foods in the worksite canteen having the highest mean of 4.50.

The one-sample t-test was done to determine if the average 'implementability' score differed significantly from the central score of '3'. As the sample size was so small, the non-parametric equivalent Wilcoxon signed ranks test, which tests if the median is significantly different from '3', was used.

Table 4.18: One sample t-test for interventions targeting improved supply

Intervention	N	Median [IQR]	Mean (SD)	T	df	p-value
1. Train managers to increase the availability of healthy food choices in his/her worksite canteen.	12	5[4.25,5]	4.50 (1.000)	5.196	11	<.001*
2. Culinary workshops for canteen workers, cooks and kitchen assistants on preparing healthy meals, using fruits and vegetables, presentation, arrangement.	12	5[4,5]	4.42 (.996)	4.926	11	<.001*

* Indicates significance at the 95% level

Average ratings for items 1 and 2 are significantly above the central rating of '3'. Thus these interventions are considered to be 'on the easy side' to implement.

Nine (n=9) participants reported that the easiest intervention to implement was to train managers to increase availability of healthy food choices in his/her worksite canteen. An intervention implemented by Fernandez *et al.* (2015: 2170) in North-eastern United States of America (USA) showed to be successful where chef training courses and dietitian-led refresher courses on healthier cooking methods were conducted. The most difficult intervention to implement was culinary workshops for canteen workers and kitchen assistants on preparing healthy meals using fruit and vegetables. This could be due to the time taken to train them or conduct culinary workshops as well as the demands of food service personnel (Hasan *et al.* 2019: 20).

4.6.5 Interventions targeting clients' information/education/motivation

Figure 4.24 represents the frequency of the ratings for interventions targeting clients' information/education/motivation by canteen managers and staff.

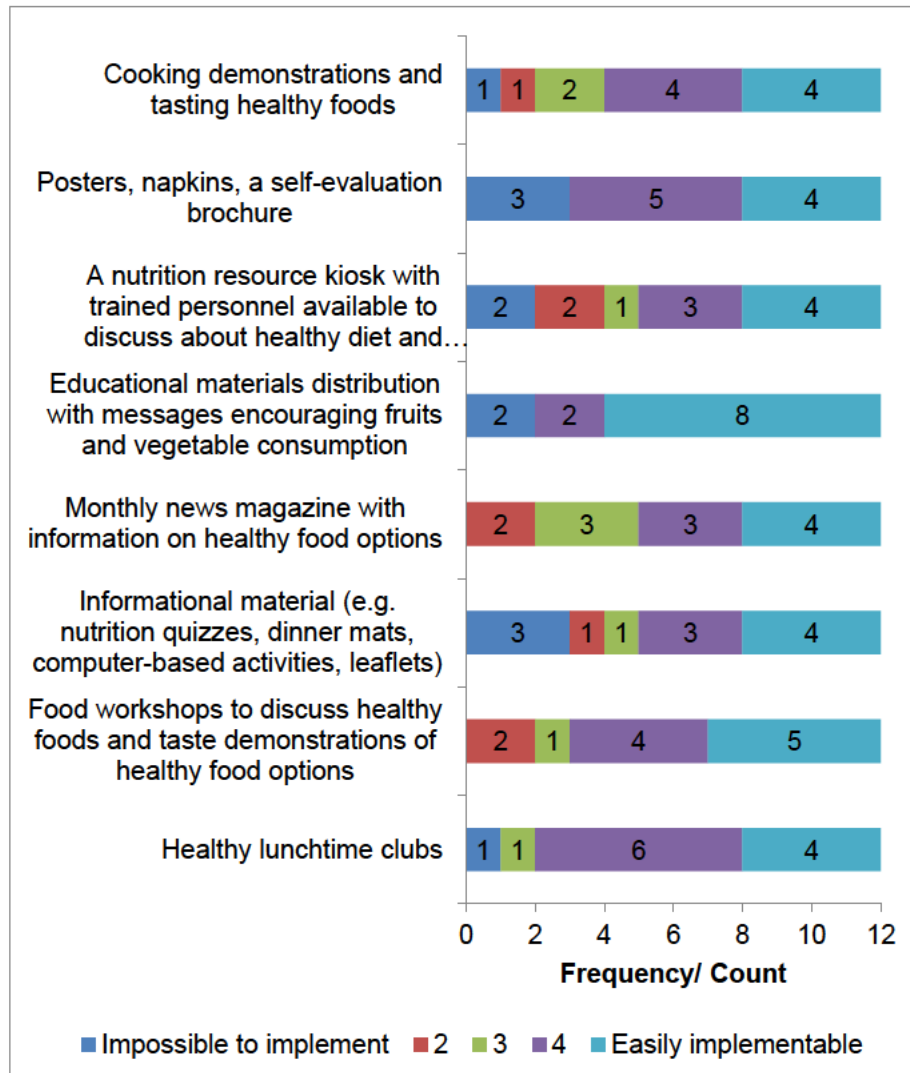


Figure 4.24: Frequencies of the ratings for interventions targeting clients' information/education/motivation

Eight (n=8) participants reported that educational materials distribution with messages encouraging fruits and vegetable consumption was the easiest intervention to implement followed by three (n=3) participants who found informational materials such as nutrition quizzes and computer-based activities; and posters, napkin, a self-evaluation brochure to be the most difficult to implement.

Figure 4.25 graphically illustrates the mean of the ratings of the interventions targeting clients' information/education/motivation.



Figure 4.25: Mean rating of interventions targeting clients' information/education/motivation

Table 4.19: One sample t-test for interventions targeting clients' information/education/motivation

Intervention	n	Median [IQR]	Mean (SD)	t	df	p-value
1. Healthy lunchtime clubs	12	4[4,5]	4 (1.128)	3.071	11	.011*
2. Food workshops to discuss healthy foods and taste demonstrations of healthy food options	12	4[3.25,5]	4 (1.128)	3.071	11	.011*
3. Informational material (e.g. nutrition quizzes, dinner mats, computer-based activities, leaflets)	12	4[1.25,5]	4 (1.670)	.692	11	.504
4. Monthly news magazine with information on healthy food options	12	4[3,5]	4 (1.443)	1.400	11	.189
5. Educational materials distribution with messages encouraging fruit and vegetable consumption	12	5[4,5]	5 (1.528)	2.646	11	.023*
6. A nutrition resource kiosk with trained personnel available to discuss a healthy diet and provide resources	12	4[2,5]	4 (1.564)	.923	11	.376
7. Posters, napkins, a self-evaluation brochure	12	4[1.75,5]	4 (1.621)	1.246	11	.239
8. Cooking demonstrations and tasting healthy foods	12	4[3,5]	3.75 (1.288)	2.017	11	.069

* Indicates significance at the 95% level

Average ratings for all items (1 to 8) are significantly above the central rating of '3'. Thus these interventions are considered to be 'on the easy side' to implement.

Eight (n=8) participants reported that the easiest intervention to implement was educational materials distribution with messages encouraging fruit and vegetable consumption. In order to encourage healthier meal choices, nutritional information was distributed in workplace canteens. VanEpps, Downs and Loewenstein (2016: 30) discovered that traffic light information was more beneficial than precise information regarding the exact kilojoule content in motivating employees to purchase food items with less kilojoules. Three (n=3) participants reported that the most difficult intervention to implement was information material, for example, nutritional quizzes, leaflets, and computer-based activities.

4.6.6 Interventions targeting organisation policies

Figure 4.26 represents the frequency of the ratings for interventions targeting organisation policies by canteen managers and staff.

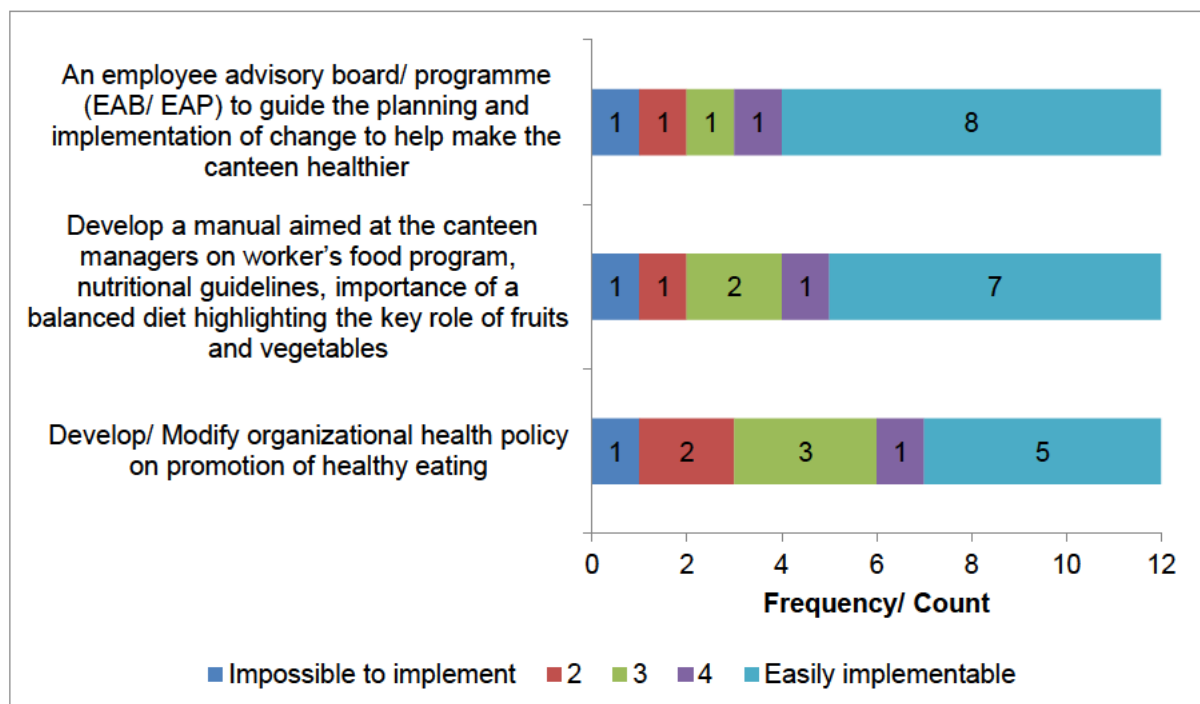


Figure 4.26: Frequencies of the ratings for interventions targeting organisation policies

Eight (n=8) participants reported that an employee advisory board/programme to guide the planning and implementation of change to help make the canteen healthier was the easiest to implement. One (n=1) participant reported that the most difficult intervention to implement was to develop/modify Organisational health policy on the promotion of healthy eating.

Figure 4.27 graphically illustrates the mean of the ratings of the interventions targeting organisation policies.

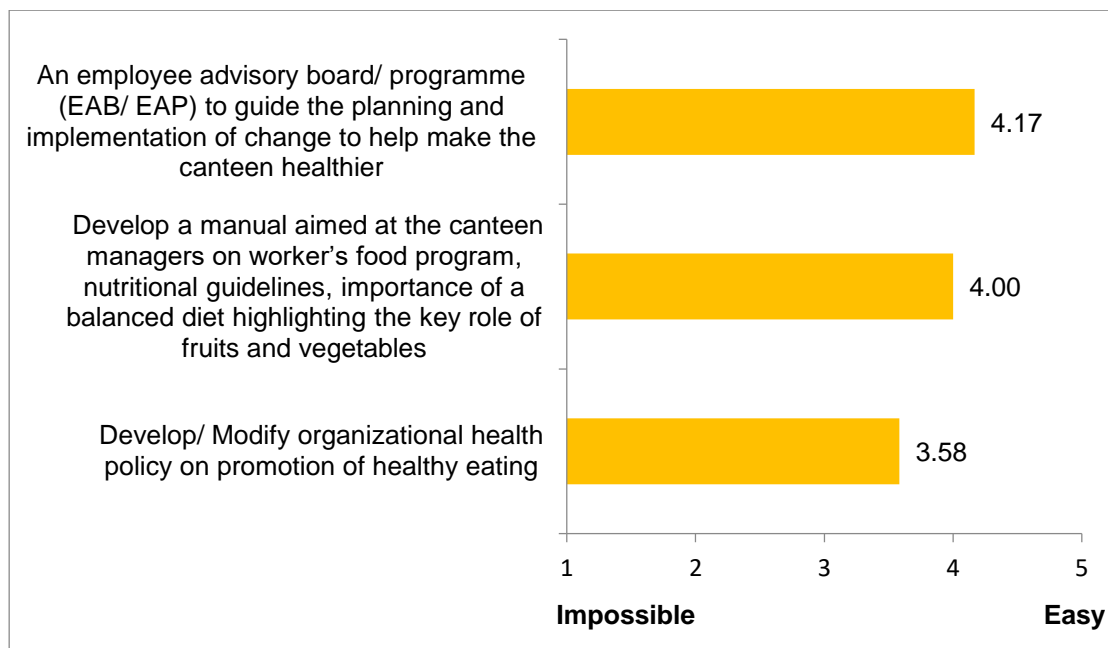


Figure 4.27: Mean rating of interventions targeting organisation policies

Table 4.20: One sample t-test for interventions targeting organisation policies using a one sample t-test

Intervention	n	Median [IQR]	Mean (SD)	t	df	p-value
1. Develop/ Modify Organisational health policy on promotion of healthy eating	12	3.5 [2.25,5]	3.58 (1.443)	1.400	11	.189
2. Develop a manual aimed at the canteen managers on a worker's food programme, nutritional guidelines, importance of a balanced diet highlighting the key role of fruits and vegetables	12	5 [3,5]	4.00 (1.414)	2.449	11	.032*
3. An employee advisory board/ programme (EAB/ EAP) to guide the planning and implementation of change to help make the canteen healthier	12	5 [3.25,5]	4.17 (1.403)	2.880	11	.015*

* Indicates significance at the 95% level

Average ratings for items 2 and 3 are significantly above the central rating of '3'. Thus these interventions are considered to be 'on the easy side' to implement.

Eight (n=8) participants reported that the easiest intervention to implement was an employee advisory board or programme to guide the planning and implementation of change to help make the canteen healthier. According to Geaney *et al.* (2011: 1346), an organised catering strategy that is continued over time may affect long-term healthy eating choices at home and at work. One (n=1) participant reported that the most difficult intervention was to develop or modify Organisational health policy on promotion of healthy eating. The Food Choice at Work interventions may persuade national and international catering players, policymakers, and the food sector to provide healthier food options (Geaney *et al.* 2011: 1348).

4.7 Scoping review on front of pack labelling (FOP)

A scoping review was conducted on FOP labelling schemes to inform the selection of a FOP labelling scheme best suited for canteen foods at worksites in SA. Several articles (n = 2513) were identified and

screened after excluding duplicates ($n = 2474$). Overall, 1347 articles were excluded from the study because their abstracts and titles did not match the qualifying criteria (figure 4.28). The grounds for withdrawing the other studies ($n = 921$) were that they did not meet the requirements for inclusion. A total of six articles was used in the qualitative analysis after a full-text review of the remaining articles. The six studies in the final review included countries such as Europe, France, Australia, Chile, Denmark, and the Eastern Mediterranean Region (Refer to article -Appendix N). Table 4.20 summarises the studies reviewed to categorise foods according to the FOP labelling scheme.

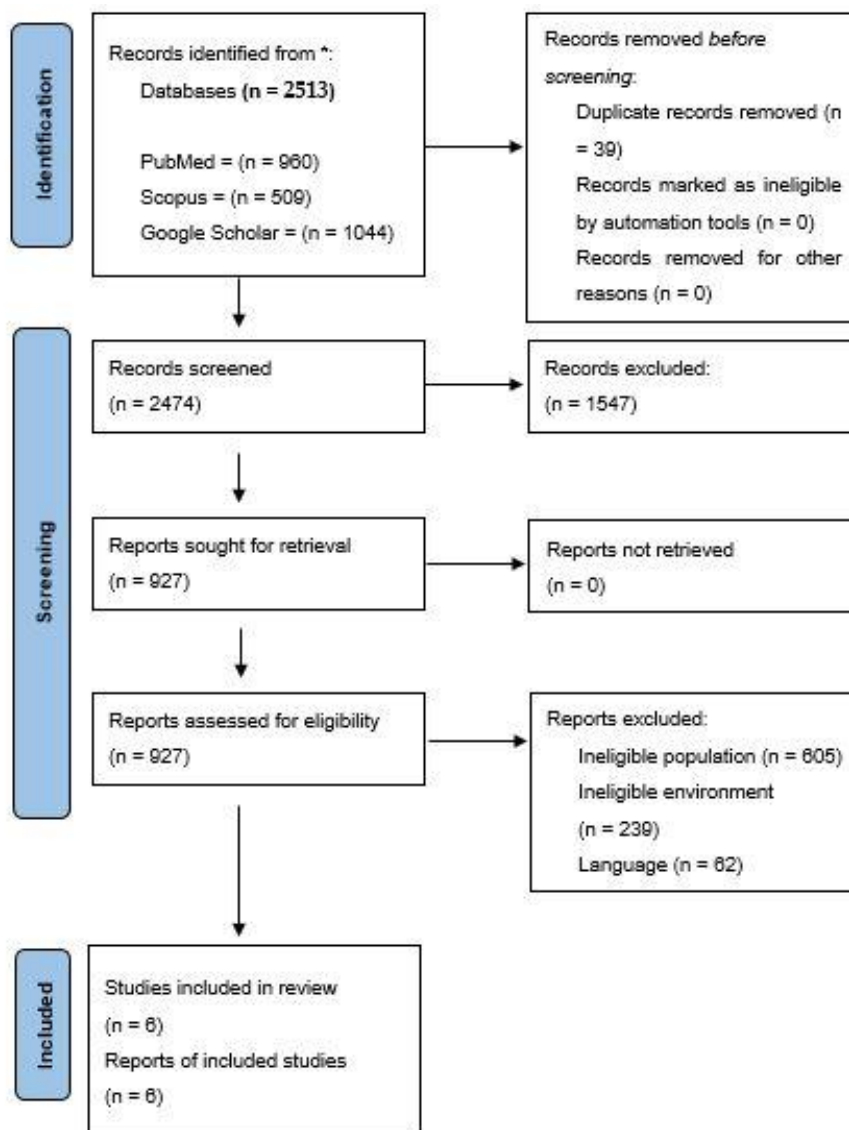


Figure 4.28: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow (Page *et al.* 2021: 5)

Table 4.21: Review of FOP labelling scheme studies to categorize food by relative healthfulness

FOP Labelling Scheme	Author, Year, Location	Population	Results of Study	Limitations
Endorsement Logo	Jewell (2019) Europe	13 countries: Croatia, Czechia, Denmark, Finland, France, Iceland, Israel, Lithuania, Norway, Poland, Slovenia, Sweden, the United Kingdom, Belgium, and the Netherlands. Study population not reported.	The aim of the logo is to suggest options that are better for you but provide no clear details to suggest whether a product is unhealthy. Front of packaging labelling (FOLP) policies were supported by government in three countries that provided directive details on product healthiness. This included nutrient-specific warning labels, a summary indicator system providing information on the overall nutrition quality of a product, and an interpretive system providing both numerical and colour-coding information on the contribution a food makes to a nutrient 's prescribed daily intake.	Lack of information on formal provisions for the assessment of FOPL policies as part of label implementation, while scholarly reviews have provided proof in encouraging the consumer and reformulation objectives.

FOP Labelling Scheme	Author, Year, Location	Population	Results of Study	Limitations
Summary indicator system: Nutri-Score information system	Hurtado <i>et al.</i> (2020) France	Study population not reported.	The nutritional profiles developed by the United Kingdom British Food Standards Agency Nutrient Profile System (FSA-NPS) were used as the scoring criteria for the nutritional profiles of Food Standards the Australian and New Zealand, the model of nutritional profiles in SA, and the model of nutritional profiles in Ireland. The FSA algorithm consists of a basic scoring system in which points are assigned on the basis of per 100 g of product nutrient material.	FOPL development: it may not be considered acceptable to use a dichotomous scoring system (with binary scoring suggesting the definition of good and bad food products). Taking this into account, Santé Publique (Public Health) France, in collaboration with the University of Paris, created five nutritional quality categories based on the British FSA-NPS, in order to ensure a high degree of discrimination within each food and beverage division, while retaining a core category in order to

FOP Labelling Scheme	Author, Year, Location	Population	Results of Study	Limitations
				avoid classifying food items as good or bad.
Nutrient-specific interpretive system: Traffic Light Labelling	Al-Jawaldeh <i>et al.</i> (2020) Eastern Mediterranean Region	Study population not reported	<p>Three countries in the area have been reported as introducing front-of-pack nutrition labelling schemes, and three more schemes are in progress. In the area, the regimes listed fell into three categories:</p> <ul style="list-style-type: none"> • The nutrient-specific traffic light labelling (Islamic Republic of Iran, Kingdom of Saudi Arabia, United Arab Emirates); • The Nutri-Score summary graded label (Morocco); • Health or endorsement logos (Abu Dhabi and Tunisia). 	In real world environments, there is not enough testing. No conclusive proof exists as to which particular scheme is most successful. The most suitable FOP labelling scheme can differ from country to country, so policy makers need to select the scheme that is most appropriate for their unique national background.

FOP Labelling Scheme	Author, Year, Location	Population	Results of Study	Limitations
Endorsement Logo—Keyhole logo	Mørk <i>et al.</i> (2017) Denmark	Males older than 35 years old with poor educational standards	In two out of three supermarket outlets investigated, the initiative had a positive impact on sales of keyhole labelled items. Sales of keyhole branded goods increased by approximately 20% in these two retail chains. There was a slight decline in sales of keyhole branded goods in the third chain. The impact varied considerably between categories of goods. Interview data analysis found that shoppers with poor education had a greater likelihood of mentioning health as a purchase motive by the end of the campaign, and there was a higher general propensity to search for nutrition information.	The findings are based on a few selected stores examined. As the frozen ready-to-eat meal counter was not very well visited, the observation / interview portion of the analysis is restricted by the range of product categories and may be one of the categories where a nutrition label may have a reverse effect. The experiments were also carried out within a short time frame, and it was therefore not possible to calculate the long-term impact of the initiative.

FOP Labelling Scheme	Author, Year, Location	Population	Results of Study	Limitations
Nutrient-specific interpretive system: Australian Health Star Rating System	Anderson and O'Connor (2019) Australia	Males and females aged 17–83 years old from the community and psychology students from the Queensland University of Technology.	<p>The purpose of this study was to see how the Australian HSR affects consumer decision-making in various comparative processing scenarios.</p> <p>Individuals were asked to complete six binary forced-choice comparisons wherein the appearance of the HSR and the nutritional status (high or low) of the cereal products were both changed. Participants were also asked to rate their willingness to buy the products. As opposed to prior research, consumers did not interpret the existence of the HSR as a sign of a healthier alternative. This indicates that the level of cognitive processes required to assess the HSR system is suitable for successful decision-making.</p> <p>When evaluating a product excluding a HSR label against a product including a HSR label, individuals who did not review the back-of-pack (BOP) nutritional information were more likely to make less informed choices. Irrespective of BOP viewing, consumers' capacity to choose healthier items was</p>	<p>The participants in this study were predominantly women, aged 17–24, with secondary school education. One of the limitations in the study is that the results may not be reflective of the average working-class Australian household. Future studies should include a more diverse group as results that are used to inform public policies must be generalizable.</p> <p>Another limitation is that when respondents had no apparent product preference, the forced-choice method may have</p>

FOP Labelling Scheme	Author, Year, Location	Population	Results of Study	Limitations
			enhanced when both products exhibited a HSR (namely a mandated labelling). This shows that consumer decision-making is influenced by the sort of comparison environment. Consumers' propensity to purchase products with low and high nutritional content was also found to be affected differently by nutrition knowledge.	inadvertently altered consumer decisions.
Endorsement Logo	Reyes <i>et al.</i> (2019) Chile	Study population not reported.	Information on general text, for example, short wording and design characteristics (such as the use of the logo, and the use of red or black colours), was presented in the literature review and qualitative stage; 15 prototypes were produced and quantitatively evaluated on the basis of the selected characteristics. A black and white stop sign, and a black and white hand were preselected in the first survey. In the second survey, in terms of visualization, intention to buy and willingness to change the planned purchase, the stop sign saying 'Excess of <nutrient>' had a considerably higher score than the hand.	The FOP warning label suggested in this article was introduced by the Chilean Minister of Health by replacing the words 'Excess of' with 'High in' because the language of the legislation did not permit the use of 'Excess of'. A communication campaign to present the latest alert message was launched to ensure that individuals correctly

FOP Labelling Scheme	Author, Year, Location	Population	Results of Study	Limitations
				<p>interpreted the significance of 'High in'. The use of the term 'High in' as a beneficial food attribute (that is, high in vitamins) was forbidden.</p>

Front-of-pack nutrition labelling is one of the evolving structural initiatives undertaken to enhance the food environment to address the steadily rising burden of diet-related NCDs. It is an inexpensive method that delivers simple and at-a-glance nutritional information to support consumers in making informed food choices at the point of purchase (Shrestha 2022: 3). In an attempt to address the NCD crisis in SA, an intervention, such as the promotion of a healthy diet through the supply of proper nutrition information on food labels, along with consumer education to help understand nutrition labels, is required.

Grading foods into categories of healthfulness through evidence of key nutritional dimensions is a practical tool to inform food environment interventions that may assist in public health promotion by influencing consumer choice in workplace canteens and beyond. It is recommended that because worksite canteen food sales in SA include both packaged and cooked food, a general test of various labelling schemes should be conducted to determine if a directional change is made towards purchasing healthier foods. Grading foods using interpretational aids adapted to the SA context into categories of relative healthfulness can be a practical tool to inform food environment interventions at worksite canteens and beyond (refer to article - Appendix N).

4.8 Interventions

Objective 6 was to develop the canteen and a physical environment intervention programme using the findings from the formative study. The results from the FGDs and IDIs and nutritional resources were used to develop the physical and canteen intervention. The structured observations assisted in developing interventions for the physical environment.

Below is a list of interventions (Table 4.22) detailing the tools to be used and the responsibilities for executing the six weeks' intervention for phase three of the study. Some interventions will run parallel to each other, and the dose of each intervention will vary; for example, parts of intervention theme one may run throughout the six weeks, whilst another intervention will be actioned for two weeks. The intervention will be audited weekly by RAs for compliance and to address any challenges to support canteen staff.

Before the intervention starts, the top main selling meal will be sent to the DUT food technology laboratory for nutritional analysis. Feedback on the analysis will be shared with the canteen manager.

Table 4.22: List of interventions detailing the tools to be used and the responsibilities for executing the six weeks' intervention for phase three of the study (Naicker 2022)

	Intervention theme	Tools	Responsibilities
1	Water	<ul style="list-style-type: none"> • Education materials on benefits, functions of water, ways to increase water – posters and table tents (English, iXhosa and isiZulu) • Infused water stand • Provision of water coolers at some sites without coolers • Suggestion box (for recommendations and commendations) 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • DUT to provide consumables for infused water • Canteen staff oversight of infused water and water coolers • DUT to provide materials (Canteen staff and DUT RAs to review weekly)
2	Reducing salt	<ul style="list-style-type: none"> • Education materials on the benefits of lowering salt in the diet, list of high and low sodium foods – posters and table tents (English, iXhosa and isiZulu) • Testing of salt in prepared dishes using provided salt meters and making small changes thereafter • Low sodium cooking demonstration and taste testing 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • DUT RAs to train canteen staff on how to test for the amount of salt in prepared food. • Small change in salt amount and adoption of tips to reduce salt in meals (Canteen staff) • DUT RAs to conduct a cooking demonstration and taste testing for canteen users – employees attending the canteen demonstration on low sodium cooking • Sensory feedback (DUT RAs to run these to test for acceptability of prepared food with a small reduction in salt)
3	Reducing fat – promoting healthy fats	<ul style="list-style-type: none"> • Education materials on the benefits of lowering fat in the diet and tips to lower fat through posters and table tents 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • Priming and prompting of a low-fat meal (DUT to

	Intervention theme	Tools	Responsibilities
		<ul style="list-style-type: none"> • Priming and prompting of a low-fat meal option • Seed sprinkle bar set up at each site 	<p>provide training and consumables for this)</p> <ul style="list-style-type: none"> • Sensory feedback (DUT to run these to test for sensory acceptability)
4	Increasing fruit and vegetables in the diet	<ul style="list-style-type: none"> • Education materials on the benefits of increasing fruit and vegetables in the diet – posters and table tents • Introduce highly flavoured veg dishes/salads (variants each day of the week) 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • Priming and prompting of increased vegetable meals (DUT to provide training and consumables for this) • Sensory feedback (DUT to run these to test for sensory acceptability)
5	Increasing unrefined carbohydrates	<ul style="list-style-type: none"> • Education materials on the benefits of unrefined carbohydrates in the diet, including low GI foods – posters and table tents • Education materials on the amount of sugar in food and non-nutritive sweeteners • Showcase one unrefined starch dish, pulses, legumes and indigenous foods (variants each day of the week) 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • Priming and prompting of increased unrefined starch and legumes etc. (DUT to provide training and consumables for this) • Sensory feedback (DUT to run these to test for sensory acceptability)
6	Choice architecture	<ul style="list-style-type: none"> • Education materials on calorific labelling, physical activity – walking messages and the use of stairs • Heart-healthy labelling • Traffic light labelling • Healthy meal options 	<ul style="list-style-type: none"> • Calorific, heart healthy/traffic light/ healthy meal labelling of cooked and packaged foods – to be placed at the canteen (DUT RAs)

4.9 Training of canteen managers

Objective 7 was to train canteen managers for the implementation of the food environmental intervention using the training manual that was developed by the researcher (Appendix M). Together with the leader of the service company, the researcher and the supervisor coordinated the canteen training. The research team and the leader of the service company both had access to the manual before the training. All canteen staff from the six worksites were invited to attend the training. The training was conducted over two days at the Durban University of Technology Rendezvous restaurant. Topics such as healthy eating, the SA Food Based Dietary Guidelines (SAFBDGs), the Healthy Eating Plate, the EatWell Plate, The SA Plate of the Nation, seasonal availability, portion control and portion sizes, food labelling, sensory evaluation and choice architecture was discussed. Cooking demonstrations and instructions on how to use specific tools, such as salt meters, were also part of the training. The researchers also suggested appropriate food environment interventions that may be implemented. This was the first official training session for some canteen staff. Refreshments and light lunches were served to all staff. The canteen staff were presented with certificates after completion of the training.



Figure 4.29: Food items prepared during the demonstrations at the training (Singh 2022)

AGENDA

DATE: 29/30 August 2022

8:30-9:00	Registration
09:00 - 9:50 09:50 - 10:00	Healthy Eating - SA Food Based Dietary Guidelines, The Healthy Eating Plate, the EatWell Plate, The SA Plate of the Nation Seasonal availability Demo: Salt meter
10:00 - 10:30	Demo: Stir fry/ Egg fried rice
10:30 - 10:45	Tea
10:45 - 11:15 11:15 - 11:30	Portion control and portion sizes Demo: Umfino
11:30 - 12:00 12:00 - 12:15	Food labelling Demo: Bean salad, Hotpot
12:15 - 12:45 12:45 - 13:00	Sensory Evaluation - taste test Taste testing
13:00 - 13:30	Lunch
13:30 - 13:50 13:50 - 14:00	Choice architecture Demo: Grains
14:00 - 14:30	Proposed interventions Questions

Figure 4.30: Agenda for the worksite canteen intervention training



Department of Food and Nutrition

Certificate of completion

This certificate has been awarded for successfully completing the worksite canteen intervention training.

Awarded by
Dr A Naicker
Senior Lecturer

Ms Shivneta Singh
Researcher

ENVISION2030 transparency • honesty • integrity • respect • accountability
fairness • professionalism • commitment • compassion • excellence

Figure 4.31: Example of the certificate that was awarded to canteen employees



Figure 4.32: Researcher presenting the certificate to the canteen employee after the worksite canteen intervention training (Singh 2022)

4.10 Conclusion

Chapter 4 included the results and discussion of the study. The analytical strategy for the structured observations, IDIs, FGDs, scoping review on FOP labelling and intervention rating scale used assisted us to understand which intervention components were more likely to be implemented successfully, both in the physical and food environment. The findings from this formative study will be used to design the worksite interventions in phase 3 of the SA Pioneer Worksite Intervention Study. The conclusions and recommendations for this study will be highlighted in the following chapter (Chapter 5).

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Given that the results are presented in the preceding chapter, only the conclusions of this study are included in this chapter. A summary of the main findings of the study are presented, and the study's limitations, strengths and recommendations will be addressed. The purpose of the study was to establish an acceptable, appropriate and feasible worksite intervention that would inform the design of the food environment and behavioural interventions to reduce cardiometabolic risk at a worksite in SA.

5.2 Main findings

The study was conducted at Unilever SA at six worksites in the KZN and Gauteng provinces and one worksite at Retailability Head Office in the KZN province.

Objective 1: To determine the capacity of the built environment through structured observations of the canteen and physical environment to offer healthy food and promote physical activity.

The physical environment

The worksites in this study were mainly situated in an urban decentralised area. All worksites had good outside pedestrian infrastructure. It was observed that there were no cycling paths to the worksites; however, public transport was easily accessible to employees. In general, all manufacturing sites were constructed on a flat surface. Walking tracks were demarcated within the worksites; however, there are no signage prompts to encourage walking. Stairwells were clean, well lit, easily visible and accessible at each building; however, the health benefits of the use of stairs were not displayed. Staff at Unilever Head Office and Retailability have a fully equipped gym whilst the manufacturing sites only have changing facilities. An approach to encourage physical activity and enhance health is to alter the physical environment; it was therefore essential to conduct an environment assessment of the internal and external physical environment for designing practical and contextualised interventions to promote physical activity at the worksites.

The food environment

The canteens offered five contract dishes and had a four-week menu cycle. The contract meals served on the menu were cost-effective. There were subsidised meals at the worksite canteens; however, the healthy meal option was the most expensive meal at the canteen. Pre-made and pre-packaged food options were sold at the canteens and displayed closer to the point of sale. Packaged foods were available at the vending machines at Unilever Head Office and Unilever Lordsvue. There were several pause areas and tea stations at the worksites. Employees used the pause areas as a break room but, more significantly, it allowed them to escape from their daily routine. Employees generally prepared hot beverages at the tea and coffee

stations. The tea stations also had a microwave and fridge that employees could use to warm or store their lunches. Promoting healthy food at canteens and vending machines, providing access to clean water, and decreasing the cost of fruits and vegetables are some of the specific methods that are advised for establishing a healthy workplace food environment.

Objective 2: To conduct semi-structured IDIs with worksite and canteen managers, and FGDs with employees, to understand the appropriateness, acceptability and feasibility of changes at the worksite.

Several themes and sub-themes emerged from the IDIs with worksite managers including availability, peak production periods, worksite resources and barriers to participation. The results from the IDIs indicated the appropriateness, acceptability and feasibility of changes at worksites and explored the perceptions, provisions, drivers and barriers to healthy eating at the worksite environment. Participants highlighted that the best times to hold lifestyle classes would depend on availability, whilst the worst times would be peak production periods. Due to shift work, there is a variance in staff availability, which makes it challenging to plan and implement the health classes. Participants indicated that a multimodal approach should be used to conduct the lifestyle education classes. It was suggested that the training room and/or gym area would be an ideal location to conduct the lifestyle classes as it is well ventilated and spacious. The two main facilitators for employees to participate in the lifestyle classes were incentivisation and worksite support and lessons should be engaging, whilst the barriers to participation were production deadlines, fear of maintaining confidentiality, feeling uncomfortable participating in a group, connectivity challenges for online classes, and support from managers.

Numerous themes and sub-themes emerged from the IDIs with canteen managers including a healthy food environment, information dissemination, employee preferences and canteen enablers. The results from the IDIs indicated the appropriateness, acceptability and feasibility of changes at worksites and explored the perceptions, provisions, drivers and barriers to healthy eating at the worksite environment. There are healthy food and beverage options currently available on the menu at all canteens. However, the participants stated that through disseminating information, they could encourage employees to consume healthier foods and beverages. Employee preferences and canteen enablers were the two primary elements that were significant when developing a canteen menu. Provisioning of healthy food options and promotions such as employee preference, a larger variety of healthy foods and a smaller variety of unhealthy foods and promotional health days facilitated healthy eating and drinking at worksite canteens although the cost of healthy food, self-efficacy, and canteen staff capability are factors that have prevented healthy eating and drinking at the worksite canteen.

Many themes and sub-themes emerged from the FGDs such as nutrient-dense foods and water, nutrient-poor foods and energy-dense beverages, the food environment and healthy longevity. The results from the IDIs indicated the perceptions, provision, drivers and barriers of healthy eating at the worksite. Healthy eating and drinking was associated with nutrient-dense foods and the drinking of water, whilst nutrient-poor foods and energy-dense beverages were described as unhealthy food and beverages. The main factors that determined participants' food and beverage choices were the food environment and healthy longevity.

Convenience, cost of meals, taste, environment, promotions, family influence, culture, stress or mood were all determinants of food and beverage choices. Participants identified the barriers to healthy food access as factors that prevented them from choosing healthy food and beverages. These factors included availability, affordability, convenience, mood, skill to prepare meals, limited variety of healthy meals, and poor sensory appeal of healthy meals. The best way to organise lifestyle programmes at the worksite was described using the words scheduling and mode. Participants highlighted that certain factors should be taken into consideration when designing the lifestyle programme such as multimodal lifestyle classes with proper scheduling from managers, staff on leave must be accommodated, the size of the class would depend on the training venue size and lesson times should be communicated in advance. The two main barriers to participating in the lifestyle programme were time limitations and self-efficacy. The findings from the IDIs and FGDs specified that there are facilitators and barriers to healthy eating and drinking at the worksite food environment. To successfully develop and implement interventions at the worksite food environment, it is essential to identify the facilitators and barriers so that they may be addressed.

Objective 3: To determine the worksite readiness to implement change through the Organisational Readiness for Implementing Change (ORIC) Questionnaire.

There were some ORIC statements that Unilever and Retailability employees agreed with whilst there were other ORIC statements that Unilever and Retailability employees disagreed with. One of the three highest scored statements for both worksites was, "I am committed to implementing this change." The three ORIC statements that employees disagreed with, with varying scores were "I have the equipment we need to implement this change", "I have the resources we need to implement this change" and "I have the expertise to implement this change." This result indicated that there was a common disagreement with the ORIC statements for both Unilever and Retailability worksites. This would have a negative impact on the design and implementation of the intervention, therefore it should be considered when designing the interventions.

Objective 4: To apply an intervention rating scale to canteen intervention components and delivery strategy to worksite managers and canteen managers.

The results of the intervention rating scale indicated that there were interventions which would be easy to implement such as increasing fruit and vegetable choices, the provision of free water and the addition of a salad bar and ready-to-eat healthy meals, whilst there were interventions that would be more difficult to implement at the worksite canteens. These include reducing sugar consumption, reducing carbonated soft drinks, removing trans-fat and reducing portion sizes of food. It is easier to implement the provision of free water intervention as it is a low-cost, non-invasive technique for improving individual health outcomes. Participants indicated that offering healthier foods such as fruits, fresh juice, and whole grains at a reduced price would be easiest to implement for interventions targeting price whilst the most difficult to implement would be interventions such as price discounts for whole fruits. This could be due to profitability. The easiest interventions to implement for interventions targeting food choice at point of purchase would be the strategic positioning of healthier alternatives to make healthy items more accessible, traffic light labelling, and healthy option stations whilst participants highlighted that the most difficult to implement would be the display of

kilojoules of a product translated into the number of minutes to perform a certain physical activity. Repositioning beverages away from snacks may lower snack consumption, gradually encouraging employees to move towards healthier choices. Participants reported that interventions to train managers to increase the availability of healthy food choices in the worksite canteen would be the easiest to implement for interventions targeting improved supply whilst the most difficult would be culinary workshops for canteen workers and kitchen assistants on preparing healthy meals using fruit and vegetables. This could be due to the time required to train or conduct culinary workshops as well as the demands made on food service personnel. Participants reported that food workshops to discuss healthy foods and taste demonstrations of healthy food options would be the easiest intervention to implement followed by informational materials such as nutrition quizzes and computer-based activities that would be the most difficult to implement. In order to encourage healthier meal choices, nutritional information should be distributed at workplace canteens. An employee advisory board/programme to guide the planning and implementation of change to help make the canteen healthier for interventions targeting organisation policies seen as the easiest to implement while the most difficult intervention to implement would be to develop/modify organisational health policy on the promotion of healthy eating. An organised catering strategy continued over time may affect long-term healthy eating choices at home and at work.

Objective 5: To conduct a scoping review on Front of Pack labelling schemes to inform the selection of a FOP labelling scheme best suited for canteen foods at worksites in SA.

Grading foods into categories of healthfulness through evidence of key nutritional dimensions is a practical tool to inform food environmental interventions that may assist in public health promotion by influencing consumer choice in workplace canteens and beyond. It is recommended that because worksite canteen food sales in SA include both packaged and cooked food, a general test of various labelling schemes should be conducted to determine whether a directional change is being made towards purchasing healthier foods. Grading foods using interpretational aids adapted to the South African context into categories of relative healthfulness can be a practical tool to inform food environmental interventions at worksite canteens and beyond.

Objective 6: To develop the canteen and a physical environment intervention programme using the findings from this formative study.

The results from the FGDs and IDIs and nutritional resources were used to develop the physical environment and canteen intervention programme. The structured observations assisted in developing interventions for the physical environment. A list of interventions detailing the tools to be used and responsibilities for executing the six weeks' intervention for phase three of the study.

Objective 7: To develop the intervention training manual and train canteen managers for the implementation of the food environment intervention.

The canteen managers indicated that they found the training manual to be very informative and that they were willing to use it for the implementation of the food environment intervention.

5.3 Limitations of the study

- The intention was to conduct the study at one worksite; however, all Unilever coastal and inland sites including Retailability, which shared a space with Unilever Head Office, were included at the request of management. Every attempt was made to collect data from each worksite using all the data collection instruments; however, the complexity of dealing with seven worksites meant that where worksites such as the inland sites were similar, qualitative data was only collected at the most representative site. Of the Unilever inland sites, two of the three work sites were not included in the IDIs, FGDs, intervention rating scale, or ORIC questionnaire. Data was collected at the most representative worksite as all the inland sites were comparable.
- One of the main challenges of the study was the COVID-19 pandemic. Due to the lockdown, there was a delay in the study as access to worksites was restricted.
- The recruiting process for the IDIs and FGDs was challenging since it had to be organised around participant availability and occasionally it was rescheduled due to cancellation or job commitments. Management assisted the researcher by confirming the availability of employees and scheduling a date and time most suitable to all participants. Management then confirmed with the researcher and a venue to conduct the IDIs and FGDs was booked.
- A few IDIs and FGDs were conducted online through Microsoft Teams during the COVID-19 lockdown. Poor internet connectivity led to technical glitches, which disrupted the discussion however every effort was made to reconnect with the participant.
- This study was conducted amongst Retailability Head Office employees only. Data may differ from other Retailability worksites.
- There were challenges recruiting participants to complete the ORIC questionnaire as it was conducted during lunch time and not many employees had enough time to complete it or were not willing to sacrifice their lunchtime to complete it. The researcher and research assistant made several visits to the worksites to complete the questionnaires until the required sample was reached. Additionally, a link to complete the questionnaire online was sent via email.
- The communication strategy was challenging as in some cases messages did not filter through from top management down to the workers.

5.4 Strengths of the study

- To the best of the researcher's knowledge, this study is the first to investigate an acceptable, appropriate and feasible worksite intervention to inform the design of the food environment and behavioural intervention to lower cardiometabolic risk at a worksite in SA.

- The worksite that was selected for this study is a multinational company, which is representative of other multinational companies in SA, hence broadening contextual scalability to other worksites in SA.
- In this study, all employees across designations were encouraged to participate in formative assessments to create inclusivity and guide the interventions bouquet selected.

5.5 Recommendations

Practise

- It is recommended that multifaceted interventions be implemented at the worksites instead of single-component interventions as it would be more beneficial.
- Sales data of canteen foods should be used to guide the design of the canteen interventions

Further research

- The study should be scaled up to other worksites to determine the comparativeness of this study to the response of other worksites regarding the acceptability, appropriateness and feasibility of worksite interventions.
- A standardised rapid analysis tool to assess the worksite environment should be developed to determine responsiveness of the worksite to lifestyle interventions and to contextualise intervention for a worksite

5.6 Conclusion

Interventions are a useful tool that can be used in worksite settings to improve employees' overall occupational well-being. Interventions targeting the food environment and behavioural intervention can promote healthy eating behaviours and reduce cardiometabolic risk. It is important to take into account organisational complexity and the built environment when designing an intervention. In this study, formative research methods were used to engage worksite stakeholders to develop an intervention plan that is both theoretically and practically grounded to foster institutionalisation of the intervention. The findings of this study was used to contextualise and guide the development of acceptable, appropriate and feasible worksite food environment and behavioural intervention to reduce cardiometabolic risk among South African employees. The methods used allows for drawing of general conclusions for the implementation of lifestyle and food environment changes at worksites in SA. It is recommended that that the study should be scaled up to other worksites to determine the comparativeness of this study to the response of other worksites regarding the acceptability, appropriateness and feasibility of worksite interventions.

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Appendix A: IREC approval letter



10 May 2021

Ms S Singh
69 Desertpalm Gardens
Palmview
Phoenix
4068

Dear Ms Singh

Design of a worksite intervention to lower cardiometabolic risk in South Africa
Ethical Clearance Number IREC 078/20

The Institutional Research Ethics Committee acknowledges receipt of your gatekeeper permission letter.

Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'K Padayachy', is written over a horizontal line.

Dr K Padayachy
Deputy Chairperson: IREC

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Appendix B: Gatekeeper approval letter



Unilever South Africa
(Pty) Ltd.
15 Nollsworth Crescent
Nollsworth Park
La Lucia Ridge Office Estate
La Lucia 4051

P O Box 4923 Durban 4000

Telephone (031) 570 3000
Facsimile (031) 570 3600

5/05/2021

To whom it may concern

This letter serves to confirm that Unilever South Africa approves the study research titled, "Acceptability, feasibility and effectiveness of a worksite intervention to lower cardiometabolic risk in South Africa: SA Pioneer Worksite Study" taking place at our worksites.

Thank you for the opportunity to participate.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'DA Viljoen', followed by a horizontal line.

Dr DA Viljoen

Head Medical and Occupational Health Services Unilever South Africa

Unilever South Africa (Pty) Ltd
Registration No 1999/00236907
Directors: M van Tiggelen (Chairman)*
J T M Apsey E Camminga* A Irvine A J Kennedy
A H Kaste D M Masto K Zarnack
* Dutch

Appendix C: Letter of information



LETTER OF INFORMATION

Title of the Research Study: Informed design of a worksite intervention to lower cardiometabolic risk in South Africa.

Principal Investigator/s/researcher:

Shivneta Singh, B-Tech in Consumer Science: Food and Nutrition.

Co-Investigator/s/supervisor/s:

Dr. Ashika Naicker, PhD Nutrition, Mrs. Evonne Singh, MEd, Dr Heleen Grobbelaar, Phd: Food and Nutrition.

Brief Introduction and Purpose of the Study:

The purpose of the study is to develop an acceptable, appropriate and feasible worksite intervention in order to design a canteen and behavioural intervention to lower cardio-metabolic risk at a worksite in South Africa. The first step to designing lifestyle interventions to be implemented in worksites is to understand the worksite food and physical environment to identify potential interventions and to understand the existing barriers and facilitators to implement those interventions in these settings. Then, a multi-component worksite intervention will be designed and implemented that will consider the characteristics of the setting and will be informed by the views of workers, managers and supervisors on the design and format of delivery of the intervention. This study is the formative research component of the South African Pioneer Worksite Intervention Study at your worksite. The South African Pioneer Worksite Intervention Study will measure the effectiveness of a canteen and a behavioural intervention on cardiometabolic risk among employees at your worksite by evaluating the change in number of individuals reaching two or more cardio-metabolic risk goals, namely reductions in blood pressure, triglycerides, and glycosylated haemoglobin (HbA1c).

Outline of the Procedures:

- A rapid assessment of the built environment through structured observations of the canteen and physical environment will be conducted

- Semi-structured in-depth interviews (IDIs) with worksite and canteen managers, and focus group discussions (FGDs) with employees will be conducted to understand the appropriateness, acceptability and feasibility to changes at the worksite.
- Worksite readiness to implement change will be assessed through the Organizational Readiness for Implementing Change (ORIC) online questionnaire directed to employees.
- An intervention rating scale will be applied to canteen intervention components and delivery strategy to worksite managers and canteen operators.
- A scoping review on Front of Pack (FOP) labelling schemes will be conducted to inform the selection of a FOP labelling scheme best suited for canteen foods at worksites in South Africa.
- The canteen and a physical environmental intervention programme will be developed using the findings from this formative study.
- The intervention training manual will be developed and canteen operators will be trained for the implementation of the food environmental intervention.

Risks or Discomforts to the Participant:

There are no potential risks to you should you participate in this study.

Benefits:

If the program is shown to be feasible, acceptable, effective and cost effective at your worksite, the results of this study will be used to make recommendations and dissemination plans on how to implement and sustain lifestyle interventions at other worksites in South Africa. Current evidence indicates that health and wellness programs at worksites provide numerous benefits with respect to altering cardiovascular risk factor profiles. Implementing health programs at worksites allows for the opportunity to continually engage adults for positive and sustainable lifestyle choices. It is also envisaged the findings of this research will be published in peer reviewed journals and presented at national and international conferences. The researcher will benefit by obtaining the necessary data required to complete a M-Tech Degree.

Reason/s why the Participant May Be Withdrawn from the Study:

Participation will be voluntarily, and you will be allowed to withdraw at any time of the study.

Remuneration:

You will not receive any remuneration for participation in this study.

Costs of the Study:

No costs will be expected to be covered by you if you choose to volunteer to participate in this research study.

Confidentiality:

The information gathered will be of a confidential nature and will not seek to jeopardize the company's status nor the identity or your status should you participate in the study. No form of identity will be required from you which will further ensure confidentiality of the data. The data collected will be stored in the Department of Food and Nutrition in a lockable cupboard for 5 years after which it will be disposed for shredding.

Persons to Contact in the Event of Any Problems or Queries:

Principal researcher: Shivneta Singh, B-tech: Food and Nutrition, cell number 0672134244 or email sshivneta@gmail.com. Supervisor: Dr A. Naicker, PhD: Nutrition, cell number: 0313732333 or email ashikan@dut.ac.za or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support Dr L Lingano on 031 373 2577 or researchdirector@dut.ac.za.

Appendix C: Letter of information (IsiZulu)



INCWADI YEMINININGWANE

Isihloko sesifundo socwaningo: uhlelo lwesakhiwo esinolwazi sokungenelela ngokugwema okubeka abasebenzi engcupheni yokuphathwa izifo eziphathelele nenhliziyo ezweni laseNingizimu Afrika

Umnini cwaningo/ noma uMphenyi wolwazi:

Shivneta Singh, B-Tech in Consumer Science: Food and Nutrition.

Uzakwabo Womnicwaningo/ Mphathi womnini cwaningo:

UDkt. Ashika Naicker, one PhD Nutrition, UNkk. Evonne Singh, one-MEd, UNksz. Sinenhlanhla Memela, one-Masters kwi-Consumer Science: Food and Nutrition.

Umyalezo ofinqiwe wesingeniso ne nhloso yalesi sifundo:

Inhloso yalesi sifundo ukuthuthukisa, nokwenza izindlela ezamukelekile futhi nezilula zokungenelela ezindaweni lapho okusebenzala khona abantu ukuze kwakhiwe indawo yokudlela kanye nemikhuba yokuziphatha, kugwemeke amathuba okuthi bahlaselwe yizifo eziphathelele nenhliziyo ezweni laseNingizimu Afrika. Isinyathelo sokuqala ukuthi kwenziwe indlela okufanele baziphathe ngayoo ezindaweni zokusebenza, ukuthi kuqondisiswe izinhlobo zokudla, Kanye nezithiyo kulezi zindawo zokusebenza. Ngaleyondlela sizobe sesithola umongo okuyiwona oyingqinamba bese sikwazi ukuthi size nesisombululo kulenkinga. Siyobe sesibeka izinhlobo ezahlukene ezizoba wumgogodla wesixazululo, zonke izinhlobo nezinsiza sizobe sizithole kubona abantu abasebenza kulezozindawo, okungaba abasebenzi Kanye nabaphathi. Lesisifundo siyingxenye futhi sesekwe yithimba lezocwaningo eNingizimu Afrika, olubizwa nge-South African Pioneer Worksite Intervention, ebhekelele impilo endaweni yokusebenza. Lenhlangano yocwaningo iyobe isibheka umthelela walolucwaningo ezindaweni ezidayisa ukudla emsebenzini Kanye nendlela okubaphatha ngayo abasebenzi, bese ibheka ukuthi kungabe ukuziphatha kwabo ngendlela abadla ngayo ngabe akubabeki yini engcupheni yokuhlaselwa yizifo eziphathelele nezifo zenhliziyo, Izobe ke isibona ukuthi bakhona yini abantu abazuze ushintsho ngokuthi bazifundise ukugwema ukudla okungababeka engcupheni yezifo. Lokhu abangakwenza ngokugwema ukudla okunamafutha nokungaba yimbangela yalezizifo zokwehla komfutho wegazi, Kanye noshukela emzimbeni (triglycerides, and glycosylated hemoglobin (HbA1c)).

Imibandela esizosebenza ngayo:

- Kuzobe sekwenziwa ukuhlolwa okusheshayo ngendlela ehlelekile endaweni yokudla Kanye nendawo yemvelo ebonakalayo.
- Sizobe sibheka futhi ukuthi ingabe lendawo yokudla inabo yini abasebenzi abanolwazi olunzulu ukwenza ukudla okunempilo, sizobe futhi sinohla lwemibuzo esizocela ukuba bayiphendule abasebenzi bakuyona indawo yokudla.
- Sizokwenza nohlelo lokubuza imibuzo ejulile esizoybhekisa kubanikazi bendawo yokudla, nalabo esizobe sixoxisana kabanzi nabo. Sizobacela ngamaqoqo abasebenzi ukuze sibone ukuthi ingabe ushintsho lungamukeleka yini nokuthi luzofika ngendlela enokuthula.
- Indawo yokusebenza yona sizoyivivinya ukuze sazi ukuthi isikulungele yini ukwamukela izinguquko. Lokhu sizokwenza ngokusebenzisa uhlelo olunzulu oluwumkhakha obhekelela ukuthi ngabe imboni ikulungele yini ukwamukela indlela entsha yokwenza izinto (i-Organizational Readiness for Implementing Change (ORIC). Sizofaka imibuzo eqondene nabasebenzi abazobe beyiphendula kwi-internet.
- Sizobe sibheka nokuthi izinga lokuthengwa kokudla okungenampilo kulendawo yokudlela lingakanani.
- Sizobe ke sesiyenza uhlelo olukhulumisana nendlela yokudla, imikhuba yethu ekudleni Kanye nendawo ekuyiyona inkantini, ukwenza loluhlelo lube yimpumelelo. Sizosebenzisa amava nemiphumela esizobe siyiqoqe ngeskhathi senza ucwaningo, ebese sisebenzisa lonke lolo lwazi ukwenza umqulu ozobe uqukethe ulwazi esizolusebenzisa ukuqeqesha abasebenzi basenkantini Kanye nokuthuthukisa ulwazi olubhekelele izindawo lapho okusuke kunenkantini khona.

Izingozi ezingavelela labo esizobe sifisa ukuxoxisana nabo:

Empeleni nje abukho ubungozi uma uzobe uyingxenywe yalolucwaningo

Izinzuzo:

Uma lolucwaningo lubonakala ukuthi luhamba kahle, lwamukeleke, futhi lubukeka luzoletha inzuzo enhle endaweni yokuthengisa ukudla, imiphumela yalolucwaningo izosetshenziswa ukwenza kangcono nokuthuthukisa indlela iNingizumu Africa engenza ngayo ukuth abasebenzi babe nomkhuba wokudla ukudla okunempilo. Ubufakazi obunzulu busikhombisa ukuthi izinhlelo zokufundisa abasebenzi ngokudla okunempilo kuleli zinomphumela omuhle kakhulu. Ukwandisa izifundo nezinhlelo ezifundisa ngezempilo eziphathelene nokudla kwenza ukuthi abantu asebekhulile bafundiseke futhi babe nentshisekelo yokwenza izinqumo ezinhle ngokudla abakudlayo. Sifisa ukuthi imiphumela yalolucwaningo ishicilelwe kubabhali bamaphendaba futhi yethulwe kuleli Kanye naphesheya kwezilwandle ezinkomfeni. Umcwaningi uyohlabana ngolwazi olusemqoka ukuphuthula izifundo ze- M-Tech Degree.

Isizathu/izizathu ezingaba yimbangela yokuhoxa kulolucwaningo:

Ukuba yingxenywe umuntu uzikhethela yena, futhi kuvumelekile ukuhoxa nanoma yinini lapho ofisa khona.

Umholo:

Awutholakali umholo ngokuba yingxeye yocwaningo

Inani Locwaningo:

Kumahhala ukuba yingxenye, akulindelekile ukuthi ulukhokhele lolucwaningo

Ukwethembeka:

Ulwazi lonke esizoluzuzela luzohlale luyimfihlo, angeke lusetshenziswe ukudicilela phansi igama lemboni yakho uma kade uyingxenye. Akudingeki imininingwane yakho, ulwazi oluyotholakala luyogcinwa uvalelekile endaweni ephephile emnyangweni we-Department of Food and Nutrition iminyaka emihlanu ebese emva kwalokho uyobe usukhishelwa ukuhlakazwa.

Ongaxhumana nabo uma ufisa ukwazi kangcono noma uma kukhona inkinga

Umnini cwaningo: Shivneta Singh, umnikazi we-B-tech: Food and Nutrition, ucingo: 0672134244 noma thumela ku-sshivneta@gmail.com. Umphathi: Dr A. Naicker, we-PhD: Nutrition, ucingo: 0313732333 noma thumela ku-ashikan@dut.ac.za noma i-Institutional Research Ethics Administrator noma 031 373 2375. Izikhalazo zingabikwa kwi- DVC: Research, Innovation and Engagement, Dr L Langaniso on 031 373 2577 or researchdirector@dut.ac.za.

Appendix D: Consent form



CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, _____ (name of researcher), about the nature, conduct, benefits and risks of this study- Research Ethics Clearance Number: IREC 078/20.
- I have also received, read and understood the above written information (Participation Letter of Information) regarding the study.
- I am aware the results of the study, including personal details regarding sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant

Date

Time

Signature

I, _____ (name of researcher/research assistant) here with confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Date

Signature

Full Name of Witness (If applicable)

Date

Signature

Appendix D: Consent form (IsiZulu)



IMVUME

Isitatimende sesivumelwano sokubamba iqhaza esifundweni sokucwaninga

- Ngiaqinisekisa ukuthi ngazisiwe ngumcwaningi (igama lomcwaningi), ngohlobo, ukuphatha, izinzuzo, nezingozi zale nombolo yocwaningo ye-Research Ethics Clearance Number:
- Ngiphinde ngathola, ngafunda futhi ngaluqonda ulwazi olubhaliwe olungenhla (incwadi yokubandakanya kwemininingwane) maqondana nesifundo.
- Ngiyazi ukuthi imiphumela yocwaningo, ukubandakanya imininingwane yomuntu ephathelene nezocansi, iminyaka, usuku lokuzalwa, ama-initials Kanye nokuxilongwa kuzocutshungulwa kungaziwa kube wumbiko wocwaningo.
- Ngenxa yezidingo zocwango, ngiyavuma ukuthi idatha eqoqwe phakathi nalolu cwano ingacutshungulwa ngohlelo lwekhompiyutha ngumcwaningi.
- Ngingase, noma ngasiphi isigaba, ngaphandle kokubandlulula, ngihoxise imvume yami futhi nasekubambeni iqhaza kulolu cwano.
- Ngibe nalo ithuba elwanele lokubuza imibuzo futhi (ngentando yami) ngizilungiselele ukubamba iqhaza ocwaningeni.
- Ngiaqonda ukuthi okutholakele okusha okuphawulekayo okwenziwe phakathi nalolu cwano okungenzeka kuhambisane nokubamba kwami iqhaza kuzonikezwa kimi.

Igama lomhlanganyeli: **Usuku:** **Isikhathi:**
Isiginesha:

Mina lapha ngiaqiniseka ukuthi umhlanganyeli ongenhla waziswe ngokuphelele ngohlobo, ukuziphatha Kanye nobungozi besifundo esingenhla.

Igama lomcwaningi **usuku**..... **Isiginesha**

Igama lofakazi **usuku:** **isiginesha**.....

Appendix E: Worksite observational checklist - The physical environment

WORKSITE OBSERVATIONAL CHECKLIST

Environmental assessment for physical activity

Worksite: ☐ La Lucia ☐ Maydon Wharf ☐ Retailability ☐ Lordsvue

☐ Indonsa ☐ Khanyisa ☐ Boksburg

Name of Assessor:

Date:

Start Time

		Yes	No	Comments
1	GENERAL LOCATION The nearest intersection (cross-road) of the worksite			
1.1	Do you characterise this area as a city centre? (Take a picture)			
1.2	Do you characterise this area as an industrial township? (Take a picture)			
2	PEDESTRIAN INFRASTRUCTURE (Outside the worksite)			
2.1	Are there footpaths (pavement) present in the area? (Take a picture)			
2.2	Is the pavement (footpath) wide enough for people to walk in both directions? (Take a picture)			
2.3	Are there vendors on the pavement (footpath)? (Take a picture)			

2.4	Is there a buffer between the pavement and the road? (e.g. a grass strip, trees, on-street parking) (Take a picture)			
2.5	Are ramps present at the intersections and driveways?			
2.6	Are sidewalks in good condition?			
2.7	Are there safe places to cross the streets? (Take a picture)			
3	BICYCLING INFRASTRUCTURE			
3.1	Are there dedicated lanes or mark for cycling? (Take a picture)			
3.2	Is it safe to cycle on the road?			
3.3	Is traffic flow fast and aggressive?			
3.4	Is the nearest bus stop or public transit within 10 minutes walking distance from the worksite?			
3.5	Generally, does the area feel safe and secure for pedestrians?			
4	WORKSITE PREMISES			
4.1	Is there bicycle storage space? (Take a picture)			
4.2	Is there a walking track in the worksite premises? (Take a picture)			

4.3	How many buildings are there in the premises? (Take a picture)			
4.4	How many floors are there in the tallest building? (Take a picture)			
5	WORKSITE BUILDING			
5.1	Are stairs visible from the main entrance? (Take a picture)			
5.2	Are stairs accessible before the elevator/escalator?			
5.3	Are stairs encountered before the elevator/escalator? (Take a picture)			
5.4	Is directional signage provided from the entrances to indicate location of stairs? (Take a picture)			
5.5	Is directional signage visible from the entrances to indicate location of stairs?			
5.6	Are stairs wide enough to accommodate groups of people travelling in both directions? (Take a picture)			
5.7	Is the stair well-lit? (windows, lighting)			
5.8	Are the stairs clean?			
5.9	Is the temperature at the stairs too hot or too cold?			
5.10	Is the stair well decorated (e.g. art)?			

5.11	Are there any signs or marks promoting use of stairs? (Take a picture)			
5.12	Is there a gym? (Take a picture)			
5.13	Are there showers and/or changing facilities?			
5.14	Are there any other designated physical activity areas, apart from the gym (e.g., exercise room)? (Take a picture)			
5.15	Are there drinking water facilities or water fountains throughout the building? (Take a picture)			
5.16	Is water, tea, coffee provided to the staff at the working desk?			
5.17	Are there lunchrooms within 10 minutes of walking distance from workspaces?			
5.18	Are there canteens within walking distance from workspaces?			

General comments:

End time:

Appendix F: Worksite observational checklist – The food environment

WORKSITE OBSERVATIONAL CHECKLIST Assessment of Canteen

Name of Assessor:

Date:

Start Time:

a. How many canteens are there in the worksite premises? _____

Fill the form below for each canteen

Worksite: ☐ La Lucia ☐ Maydon Wharf ☐ Retailability ☐ Lordsvue

☐ Indonsa ☐ Khanyisa ☐ Boksburg

Canteen type: ☐ Main ☐ Kiosk ☐ Other, specify _____

Canteen Name (or Number):

Start Time:

		Yes	No	Don't know	Comments
1	TYPES OF FOOD IN THE CANTEEN				
1.1	Offers <u>ONLY</u> pre-made and pre-packaged options (cookies, cakes, sandwich) and the food is prepared off-site and brought in to the food service location				
1.2	Offers a small number of menu (less than 15) options including premade or quick to make options				
1.3	Offers a large number of menu (more than 15) options that are made in-house.				
1.4	The menu or food options offered in the canteen is changed at least once a week (Comment on how often the menu is changed)				

1.5	A buffet is served				
1.6	(If yes to 1.5) A customer chooses the amount of food in the buffet				
2	FOOD OPTIONS				
2.1	Are the following grains or grain products available?				
2.1a	Whole grains (Barley, brown rice, buckwheat, bulgur (cracked wheat), millet, oatmeal, popcorn, whole-wheat bread, pasta or crackers)				
2.1b	Refined grains (white flour, white rice and white bread, maize meal, pasta, samp)				
2.2	Are the following lentils or legumes available?				
2.2a	Speckled beans				
2.2b	Kidney beans				
2.2c	Chickpeas				
2.2d	Soy				
2.2e	Peanuts and nuts				
2.2f	Other				

2.3	Are the following vegetables available?				
2.3a	Dark greens (broccoli, spinach, kale, lettuce)				
2.3b	Orange and red vegetables (carrots, tomatoes, butternut/ pumpkin, red pepper, orange sweet potato)				
2.3c	Starchy vegetables (potato)				
2.3d	Other vegetables (celery, green beans, cauliflower, eggplant, cucumber, mushroom, peas, cabbage, beetroot, pepper)				
2.4	How are vegetables prepared and served?				
2.4a	Raw				
2.4b	Steamed				
2.4c	Baked or grilled				
2.4d	Stir fried				
2.4e	Deep fried				
2.4f	Is oil visible on the cooked vegetable? (Take a picture)				
2.4g	Other				

2.5	Are the following animal-based foods (non-vegetarian) options available?				
2.5a	Eggs				
2.5b	Chicken				
2.5c	Fish				
2.5d	Mutton (Specify, e.g. lamb)				
2.5e	Beef				
2.5f	Pork				
2.5g	Sea food (e.g., prawns, shrimps, lobsters)				
2.5h	Dried meat (biltong)				
2.5i	Processed Meats (Vienna's / Polony, Russians, Boerewors Sausage)				
2.5j	Other				
2.6	How are meat prepared?				
2.6a	Steamed				
2.6b	Baked or grilled				

2.6c	Stir fried				
2.6d	Deep fried				
2.6e	Curry				
2.6f	Is oil visible on the cooked on the meat? (Take a picture)				
2.6g	Other				
2.7	Are the following fruit options available?				
2.7a	Fresh whole fruits				
2.7b	Cut up				
2.7c	Frozen				
2.7d	Canned				
2.7e	Dried				
2.7f	Other				
2.8	Are the following types of oil and fats available?				
2.8a	Sunflower oil				
2.8b	Olive oil				

2.8c	Palm oil				
2.8d	Butter				
2.8d	Canola				
2.8e	Other				
2.9	Are the following desserts available?				
2.9a	Cake				
2.9b	Biscuits				
2.9c	Ice cream				
2.9d	Other				
2.10	Are the following Dairy products available?				
2.10a	Yoghurt (low fat, fat free, etc.)				
2.10b	Maas (low fat, fat free, etc.)				
2.10c	Flavoured milkshakes (low fat, fat free, etc.)				
2.10d	Milk (low fat, fat free, etc.)				
2.10e	All cheese				

2.10f	Other				
2.11	Are the following beverages available? [If available free of cost, please indicated in the comment section]				
2.11a	Regular carbonated soft drink				
2.11b	Diet carbonated soft drink				
2.11c	Fresh fruit juice				
2.11d	Canned fruit juice				
2.11e	Packaged juice				
2.11f	Water				
2.11g	Soda water				
2.11h	Other				
2.12	Are the following types of milk available?				
2.12a	Fat-free milk (Skimmed)				
2.12b	Low -fat milk				
2.12c	Whole milk (Full cream)				

2.12d	Other (Evaporated, buttermilk, condensed milk, coconut milk)				
2.13	Are the following types of tea and coffee available?				
2.13a	Black Tea				
2.13b	Milk Tea				
2.13c	Rooibos Tea				
2.13d	Black Coffee				
2.13e	Milk Coffee				
2.13f	Green Tea (e.g. Jasmine, Chamomile)				
2.13g	Sugar is provided for customers to add (NOT added during preparation)				
2.13h	Other (Iced Tea, milo, hot chocolate)				
2.14	Is the following type of FREE and safe water available?				
2.14a	Cold water				
2.14b	Hot water				

3	PORTION SIZES				
3.1	Is the sugar served separately from hot beverages?				
3.2	Is there more than one portion size option for food items? (e.g., 1/2 plate rice and a full plate rice; big can of carbonated soft drink and a smaller can of carbonated soft drink)				
3.3	Is smaller portion size with proportional pricing available for example half plate rice for half the price of the full plate?				
3.4	Is salt available on the dining tables?				
3.5	Is tomato sauce or sweet and spicy sauce available on the dining tables?				
3.6	Other				
4	POINT OF CHOICE				
4.1	Is there nutrition information on the kilojoules per serving provided on a large display or menu board?				
4.2	Is there nutrition information on the amount of salt/sodium in foods provided on a large display or menu board?				

4.3	Is there a system to identify healthier items in the canteen (e.g., icons or colour codes for healthy and less healthy items)?				
4.4	Are price discounts for healthier foods (e.g., whole fruits) available?				
4.5	Are healthier foods (e.g., fruits, fresh fruit juice, diet drinks) placed closer to the customer?				
4.6	Are healthier foods (e.g., fruits, fresh fruit juice, diet drinks) placed at eye level?				
4.7	Are healthier food options promoted (e.g., through signs, banners, and/or kiosks)?				
4.8	Other				
5	INFORMATION				
5.1	Are there printed brochures with nutritional information (e.g., kilojoules/servings) at the entrance to the canteens on tables or elsewhere?				
5.2	Other				
6	PICTURES AND DOCUMENTS				
6.1	Copy of menu received				

6.2	Photo of canteen showing food options taken				
6.3	Brochures with nutritional information (If so, take one for reference)				

General Comments:

End time:

Appendix G: In-depth interview guide for worksite managers



IN-DEPTH INTERVIEW GUIDE

WORKSITE MANAGERS

Hello! I'm [insert name]. Thank you for agreeing to meet today.

I am interested in talking with you because we are collaborating with your workplace to start a program to help employees be healthier. For the healthy lifestyle program to be a success, it is very important that we get input from management staff such as yourself. So, we are interviewing you, along with other managers, to get your opinion about how to make the program work well for your workplace and employees.

I am interested in hearing your thoughts and your input about the program. So, please don't feel shy and feel free to share your honest opinions. There are no right or wrong answers. Your views and suggestions are very valuable. We will use what we learn from our discussion to plan the program to suit the employees at your workplace.

I have a list of questions I would like to ask you. Feel free to bring up any topics you feel are related to our discussion.

Also, I want to let you know that your participation in this interview is completely voluntary. If you want to stop at any time or don't feel comfortable answering a question, please let me know.

I would like to record our discussion so that I don't miss anything you say. Our discussion will remain completely confidential. The information you give will only be used to help create a program that fits the needs of your workplace and employees, and your name will not be identified.

Do you agree to participate in the interview?

Is it okay to record the discussion?

The interview will last about 30 to 40 minutes. Do you have any questions before we start? *[Answer any questions.]*

Let's begin!

[Start the recorder]

WARM-UP

1. What is your job title?
2. What are your responsibilities day-to-day?

PROBES

- Supervision of employees

LIFESTYLE PROGRAM

Now, I would like to talk about the healthy lifestyle program that we would like to develop with your help. The goal of the program is to help employees be healthier and prevent or manage cardiometabolic diseases. We would like your opinions and ideas about how to make this program successful.

The program has two parts. The first part will be a series of classes to give employees information about health. Each health class will last about one hour.

3. What would be the best times to hold health classes at your workplace?

PROBES

- Why?

4. What would be bad times to hold health classes at your workplace?

PROBES

- Why?
- Financial year end?
- The vacation period?
- Annual shutdown?
- Peak period demands?

5. What would be good locations for the health classes at your workplace?

PROBES

- Why?
- Is there space available at the worksite?

6. How do you think staff would feel about conducting online compared to F2F lifestyle education classes?

PROBES

- Would they be happy to conduct the classes online or F2f?
7. Lifestyle education classes may be conducted in groups of 20. Do you think participation would be affected by gender, type of job position? Why?

PROBES

- If so, what can be done to overcome these challenges?
8. Which topics about healthy eating or physical activity do you think would most interest your employees? Why?

PROBES

- Different for different groups (e.g., male vs. female employees, or managers vs. non-managers)?
9. What would encourage your employees to participate in the health classes? Why?

PROBES

- To sign up
 - To attend regularly
 - Support from management
 - Support from co-workers
 - Support from family
10. What might be the challenges for your employees to participate in the health classes?

PROBES

- Taking time from work responsibilities

WRAP-UP QUESTIONS

11. What else should we consider when designing the healthy lifestyle program for your workplace and employees?
12. Do you have anything else to add to our discussion today?

CONCLUSION

Thank you for taking time to talk with me! You have shared important information and given us a lot of ideas. Your input will be very valuable for planning the healthy lifestyle program at your workplace.

[Stop the recorder]

Appendix G: In-depth interview guide for worksite managers (isiZulu)



Indlela yokwenza i-interview

Sawubona (igama lakho), ngiyabonga ukuthi uvumile ukuhlalanga nami namhlanje.

Kungaba yintokozo ukuxoxa nawe njengoba nje sizobe siqala ukwenza uhlelo oluzosiza kakhulu abasebenzi ngokuphila kangcono.

Ukuze loluhlelo lube yimpumelelo, kusemqoka kakhulu ukuthi sithole amava kubaphathi abafana nawe. Ngakho sizobe sikubuza imibuzo Kanye nozakwenu ukuze sithole imibono yenu mayelana nokuthi singasebenzisa ziphi izindlela ukuze loluhlelo lukwazi ukunisebenzela kanye nabasebenzi benu.

Ngifisa ukuzwa imicabango yenu nalokho enifisa ukukuphawula ngaloluhlelo. Ngakho ke ngicela ukhululeke ungesabi ukubeka uvo lwakho. Zonke izimpendulo zamukelekile, Imibono yakho isemqoka kakhulu, yiyona imibono yenu ezokwenza sifunde lukhulu ukuze sikwazi ukwenza uhlelo oluzokhulumisana nqo nabasebenzi bakulendawo.

Nginemibuzo engizocela ukukubuza yona. Uvumelekile ukuletha noma yisiphi isihloko ocabanga ukuthi siyingxenywe yalenkulomo.

Okunye, Ngifisa wazi ukuthi ukuba yingxenywe yaloluhlelo kuyinto okuzomele uzikhethile wena ngokuthanda kwakho, futhi Uma uzizwa ungathandisi ukuphendula umbuzo ngicela ungazise, noma uma usufuna ukushiya uhlelo ungazise.

Ngicela ukuthi ngiqophe konke esizokuxoxa ukuze kungabi bikho engizokukhohlwa kulokhu ozokusho. Konke esikuxoxayo kuyimfihlo phakathi kwam nawe. Ulwazi oyongipha lona luyosiza imboni osebenza kuyona kanti futhi negama lakho alizukuvezwa.

- Ingabe uyavuma ukuba yingxenywe?
- Uyangivumela ukuthi ngiqophe?

Ngizodinga imizuzu yakho engama-30 kuya kuma-40. Ingabe kukhona imibuzo onayo ngaphambi kokuthi siqale? *[Yebo noma cha.]*

Asiqale ke!

[Qala ulungele ukuqopha]

Isilungiselelo

1. Ingabe usebenza msebenzi muni?
2. Yiziphi izinto ozenzayo nsukuzonke emsebenzini?
 - Ukulawula abasebenzi

Uhlelo lokunakekela impilo

Ngifisa ukuthi sixoxe mayelana nohlelo lwesikompilo esifisa ukulwenzela imboni ngokusizwa nguweni. Okuyiyona nhloso yaloluhelelo ukuthi sisize abasebenzi baphile kancono futhi bavikele nezifo eziphathelele nenhliziyo, sifisa usilekelele ngolwazi lwakho ukuze loluhlelo lube yimpumelelo. Loluhlelo luhlukene ngezigaba ezimbili. Uhlelo lokuqala lumayelana nenkantini bese olwesibili luzobe lufundisa abasebenzi mayelana nokuvikela izifo. Isigaba ngasinye sizobe sithatha ihora elilodwa.

3. Yisona siphiso isikhathi ocabanga ukuthi singasisebenzisa ukwenza ikilazi lezempilo?
 - Kungani?
4. Iziphi izikhathi ezingafanele sibe nekilasi ngazo?
 - Kungani?

Yiziphi izindawo esingazisebenzisa ukufundela kuzona?

- Kungani?
5. Ucabanga ukuthi bengazizwa kanjani abafundi uma bezofundiselwa emoyeni (online)?
 - Ama-device nama-datha sinawo
 - Nezindlela zokufunda emoyeni (online) sinazo
 6. Abasebenzi bazohlukaniswa kusukela kwi-15 kuya kuma-20. Wena ubungahlukanisa kanjani, kungani?
 - Ngokobulili?
 - Ngokwesikhundla?
 - Kusemqoka kangakanani ukufunda ngaloluhelelo?
 - Ingabe isimo sendlela yokufunda sizoba nomthelela yini kubafundi?
 7. Yiziphi izihlokwana ezithinta ukudla okunempilo noma izinto zokuzivocavoca emzimbeni ocabanga ukuthi ozakwenu bengazithokozela? Kungani?

- Sihlukanisa abantu ngokwezigaba zabo (isibonelo: abasebenzi besilisa kanye nesifazane, noma abaphathi Kanye nabasebenzi)?
8. Yini engakhuthaza abasebenzi ukuze bazinikele kulezizifundo? kungani?
- Ukusayina
 - Ukuphumelela nsuku zonke
 - Ukwesekwa kwabaphathi
 - Ukwesekana kwabasebenzi bebodwa
 - Ukwesekwa wumndeni
9. Yiziphi izingqinamba ezingaba khona ukuphazamisa lezizifundo?
- Ukusebenzisa isikhathi somsebenzi
10. Yilona luphi ulimi oluzosetshenziswa?

Imibuzo yokuzilungiselela

11. Ingabe kukhona ofisa sibe nakho emqondweni ngaphambi kokuqala lamakilasi?
12. Ingabe kukhona ofisa ukuthasisela ngakho kulengxoxo?

Isiphetho

Ngyabonga ngesikhathi sakho! Usisize kahulul ngolwazi lwakho olunzulu, amava akho ayosisiza ukuhlela kangcono uhlelo lokusiza abasebenzi ukuze behlale bephilile.

[ukuqopha kuyamiswa]

Appendix H: In-depth interview guide for canteen managers



IN-DEPTH INTERVIEW GUIDE

CANTEEN MANAGERS/ SUPERVISORS

Hello! I'm [insert name]. Thank you for agreeing to meet today.

I am interested in talking with you because we are collaborating with your workplace to start a program to help employees be healthier. For the healthy lifestyle program to be a success, it is very important that we get input from management staff such as yourself. So, we are interviewing you, along with other managers, to get your opinion about how to make the program work well for your workplace and employees.

I am interested in hearing your thoughts and your input about the program. So, please don't feel shy and feel free to share your honest opinions. There are no right or wrong answers. Your views and suggestions are very valuable. We will use what we learn from our discussion to plan the program to suit the employees at your workplace.

I have a list of questions I would like to ask you. Feel free to bring up any topics you feel are related to our discussion.

Also, I want to let you know that your participation in this interview is completely voluntary. If you want to stop at any time or don't feel comfortable answering a question, please let me know.

I would like to record our discussion so that I don't miss anything you say. Our discussion will remain completely confidential. The information you give will only be used to help create a program that fits the needs of your workplace and employees, and your name will not be identified.

Do you agree to participate in the interview?

Is it okay to record the discussion?

The interview will last about 30 to 40 minutes. Do you have any questions before we start? *[Answer any questions.]*

Let's begin!

[Start the recorder]

WARM-UP

1. What is your job title?
2. What are your responsibilities day-to-day?

PROBES

- Supervision of employees

Healthy eating

I would like to talk about the second part of the program. It will include changes to the workplace to help employees eat healthier during the workday.

Let's start with healthy eating.

By healthy eating, I mean eating mostly vegetables, fruit, and whole grains, healthy fats, and healthy proteins like chicken, lentils, and beans. Not eating a lot of fried foods and drinking water instead of sugary beverages is also a part of healthy eating.

3. What changes can be made at your workplace to help employees eat and drink healthier?
 - Pause rooms, tea rooms, coffee shop
 - Conferences and events
4. What changes can be made to the canteen(s) at your workplace to help employees eat and drink healthier?

PROBES

- Choose healthier food options
- Avoid choosing unhealthy food options

5. How can managers such as yourself encourage employees to eat and drink healthier?
6. What factors do you think are important when developing a canteen menu?

PROBES:

- Nutrition
- Price
- Staff hours for food preparation
- Age of employees
- Packaging

- Seasonal availability

7. What facilitates healthy eating and drinking at the worksite canteen?

PROBES:

- Special events, For example: Diabetes Day
- Management

8. What prevents healthy eating and drinking at the worksite canteen?

PROBES

- Employee preferences
- Cost
- Skills to prepare meals
- Wastage

9. Are there any healthy eating programs implemented at the worksite canteen? If so, explain.

10. Pre and post COVID-19, did you notice any changes with food and beverage consumption?

WRAP-UP QUESTIONS

11. What else should we consider when designing the healthy lifestyle program for your workplace and employees?

12. Do you have anything else to add to our discussion today?

CONCLUSION

Thank you for taking time to talk with me! You have shared important information and given us a lot of ideas. Your input will be very valuable for planning the healthy lifestyle program at your workplace.

[Stop the recorder]

Appendix H: In-depth interview guide for canteen managers (isiZulu)



Indlela yokwenza i-interview

Sawubona ngingu [igama lakho]. Ngiyabonga ukuthi uvumile ukuhlalana nami namhlanje.

Kungaba yintokozo ukuxoxa nawe njengoba nje sizobe siqala ukwenza uhlelo oluzosiza kakhulu abasebenzi ngokuphila kangcono.

Ukuze loluhlelo lokuphila impilo kangcono lube yimpumelelo, kusemqoka kakhulu ukuthi sithole amava kubaphathi abafana nawe. Ngakho sizobe sikubuza imibuzo kanye nozakwenu ukuze sithole imibono yenu mayelana nokuthi singasebenzisa ziphi izindlela ukuze loluhlelo lukwazi ukunisebenzela kanye nabasebenzi benu.

Ngifisa ukuzwa imicabango yenu nalokho enifisa ukukuphawula ngaloluhlelo. Ngakho ke ngicela ukhululeke ungesabi ukubeka uvo lwakho. Zonke izimpendulo zamukelekile. Imibono yakho isemqoka kakhulu. Sizosebenzisa lokhu esikufundile kulenkulumo ukuhlela uhlelo oluzofanela abasebenzi kwindawo yakho yokusebenzela.

Nginohla lwemibuzo engingathanda ukubuza yona. Zizwe ukhululekile ukuletha noma ngabe yisiphi isihloko osizwa simayelana nalenkulumo yethu.

Okunye, Ngifisa wazi ukuthi ukuba yingxenye yale-Interview kuyinto ozikhethela wena ngokuthanda kwakho. Uma ufuna ukuyeka noma kungasiphi isikhathi noma uzizwa ungakhululekile ukuphendula umbuzo, ngicela ungazise.

Ngingathanda ukuyiqopha lenkulumo yethu ukuze kungezokuba bikho lutho okuzongidlula kulokhu ozokusho Lenkulumo yethu izohlala iyimfihlo ngokupheleleyo. Ulwazi ozoluletha luzosiza ukwakha uhlelo oluzofanela izimfanelo zendawo yakho yokubesebenzela neyabasebenzi bakho, kanti futhi negama lakho alizukuvezwa.

- Ingabe uyavuma ukuba yingxenye yale-Interview?
- Ingabe kulungile ukuqopha lenkulumo?

Le-Interview izoba yimizuzu engamashumi amathathu (30) ukuya kwengamashumi amane (40). Ingabe kukhona imibuzo onayo ngaphambi kokuba siqale? *[Yebo noma cha.]*

Asiqale ke!

[Qala ulungele ukuqopha]

UKUZILUNGISELELA

1. Ingabe usebenza msebenzi muni?
2. Yiziphi izinto ozenzayo nsukuzonke emsebenzini?
 - Ukulawula abasebenzi

Ukudla ukudla okunempilo

Ngingathanda ukukhuluma ngesigaba sesibili saluluhlelo. Izobandakanya ushintsho endaweni yokusebenzela ukusiza abasebenzi ngokudla ukudla okunempilo ngezikhathi zokusebenza.

Asiqale ngokudla okunempilo.

Ngokudla ukudla okunempilo, ngiqonde ukudla kakhulu imifino nezithelo, kanye nokusanhlamvu okuphelele, nokunamafutha alungile, kanye namaprotheni ayimpilo afana nenyama yenkukhu, ama-lentils, kanye nobhontshisi. Ukungadli ukudla okuningi okuthosiwe kanye nokuphuza amanzi esikhundleni seziphuzo ezinoshukela omningi yingxenye yokudla ukudla okunempilo.

3. Yiziphi inguquko ezingenziwa endaweni yakho yokusebenzela ukusiza abasebenzi ukuze badle ukudla okunempilo.
4. Yiziphi izinguquko ezingenziwa kwinkantini endaweni yakho yokusebenzela ukusiza abasebenzi ukuze bedle ukudla okunempilo?
 - Kongakhetha kukho, ketha ukudla okunempilo
 - Kongakhetha kukho, gwema ukhetha ukudla okungenampilo
5. Bangenza njani abaphathi abanje ngawe ukugqugquzela abasebenzi ukuba badle ukudla okunempilo?
6. Yiziphi izici ocabanga ukuthi zibalulekile uma usungula imenyu yenkantini?
 - Okunomsoco
 - Amaxabiso
 - Amahora wabasebenzi ukulungiselela ukudla
 - Iminyaka yabasebenzi

- Ukupakisha
- Izikhathi zokutholakala kokuthile

7. Yini elulaza ukudla ukudla okunempilo endaweni yenkantini?

- Imicimbi ekhethlekile. Isibonelo, Usuku loshukela
- Ukuphatha
- Izinsizakalo zezokudla zakwaFedics

8. Yini evimbela ukudla ukudla okunempilo endaweni yokusebenzela enkantini?

- Ukuzikhethela kwabasebenzi
- Izindleko
- Amakhono wokulungisa ukudla
- Imfucuzo

9. Ingaba zikhona izinhlelo zokudla ukudla okunempilo eziphumelelisiwe endaweni yokusebenzela eyinkantini? Uma kunjalo, chaza

IMIBUZO YAMAPHETHELO

10. Yini enye esingayibheka uma senza loluhlelo lokuphila impilo engcono endaweni yakho yokusebenzela kanye neyabasebenzi.

11. Ingabe kukhona okunye ofisa ukukwengeza kwinkulamo yethu yanamhlanje?

ISIPHETHO

Ngiyabonga ngesikhathi sakho osithathile ukukhuluma nami! Usicobelele ulwazi olubaluleke kakhulu kanye waphinda wasinika nemibono eminingi. Amava wakho ayobaluleka kakhulu ekuhloleni uhlelo lokuphila impilo engcono endaweni yakho yokusebenzela.

[misa ukuqopha]

Appendix I: Focus group discussion guide



FOCUS GROUP DISCUSSION GUIDE

Welcome and thank you for volunteering to take part in this focus group. You have been asked to participate as your point of view is important. I realise you are busy and I appreciate your time.

Introduction: This focus group discussion is designed to assess your current thoughts and feelings about the, provision, drivers and barriers of healthy eating at your worksite. The focus group discussion will take no more than one hour. May I tape the discussion? (If yes, switch on the recorder).

Anonymity: Despite being taped; I would like to assure you that the discussion will be anonymous. The tapes will be kept safely in a locked facility until they are transcribed word for word, then they will be destroyed. The transcribed notes of the focus group will contain no information that would allow individual subjects to be linked to specific statements. You should try to answer and comment as accurately and truthfully as possible. I and the other focus group participants would appreciate it if you would refrain from discussing the comments of other group members outside the focus group. If there are any questions or discussions that you do not wish to answer or participate in, you do not have to do so; however please try to answer and be as involved as possible.

Ground rules

- The most important rule is that only one person speaks at a time. There may be a temptation to jump in when someone is talking but please wait until they have finished.
- There are no right or wrong answers.
- You do not have to speak in any particular order.
- When you do have something to say, please do so. There are many of you in the group and it is important that I obtain the views of each of you.
- You do not have to agree with the views of other people in the group.
- Does anyone have any questions? (answers). • OK, let's begin. **Warm up**
- First, I'd like everyone to introduce themselves. Can you tell us your name?

Introductory question

I am just going to give you a couple of minutes to think about your perceptions of healthy eating at your worksite.

Guiding questions

- What do you understand by healthy foods and beverages?
- What do you understand by unhealthy foods and beverages?
- What are the factors that determine your food and beverage choices?
- What facilitates you to choose healthy food and beverages?
- What obstructs you from choosing healthy food and beverages (At home and at work)?
- What would be the best way to organize lifestyle classes at your worksite (location, time of day, composition of groups)
- What would facilitate your participation in lifestyle classes?
- What would facilitate your participation in lifestyle classes?
- In your opinion, do you consume the same, less or more food and beverage when you meet with family and friends?

Probe - And is this consumption pattern the same at home vs at work?

- Pre and post COVID-19, did you notice any changes with your food and beverage consumption?

Concluding question

- Of all the things we've discussed today, what would you say are the most important issues you would like to express about this checklist?

Conclusion

Thank you for participating. This has been a very successful discussion

- Your opinions will be a valuable asset to the study
- We hope you have found the discussion interesting

- If there is anything you are unhappy with or wish to complain about, please contact the local PI or speak to me later
- I would like to remind you that any comments featuring in this report will be anonymous
- Before you leave, please hand in your completed personal details questionnaire

[Stop the recorder]

Appendix I: Focus group discussion guide (isiZulu)



Ingxoxo yeqembu egxilile: umgudu wokubuza imibuzo

Wamkelekile futhi ngiyabonga ukuthi uvume ukuvolontiya njengenxenye yaleliqoqo Kanye nokusipha imibono yakho ebalulekile kakhulu. Ngiyazi umatasa ngakho ke ngyasibonga isikhathi osiphe sona.

Isingeniso: Inhloso yalamaqoqo ukuthi sikwazi ukuthola imicabango yenu eyamanje ngezindlela Kanye nezinto eziyizingqinamba ezidala ukuthi abantu bengadli kahle ngokwezempilo kulemboni. Loluhlelo luzothatha ihora elinye vo. Ngicela ukurikhoda loluhlelo ukuze ngizokwazi ukuthi ngithole konke? (uma ekuvumela usungaqala ukurikhoda)

Ukungadalulwa: Noma ngabe urikhodiwe kodwa ngifisa ukukuqinisekisa ukuthi angeke igama lakho lidalulwe; Ngifisa ukukuqinisekisa ukuthi konke esikukhulumayo kuyimfihlo phakathi kwethu lana, konke okuqoshiwe kumathephu kuzokhiyelwa endaweni ephephile kuze kushicilelwe kahle emva kwalokho kuyobe sekuphelile, konke okuqoshiwe kuyobe nakho sekucishwa unomphela. Ngicela umuntu akhulume akhululeke futhi kube yiqiniso neqiniso lodwa. Sinabozakwathu siyafisa ukuthi esikukhuluma lapha ekilasini kugcine lapha kungaphumeli ngaphandle. Uma ungafuni ukuphawula unelungelo lokwenza njalo kodwa singafisa ukuthi wonke umuntu abambe iqhaza ukuze sizothola ulwazi.

IMIGOMO

- Umthetho osemqoka kunayo yonke, ukuthi kukhuluma umuntu oyedwa ngesikhathi. Uma kwenzeka uzizwe usufisa ukukhuluma ngesikhathi omunye esakhuluma kodwa kungakuvumeli lokho, linda eze aqede osuke esanikwe ithuba.
- Zonke izimpendulo zamukelekile, azikho ezinhle futhi azikho ezingafanele.
- Akudingi uze ushintshe indlela okhuluma ngayo.
- Uma kukhona ofisa ukukusho khululeka ukhulume, njengoba nibaningi nje nami ngifisa ukuzwa imibono yenu nonke.
- Akuphoqelelekile ukuthi uvumelane nemibono yabanye ozakwenu.
- Ingabe ukhona onombuzo? (yebo).

- Kulungile sesingaqala.

Ukuzilungiselela

- Okokuqala nje, ngicela umuntu azethule asazise igama lakhe?

Imibuzo yokwandulela

Ngizonipha imizuzwana ukuthi nicabange ukuthi yini efikayo emqondweni uma sikhuluma ngendaba yokudla okunempilo.

Imibuzo yokugcina

- Yikuphi okuqondayo mayelana nokudla okunempilo?
- Yikuphi okuqondayo ngokudla okungenampilo?
- Yiziphi izinto ezinomthelela ekukhetheni ukudla okudlayo?
- Yini eyenza ukhethe okudlayo enkantini yasemsebenzini?
- Yiziphi izinto ezikuvimbela ekutheni ungakhethi ukudla okunempilo emsebenzini?
- Iyiphi indlela ongayisebenzisa ukwenza amakilasi afundisa ngokudla okunempilo, indawo, isikhathi, amaqoqo, ungafisa ukuthi nibonane ubuso nobuso noma ungafisa kufundwe emoyeni.
- Yini engakwenza ukuzwazi ukubamba iqhaza kulamakilasi akhuluma ngokuziphatha?
- Yikuphi okungakwenza kulamakilasi akhuluma ngokuziphatha?
- Yikuphi ukudla okuthengiswa enkantini okuhehayo Kanye nokungahehi?
- Yikuphi ukudla okuyaye kudliwe uma kunemihlangano okuhehayo Kanye nokungahehi?

Umbuzo wokugcina

- Kukho konke esikuxoxile namuhla, yikuphi okuzwe kubonakala kusemqoka kakhulu, yikhona kuphi ofisa sikubhale phansi ukuze kuzolungiswa?

Isiphetho

Ngiyabonga ukuthi ubeyingxenye.

- Imibono yenu izosiza kakhulu ukulungisa isimo ngohlelo lwethu.
- Ngiyethemba ulithokozele lelikilazi.
- Uma kukhona ongathokozile ngakho ngicela ukhulume nomphathi noma uxhumane nami uma sengiqedile nje maduzane.
- Ngifisa ukukukhumbuza ukuthi konke ebesikukuluma kuleli kilazi kuyimfihlo futhi igama lakho angeke lidalulwe.
- Ngaphambi kokuthi uphume ngicela ushiye iphepha lakho obuphendulela kulona.

[ungawucisha umshini wokuqopha]

Appendix J: Demographic details questionnaire for FGDs



FOCUS GROUP DISCUSSION: DEMOGRAPHIC DETAILS QUESTIONNAIRE

Please answer the following questions in the spaces provided, circle or tick the most appropriate options.

1. Age.....

2. Are you: (please tick as necessary) Male ☐ Female ☐

3. What is your job title?

5. How many years of experience have you had in this current job?

☐ <1 Year ☐ 1-2 Years

☐ 2-5 Years ☐ 5-10 Years

☐ >10 Years

Thank you for taking the time to complete this questionnaire.

Appendix J: Demographic details questionnaire for FGDs (isiZulu)



Imibuzo ebhekiswe emaqoqweni: Imibuzo mayelana nemvelaphi yabasebenzi:

Phendula imibuzo elandelayo ngokujobelela izimpendulo ngokononina ezikhaleni.

1. Iminyaka:

2. Ubulili: Owesilisa ☐ owesifazane ☐

3. Usebenza msebenzi muni?

5. Ingabe ususipiliyoni esingakanani kulomsebenzi wakho?

☐ <1 unyaka ☐ 1-2 iminyaka

☐ 2-5 iminyaka ☐ 5-10 iminyaka

☐ >10 iminyaka

Ngyabonga ngokuphendula lemibuzo

Appendix K: Organisational Readiness for Implementing Change (ORIC) Questionnaire



ORGANIZATIONAL READINESS FOR IMPLEMENTING CHANGE (ORIC)

Dear Participant,

The aim of the study is to reduce prediabetes among employees at your worksite through canteen improvements and lifestyle education. Small changes will be made to your worksite food environment for one year, for example, providing educational materials on healthy eating (posters, pamphlets, table tents), provision of free water and fruit, the introduction of brown rice, etcetera. The lifestyle education program will include goal setting to reduce weight, dietary education, stress education and physical activity classes. Staff will be invited to take part in the lifestyle education lessons. Before we design the intervention, we want to assess your worksite readiness to implement change.

By participating in this survey, you will be volunteering to contribute to the research study on the determination of the worksite readiness to implement change (Are employees willing to implement the changes at their worksite).

Your assistance in the completion of the survey is highly appreciated. It would take approximately 5 minutes of your time. Your responses will be confidential - we will not collect identifying information such as your name, etcetera.

Your participation in this study is voluntary. If you decide to participate in this research survey, you may withdraw at any time. Should you wish to participate in this study, your answers will not be shared with anyone but will be used anonymously for only scholarly purposes by the research team.

Kindly choose your option according to the category mentioned below.

1	2	3	4	5
Disagree	Somewhat	Neither Agree	Somewhat	Agree
	Disagree	nor Disagree	Agree	

Please indicate your position in the company (job title): _____

Please indicate which worksite you are employed at:

Worksite: ☐ La Lucia ☐ Maydon Wharf ☐ Retailability ☐ Lordsvew

☐ Indonsa ☐ Khanyisa ☐ Boksburg

I am committed to implementing this change.	1	2	3	4	5
I am determined to implement this change.	1	2	3	4	5
I am motivated to implement this change.	1	2	3	4	5
I will do whatever it takes to implement this change.	1	2	3	4	5
I want to implement this change.	1	2	3	4	5
I feel this change is compatible with our values.	1	2	3	4	5
I need to implement this change.	1	2	3	4	5
I believe this change will benefit our worksite.	1	2	3	4	5
I believe it is necessary to make this change.	1	2	3	4	5
I believe this change will work.	1	2	3	4	5
I see this change as timely.	1	2	3	4	5
I believe this change is cost-effective.	1	2	3	4	5
I believe this change will make things better.	1	2	3	4	5
I feel that implementing this change is a good idea.	1	2	3	4	5
I value this change.	1	2	3	4	5
I know what it takes to implement this change.	1	2	3	4	5
I can keep the momentum going in implementing this change.	1	2	3	4	5
I can manage the politics of implementing this change.	1	2	3	4	5
I can support people as they adjust to this change.	1	2	3	4	5
I can get people invested in implementing this change.	1	2	3	4	5
I can coordinate tasks so that implementation goes smoothly.	1	2	3	4	5

I can keep track of progress in implementing this change.	1	2	3	4	5
I know how much time it will take to implement this change.	1	2	3	4	5
I know what resources we need to implement this change.	1	2	3	4	5
I know what each of us has to do to implement this change.	1	2	3	4	5
I have the equipment we need to implement this change.	1	2	3	4	5
I have the expertise to implement this change.	1	2	3	4	5
I have the time we need to implement this change.	1	2	3	4	5
I have the skills to implement this change.	1	2	3	4	5
I have the resources we need to implement this change.	1	2	3	4	5
The timing is good for implementing this change.	1	2	3	4	5

Thank you for your time!

Appendix L: Intervention rating scale



INTERVENTION RATING SCALE

Please ask the canteen manager or the manager of the worksite how would s/he rate the following interventions on the scale of 1 to 5; 1 being impossible to implement and 5 being easily implementable.

Name of Assessor:

Date:

Start Time:

Participant id:

Designation:

Worksite: ☐ La Lucia ☐ Maydon Wharf ☐ Retailability ☐ Lordsview

☐ Indonsa ☐ Khanyisa

☐ Boksburg

Canteen name/s or number/s: _____

Canteen type: ☐ Main ☐ Kiosk ☐ Other, specify _____

	Interventions	1	2	3	4	5	Remarks
	Interventions targeting food quality/ quantity						
1	Remove trans-fat						
2	Reduce trans-fat						
3	Reduce saturated fat						
4	Reduce sugar						
5	Reduce the amount of salt during cooking						

6	Increase fruit and vegetable choices						
7	Reduce portion sizes of foods						
8	Offer smaller portion size with proportionate pricing. For example, half plate rice for half the price of the full plate						
9	Ready to eat healthy meal (Canteen Take Away)						
10	Reduce soda						
11	Free clean cold water						
12	Add salad bar (A salad bar is a buffet-style table or counter at a restaurant or food market on which salad components are provided for customers to assemble their own salad)						
	Interventions targeting price						
13	Price discounts for whole fresh fruit						
14	Provide free fruit and/or vegetables						
15	Healthier foods such as fruits, fresh juice, whole grains for reduced price						
	Interventions targeting food choice at point of purchase						
16	Traffic Light Labelling: Green (healthy), Yellow (less healthy) or Red (unhealthy)						

17	Strategic positioning of healthier alternatives to make healthy items more accessible such as keeping fruits at the eye level						
18	Healthy option station						
19	Use a nutrition logo or a specific symbol on healthy food to help people recognize which foods are healthy						
20	Display the number of kilojoules of a product translated into the number of minutes to perform a certain physical activity at work (e.g. 35 minutes' walk for a can of carbonated soft drink)						
	Interventions targeting improved supply						
21	Train managers to increase the availability of healthy food choices in his/her worksite canteen.						
22	Culinary workshops for canteen workers, cooks and kitchen assistants on preparing healthy meals, using fruits and vegetables, presentation, arrangement						
	Interventions targeting client's information /education /motivation						
23	Healthy lunchtime clubs						
24	Food workshops to discuss healthy foods and taste demonstrations of healthy food options						
25	Informational material (e.g. nutrition quizzes, dinner mats, computer-based activities, leaflets)						

26	Monthly news magazine with information on healthy food options						
27	Educational materials distribution with messages encouraging fruits and vegetable consumption						
28	A nutrition resource kiosk with trained personnel available to discuss about healthy diet and provide resources						
29	Posters, napkins, a self-evaluation brochure						
30	Cooking demonstrations and tasting healthy foods						
	Interventions targeting organization policies						
31	Develop/ Modify organizational health policy on promotion of healthy eating						
32	Develop a manual aimed at the canteen managers on worker's food program, nutritional guidelines, importance of a balanced diet highlighting the key role of fruits and vegetables						
33	An employee advisory board/ programme (EAB/ EAP) to guide the planning and implementation of change to help make the canteen healthier						

34. Do you have any other ideas to make the canteen healthier?

Appendix L: Intervention Rating Scale (isiZulu)



Isilinganiso sokulinganisa ukungenelela

Sicela ubuze umphathi wendawo yokudlela noma umphathi wasemsebenzini ukuthi uzokala kanjani ukungenelela okulandelayo ngesilinganiso sa-1 kuya ku- 5; **1 ayinakwenzeka ukuqaliswa futhi, 5 ukuqaliswa kalula.**

Igama lomhloli: usuku: iskhathi ekuqalwa ngaso:

Igama lomphenduli: ukuqokwa/isikhundla:

Worksite: ☐ La Lucia ☐ Maydon Wharf ☐ Retailability ☐ Lordsview

☐ Indonsa ☐ Khanyisa ☐ Boksburg

Amagama ezindawo zokudlela noma izinombolo:

	Ukungenelela	1	2	3	4	5	Amazwi/phawula
	Ukungenelela okubhekiswe izinga lokudla ubungako.						
1	Susa i-transfat						
2	Yehlisa i-transfat						
3	Ukunciphisa amafutha agcwele						
4	Ukunciphisa ushukela						
5	Ukunciphisa inani losawoti ngesikhathi sokupheka						


6	Ukwandisa izithelo nezitshalo zemfino						
7	Ukunciphisa ingxenye yokudla						
8	Unikeze ubungakanani besiyazi obuncane ngamanani ahambisanayo. Isbonelo , isigamu selayisi nesigamu senani elincane eputetini eligcwele.						
9	Ukulungele ukudla ukudla okunenmpilo (isitsha se-canteen sisusa)						
10	Nciphisa i-soda						
11	Amanzi ahlanzekile						
12	Engenza ibhadidi (ibhadidi istayela se- buffet noma i-counter yasendaweni yokudlela noma emakethe yokudla okuyinto eyizingxenye zesaladi ezinikezwa amakhasimende ukuba ahlangele nesisaladi labo)						
	Ukungenelela okuhloswe ngentengo						
13	Izaphulelo zamanani ezithelo zonke ezintsha						
14	Unikeze izithelo mahhala kanye/noma imifino						
15	Ukudla okunempilo okufana nezithelo, ijusi entsha, okusenhlamvu okuphelele ngenani elincishisiwe						

	Ukungenelela okubhekiswe ekukhetheni kokudla ngesikhathi sokuthenga						
16	Ukulayishwa kokukhanya kokuhamba komgwaqo okuhlaza (okunempilo), ophuzi (onempilo encane) noma obomvu (ongenampilo).						
17	Ukubeka amasu amahle anempilo yokwenza izinto ezinempilo zifinyeleleke kangcono njengokungcina izithelo ezingeni lesi						
18	Isiteshi sokhetho esinempilo						
19	Sebenzisa i-logo yokudla noma uphawu oluthile lokudla okunempilo ukusiza abantu ukuthi babone ukuthi yikuphi ukudla okuphephile						
20	Khombisa inani lamakholori womkhiqizo ohunyushwe kwinimbolo yamaminithi ukwenza umsebenzi othile womzimba emsebenzini (isibonelo: njengokuhamba imizuzu engu- 35 uhambela ikani le-soda)						
21	Ukungenelela okubhekiswe ekuhlinzekeni okuthuthukisiwe						
22	Qeqesha abaphathi ukuthi bakhuphule ukuba khona kokudla okunempilo endaweni yokudlela emsebenzini						
23	I-workshop yokugaya yezisebenzi zasendaweni yokudlela emsebenzini, abapheki Kanye nabasizi bekhishi ekulungiseleleni ukudla okunempilo, besebenzisa izithelo nemifino, izethulo, ilungiselelo.						

24	Izikhathi ezibhekiswe kumakhasimende ulwazi/ imfundo/ isisusa						
25	Amakilabhu ezempilo asemini						
26	Ama-workshop akhuluma ngokudla okunempilo futhi ukunambitha ukuboniswa kokudla okunempilo						
27	Ukwazisa ulwazi (isibonelo ukudla okunomsoco, amashidi okudla, ukudla okusekhompyutheni).						
28	Umagazini onemininingwane yokudla okunempilo						
29	Ukusabalalisa izinto zokufundisa ngemilayezo ekhuthazayo izithelo nokusetshenziswa kwemifino.						
30	Isisetshenziswa somthombo wokudlaokunomsoco nabasebenzi abaqeqeshwe abakhona ukuze baxoxisane ngokudla okunempilo futhi banikeze izinsiza.						
31	Amaphosta, ama- napkins, incwanjana yokuhlola						
32	Ukweza imiboniso nokuza ukudla okunempilo						
	Ukungenelela okubhekiswe ezinkombisweni zenhlangano						
33	Ukuthuthukisa/ ukuguqula inqubomgomo yezempilo yenhlangano ekukhuthazeni ukudla okunempilo						
34	Ukuthuthukisa i- manual eqondiswe abaphathi bezindawo zokudlela ohlelweni lokudla kwabasebenzi, imihlahlandlela yokudla okunempilo, ukubaluleka kokudla okunomsoco okuqokomisa indima ebalulekile.						

35	Ibhodi lokucebisa abasebenzi ukuthi liqondise ukuhlela nokwenziwa kwezinguquko ukusiza ukwenza indawo yokudlela ephilile						
----	--	--	--	--	--	--	--

36. Unayo imibono yokwenza indawo yokudlela ibenempilo.



SEEKING VOLUNTEERS FOR A RESEARCH STUDY

The purpose of the study is to develop an acceptable, appropriate and feasible worksite intervention in order to design a canteen and behavioural intervention to lower cardio-metabolic risk at your worksite.

TO PARTICIPATE IN THIS RESEARCH STUDY, YOU MUST:

- Be a permanent staff member
- Consume at least one meal from the canteen per day

NOTE: PARTICIPATION IN THIS STUDY DISCUSSION INVOLVE A TIME COMMITMENT OF ONE HOUR

For more information about this study, please contact Shivneta Singh:

- Phone: 067 213 4244
- Email: sshivneta@gmail.com

STUDY TITLE: INFORMED DESIGN OF A WORKSITE INTERVENTION TO LOWER CARDIOMETABOLIC RISK.

Research Study: Focus Group Discussion Contact: Shivneta Singh Phone: 067 213 4244	Research Study: Focus Group Discussion Contact: Shivneta Singh	Research Study: Focus Group Discussion Contact: Shivneta Singh	Research Study: Focus Group Discussion Contact: Shivneta	Research Study: Focus Group Discussion Contact: Shivneta	Research Study: Focus Group Discussion Contact: Shivneta	Research Study: Focus Group Discussion Contact: Shivneta	Research Study: Focus Group Discussion Contact: Shivneta
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Appendix N: Fieldworkers training manual



Title of study: Design of a worksite intervention to lower cardiometabolic risk in South Africa

IREC number: IREC 078/20

**FIELDWORKERS TRAINING MANUAL FOR KEY INFORMANT
INTERVIEWS AND FOCUS GROUP DISCUSSIONS
(Face to Face and Online)**

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PART A: KEY INFORMANT INTERVIEWS

1. WHAT ARE KEY INFORMANT INTERVIEWS?

Key informant interviews are defined as qualitative in-depth interviews consisting of individuals who are aware about what is happening in the community. The purpose of key informant interviews is to gather information from a diverse group of people. This includes community leaders, professionals, or citizens who have first-hand knowledge about the community. These community experts, with their precise knowledge and understanding, can provide an insight on the nature of problems and provide recommendations for solutions. Telephone interviews and face-to-face interviews are the two most common techniques used to conduct key informant interviews. This manual focuses on individual, face-to-face interviews.

2. ETHICAL GUIDELINES

2.1. Explain the purpose of the interview

The purpose of the interview should be explained to participants within context of the research study. It is imperative that you be honest and direct about the study objectives as well as the anticipated risks and benefits to the participant and the community, and that you recognize the organizations involved in the study. It is also vital not to create false expectations in order to attain a participant's cooperation.

2.2. Confidentiality

Participants should be notified that whatever they discuss during the interview will be kept in confidence. This is important as you can earn their trust and elicit good data. The interviewer should be able to comprehend and explain the procedures outlined in the study protocol for protecting participants' privacy. If the participant is concerned about their confidentiality that you cannot address, they can be referred to the study officials whose contact information is provided on the informed consent form. It is very important to adhere to this commitment.

2.3. Informed consent

Before conducting the interview, you need to obtain an informed consent in accordance with procedures specified for the study from every participant. Informed consent can either be obtained verbally and tape recorded or participants may be required to sign a written informed consent document. If the documents are in multiple languages, ensure the version in the appropriate language is used for the participant. In addition to informing participants about the voluntary nature of the study, the main purpose of informed consent is to ensure that they understand the risks and benefits involved in participation. The informed consent document should also provide participants with information on how the interview data will be used, who will have access to the data, and whom they may contact for questions.

3. RESPONSIBILITIES OF AN INTERVIEWER

The interviewer is responsible for achieving the following roles, tasks, and obligations before, during, and after the interview:

Prepare for the interview

- Recruit participants according to the recruitment strategy outlined in the work plan if interviewers are involved in recruitment.
- Set up recording equipment and the physical space where interviews will take place.
- Become knowledgeable about the research topic, including anticipating and being prepared to answer any questions participants may have about it.
- Be reliable. Show that you are committed in order to get participants to take the interview seriously.
- Be punctual, equipped with the recording equipment, interview guide, and notebooks. Be both mentally and psychologically prepared to conduct the interview. Keep all promises you make to participants.

Interview participants thoroughly

- Obtain informed consent from each participant before the interview.
- Address all questions or topics listed in the interview guide.
- Ask follow-up questions (some of which may be scripted in the interview guide) in order to attain participants' complete knowledge and experience related to the research topic.
- Probe participants to elaborate on their responses, with the aim of gaining maximum information that they can share about the research topic.

Document the interview

- Record the interview using an audio recorder.
- Take backup notes.
- Observe and document participants' behaviours and contextual aspects of the interview as part of your field notes.
- Expand the notes as soon as possible after each interview, preferably within 24 hours.

4. HOW TO PRESENT YOURSELF AT AN INTERVIEW

The relationship between the interviewer and the participant commences at the first contact, with the participant's first impression of the interviewer based many factors. These factors include the greeting, manner of speaking, clothing, and body language. All of these should be suitable for the particular culture and environment and convey respect for the participant. Cell phones should be switched off and out of sight to indicate the participants is not of secondary importance.

5. TWO METHODS THAT CAN BE USED TO RECORD KEY INFORMANTS INTERVIEWS

5.1. Note-taking:

Interviewers should strategically take notes during the interview as well as immediately after. It is advisable to type and print the key questions in the key informant guide, leaving enough space between each question to manually write the key informant's responses while conducting the interview.

However, taking notes while interviewing an individual may be challenging as interviewers may be engaged in the discussion and not taking notes. It is important to take notes during the interview but this should not interrupt the flow of the discussion. Once the interview is over, the interviewer should immediately review their notes, expand on their short-hand note-taking, or add important comments or points made. This decreases the chance of losing valuable interview information that may occur after a day or several hours.

5.2. Tape recording:

A tape recorder can be used by an interviewer to document what key informants say. This method allows the interviewer to easily engage in the discussion without being concerned about note-taking. The interviewer may take brief notes during the interview, write down and organize notes at the end of the interview and use the tape recording to fill in information gaps or details. It is compulsory to obtain informed consent from the key informant to audiotape the interview. Therefore, it is advisable to discuss the possibility of tape recording before the interview is scheduled. It is imperative to emphasize that the interview will be recorded so that important insights and information will not be missed, the interview will not be recorded if participants disagree and the audiotape will not reveal any identity and will be stored in a secure place.

6. CONDUCTING THE INTERVIEW

The interview tool developed will help structure the discussion and key questions. Interviewers should prepare for the interview by practicing and familiarizing themselves with the script and questions before meeting the key informants.

a. Starting The Interview

The interviewer should commence by thanking the respondent and emphasizing the importance of the meeting. The interviewer can then make any clarifications and answer any questions regarding the study and purpose of the interview. Caution should be taken in order not to influence or be biased towards the respondents' answers.

b. During The Interview

Interviewers should listen attentively for recurring and new opinions or beliefs. They should take notes, highlighting the key points. Throughout the interview, interviewers should pace themselves. It is important to obtain a response to certain key questions from every individual interviewed in order to compare the data collected and identify themes.

c. Closing the Interview

At the end of the interview, ask the key informant if they have any questions or final comments. Let them know what will happen with the information and conclude the interview by thanking them for their time.

7. A CO-CONDUCTED INTERVIEW

It is occasionally appropriate to have two interviewers although interviews are traditionally conducted by one investigator. For instance, when interviews are not being recorded, an additional interviewer is required to take notes while the other person conducts the interview. Two interviewers may also be needed due to safety concerns.

The roles in the interview can be decided before the interview when two field staff are present. One person should take the role of conducting the interview (interviewer), while the other focusses on taking notes (note-taker). The interviewer can also take brief notes. The note-taker should not disturb the interview unless required by the interviewer or asked a question by the participant.

The interviewer should ask the note-taker if any points need to be clarified before the interview closes. Thereafter, staff members should debrief with each other and discuss what happened and what they learned, either directly after the interview or within a day. The note-taker should take detailed notes during the debriefing. These notes may then be reviewed and supplemented by the interviewer.

8. KEY SKILLS FOR INTERVIEWING

Skill	Includes	Rationale	Tips
Rapport-building	The ability to quickly create an interviewer and participant dynamics that are positive, relaxed, and mutually respectful.	<p>Participants will talk freely, openly, and honestly about the research topic if they:</p> <ul style="list-style-type: none">-feel comfortable in the interviewer's presence.-trust the interviewer.-feel secure about confidentiality.-believe the interviewer is interested in their responses.-do not feel judged.	<p>Learn culturally-specific styles and techniques for building rapport.</p> <p>Examples include:</p> <ul style="list-style-type: none">- be friendly- smile- use a pleasant tone of voice- use relaxed body language- incorporate humour- be humble- do not patronize-be patient

Skill	Includes	Rationale	Tips
Emphasizing the participant's perspective	<p>Treating the participant as the expert.</p> <ul style="list-style-type: none"> -Not allowing the participant to start interviewing you. -Balancing deference to the participant with control over the interview. -Being an attentive listener. -Portraying a neutral attitude. 	<p>The interviewer's perspective on the research issue should be invisible. This avoids the risk that participants will modify their responses to please the interviewer instead of describing their own perspectives.</p>	<ul style="list-style-type: none"> -Remember that the purpose of the interview is to elicit the participant's perspective; consider yourself a student. -If a participant asks for factual information during the interview, write down the questions and respond after the interview is over. -If a participant asks what you think, deflect the question. Let the participant know that you consider his or her point of view more important. -Don't overcompensate for perceived status differences by giving the participant too much control over the interview. -Pay attention to what participants say and follow up with relevant questions and probes. -Be aware that what you say, how you say it, and your body language can convey your own biases and emotional reactions. Use them instead to convey neutrality and acceptance.
Adapting to different personalities and emotional states	<p>Being able to adjust your style to accommodate each participant.</p>	<p>Every participant has a unique character and demeanour. By adopting an appropriate demeanour for each individual, the interviewer can help the participant be comfortable enough to</p>	<ul style="list-style-type: none"> -Various interviewing styles may be required for diverse participants, for example, being able to retain control of a discussion with a dominant personality. -Adapting to each participant may require being more careful in the way you present sensitive issues, adjusting your tone of

Skill	Includes	Rationale	Tips
		<p> speak freely about the research topic. </p>	<p> voice, or exhibiting increased warmth or social distance. </p>

9. ONLINE KEY INFORMANT INTERVIEWS

9.1. Communication through information and communication technologies (ITCs)

Certain ICTs allow for a complete range of visual and verbal exchange. Some ICTs, for example, videoconferencing, allow for an interview that closely resembles the natural back-and-forth of face-to-face communication, including verbal and nonverbal signals.

ICTs enable participants to share real or imagined visual artefacts, images, or environments. Web conferencing tools permit researchers and participants to view or create visual images. In immersive multi-user visual environments (MUVES), researchers and participants can navigate the virtual worlds or environments chosen or created by the researcher or the participant. The four main types of synchronous communication are summarised below:

1. Text based

Interaction through words that are typed, use of images is limited through emoticons or exchange of pictures.

Communication through a phone, mobile device, or computer.

2. Videoconference or Video call

Communication through audio and video using a videoconference facility, computer, or mobile device.

3. Multichannel Meeting

Communication through audio, video, text, and/or shared applications using a computer or mobile device.

4. Immersive 3-D environment

Communication through audio or text, and visual exchange using a computer or mobile device.

9.2. Different roles in key informant interviews

Key informant interviews comprises of interrelationships among the following:

- The interviewer, is responsible for ethical, respectful inquiry and accurate collection of data relevant to the research purpose and questions, regardless of the interview style.
- The interviewee gives honest answers to questions. He/she takes part in discussion with the researcher to develop ideas or answers that provide insight into his or her perceptions, understandings, or experiences of personal, social, or organizational dimensions of the subject of the study. Depending on the type and expectations of the research, they may also be called subjects, respondents, or research participants.

- The research purpose and questions serve as the framework. It offers focus and boundaries to the communication between the researcher and interviewee.
- The research environment creates a context for the study. Depending on the type of the study, the environment may be important for the researcher's understanding of the interviewee. Cyberspace is the research milieu for online interviews.

9.3. Techniques for video-conferencing interviews

9.3.1. Recruitment

When recruiting participants for online videoconferencing interviews, it is vital to notify potential participants that the medium used for interviewing will be through an online portal, such as Skype or WhatsApp. Participants should be mindful of the basic technological requirements and equipment required to participate in the interview from the beginning. These requirements may include an internet connection, a webcam, speakers, and a microphone. Many smart phones or tablets with computer-mediated communication (CMC) applications may be adequate to successfully conduct interviews. Studies indicate that allowing participants to choose a medium increases their willingness to participate in the study as participant input into the process helps to build rapport and trust between the interviewer and interviewee.

Scheduling synchronous online interviews may be less complicated than traditional in-person interviews as it decreases travel costs and increase access to individuals globally. It is more convenient to meet online, with interviews conducted at times and locations that are agreeable to both the interviewer and interviewee. It is important to take into consideration different time zones and personal schedules. Interviewers must be flexible in order to accommodate different schedules because participants usually maintain a daily schedule.

9.3.2. Rapport

Building a rapport with participants, specifically individuals who are not familiar to video-conferencing systems, is important. Communication before the online interview builds upon the participants' impressions and trust of the researcher. In-person interviews enable the researcher and participant to get to know each other before the interview, making it easier to build a foundation. Online interviews differ, therefore the researcher should be more specific with all regards to the interview. The initial scheduling and arrangements for the online interview is most likely to take place over a telephone or via email. The researcher should provide detailed information regarding expectations of the interview, answer all questions that may be asked, and alleviate possible apprehensions of the interviewee. Through all communication, the researcher should try to develop openness and approachability.

Participants may express some concern regarding the confidentiality and security of an online interview. Researchers should adhere to all protocols regarding protection of participants, similar to in-person interviews, indicating to participants before the starting of the interview that all necessary precautions have

been taken to protect the information and/or their identity. Participants should be notified that all records of the interviews (including audio or video recordings), are maintained on a secure, password-protected computer system.

Every study, including the use of computer and Internet technologies, must:

- Ensure the procedures fulfil the principles of voluntary participation and informed consent;
- Maintain the confidentiality of information obtained from or about human participants; and
- Adequately address possible risks to participants including stress and related issues.

9.3.3. Preparation

Both the researchers and participants should be technically prepared for the online interview. Voiceover-internet-protocol (VOIP) is a low-cost, easy to learn option. It is recommended that the software be installed at least a day prior to the scheduled interview. Test the equipment, try out the software and check internet connectivity well in advance of the scheduled interview in order to address any issues or glitches that may occur. It is advisable to video interview a friend, colleague, or family member and ask them for feedback. Decide if the chosen location is appropriate and if they could see you clearly.

Preparation also comprises of the consideration of presentation. Researchers should ensure they have an appropriate attire for the interview that maintains a professional appearance. The focus of the interview needs to be on the questions and responses therefore interviewers should also be aware of the background which appears on the device as it will be seen by the participant during the full duration of the interview. Researchers are also required to prepare for and attempt to reduce or eliminate potential distractions. If working from home, it is advisable to complete the interview in a closed room where children, pets, and other potential disruptions can be avoided.

Researchers are required to be prepared with the questions, probes, prompts, and other techniques to advance the conversation. Once the interview is in process, it is the researcher's responsibility to concentrate on the interview itself, ensuring that the necessary data is collected in order to answer the primary research questions. The researcher will effortlessly be able to pay attention to matters if all proceeds well with the technology and internet connection. If any difficulties occur, for example, poor internet connection or large time lag, the researcher must be prepared to handle and adapt to the situation as required. Allocating time to allow for technical delays is a strategy that potentially increases the opportunity for all of the questions to be answered thoroughly, increasing the validity of the study.

9.3.4. During the interview

It is important to maintain eye contact throughout the discussion. The microphone should be managed, if used. Take into consideration the small sounds such as rustling paper as it can be amplified through a microphone. Speak clearly and make sure you can be heard (converse just like it would be in person). Use facial expressions and hand gestures to emphasize points. Be an active listener. Position yourself so you

are centred and looking into the camera. It is recommended to have the camera at eye-level so you are not looking up or down at the interviewee. Sit up straight or lean forward slightly to help increase eye contact.

9.3.5. Records and Analysis

Media such as Skype permits the researcher to record both the audio and video conversations. There are numerous “video call recording” plug-ins or applications that can be used with either Windows or Mac platforms with minimal or no cost. As stated earlier regarding the interview software, these applications should be tested thoroughly prior to the interview to ensure proper recording. It is suggested that an audio recorder and/or hand-written notes may also be used as backup in the event of technical difficulties. Qualitative analytic software programs are also advancing with the advancement in technology to meet the needs of researchers. Software tools, for example Atlas. ti or NVivo have features which enable coding directly in an audio/video file, potentially eliminating the need for transcription. Coding the data is only one step in analysis. Online interviews also present additional considerations for the analysis process.

10. The South African Pioneer Worksite Intervention Study

Tool		Face to Face	Online
Key Informant Interviews	Recruitment	<p>Purposive sampling will be used to recruit worksite managers and canteen operators. Participants will include full time staff in a management or supervisory position. Lists and contact details of managers will be obtained from the Human resources department and from the canteen service provider. Participants will be contacted over email to re- inform them about the study</p>	<p>Purposive sampling will be used to recruit worksite managers and canteen operators for the key informant interviews. Participants will include full time staff in a management or supervisory position. Lists and contact details of managers will be obtained from the Human resources department and from the canteen. Participants will be contacted over email to re- inform them about</p>

Tool		Face to Face	Online
		and requesting their participation. The outcomes of key informant interview, details of the interview and a schedule for face to face data collection will be presented. The interviews will be scheduled at a time and place convenient to the participants and time contributions from participants would be estimated as 30 to 45 minutes. For all non-responding potential participants, a follow up email will be sent. Potential participants details will be recorded and consent will be sought.	the study and requesting their participation. The outcomes of key informant interview, details of the online interview and a schedule of the online data collection dates will be presented. For all non-responding potential participants, a follow email will be sent. Potential participants details will be recorded and consent will be sought.
	Consent and scheduling/ follow up	Participants will be given the option of completing the informed consent form on email or consent will be obtained in person before data collection. Participants will be reminded over email or by phone about the	Consent will be obtained through email. Verbal consent to record the session will be obtained at the start of the online session. Participants will be reminded over email about the interview a week before, a day

Tool		Face to Face	Online
		interview a week before, a day before and on the day of the interview.	before and on the day of the interview.
	Management of the interview	A trained moderator will use a semi-structured interview guide to conduct the interview. All interviews will be audio-recorded with a digital recorder. A note taker will transcribe the discussion.	A trained moderator will use a semi-structured interview guide to conduct the interview. The note-taker's role will be extended to manage written chats and questions during the online call.
	Incentive	Participants will be provided with refreshments and an incentive voucher for their participation.	Participants will be given a data voucher in place of the refreshments. In addition all participants will receive an incentive voucher for their participation.

PART B: FOCUS GROUP DISCUSSIONS

1. WHAT ARE FOCUS GROUP DISCUSSIONS (FGDs)?

Focus groups are group discussions consisting of eight to ten people who gather together to discuss a topic of interest. The discussion is directed by a group leader, also known as a moderator. The role of the moderator is to ask questions and try to help the group have a natural and lively conversation amongst each other. Group interaction is vital as it provides as insight of how people think about an issue, different opinions and ideas of individuals and the inconsistencies and variation that exist.

The discussion of the group is usually focused with one or two main topics in order to acquire a detailed idea about how individuals think about the area of interest. Focus groups are also focused because the participants generally share common characteristics. These include age, sex, educational background, religion, or something directly related to the topic being studied. This allows the group to speak without hesitation.

2. ETHICAL GUIDELINES

2.1. Confidentiality

It is important to maintain confidentiality when conducting FGDs. This requires special precautions and emphasis in focus groups. Therefore, it is advisable to avoid using participants' names during the focus group. A system of name substitution should be implemented before the session begins. For example, participants could be assigned numbers, letters, or pseudonyms for the moderator and note-taker to use in order to identify speakers in their notes.

The moderator and note-taker should assure participants that everything they share during the FGD will be confidential within the project staff, however, it is not promised that members of the group would do the same. Hence, it is imperative to emphasize that participants should respect each other's privacy and anonymity, both at the beginning and end of each session. Members of the group should also be made aware that they should not reveal the identities of other participants nor indicate who made specific comments during the discussion outside of the focus group environment.

If a participant feels concerned about their privacy during the focus group, they can be assured that special precautions to protect participants' identities and data have been taken. The moderator needs to understand the procedures outlined in the study protocol for protecting participants' privacy and should be able to explain these steps clearly. Participants will be provided with the contact information of study officials whom they can call for more specific information which generally appears on the consent form. If the participant is still uncomfortable after all assurances and wish to withdraw from the focus group, the moderator should respectfully acknowledge and support their right to do so and thank them for their time and effort.

2.2. Informed consent of the Focus Group Discussion

An informed consent in accordance with the procedures of the specific study protocol needs to be obtained from every participant before beginning the focus group discussion. The purpose of the informed consent is to ensure that participants understand that they are not for any reason obligated to participate in the focus group, nor are they required to answer any questions they do not wish to answer. Informed consent can be obtained verbally and may be tape recorded or written. It is also necessary to provide participants with information on how the focus group data will be used and who will have access to it.

3. ROLE OF THE MODERATOR

A FGD depends on the moderator (also known as facilitator) to guide the group's discussion. The moderator is required to have a set of skills and techniques in order to ensure the topics of interest discussed are addressed comprehensively. Below is a list of suggested skill set:

- Ability to create a warm, supportive and comfortable environment to encourage an open and honest discussion among diverse groups and individuals.
- Have good and active listening skills to help engage with the respondent by paraphrasing or summarising their responses. This also involves using gestures to encourage conversation.
- Have good observation skills, pay attention to participants' body language or demeanour and recognise group dynamics.
- Have good communication skills and knowledge of the topic of discussion with additional information on the subject. This helps in probing answers for a more in-depth discussion.
- Flexibility to adapt to the flow of the discussion, remain open to changes in the discussion guide, adjust to participants' requests during the group and adjust physical behaviours and activity around the room.
- Ability to remain neutral by getting involved while maintaining verbal and non-verbal objectivity.
- Should have a sense of humour to keep the discussion relaxed, encourage sharing of information.

4. ROLE OF THE NOTE-TAKER

Note-takers are accountable for taking detailed notes of the discussion, even though focus group sessions are usually tape-recorded. These notes serve as supplementary documentation of the discussion, documentation of the note-taker's observations, and as a backup in the event that the recording system fails. Note-takers may also be responsible for tasks related to recording such as operating the tape recorder and taking appropriate security measures to protect the tapes once the session is over. Note-takers generally facilitate the logistics of participant arrivals and departures, for example, early withdrawal and escort to the washroom. Effective note-takers should be careful observers of verbal and nonverbal behaviours.

5. CONDUCTING THE FOCUS GROUP DISCUSSION

a. Welcome the Participants

Participants should be told to sit in a semicircle as they arrive. The FGD can start with the opening section of the FGD Guide. Ensure the ethical considerations are addressed and obtain consent before proceeding to the discussion. A few informal warm-up questions may be asked to break the ice.

b. Guiding the discussion

The exploration section is the key part of the FGD. Ask the questions as they are written in the guide, but allow for flexibility in the sequencing or probing questions. This ensure that there is a natural flow of the discussion. The FGD Guide is a semi-structured tool to help guide the discussion; it is not a survey instrument. Therefore, you don't need to ask the questions in the exact order and exactly as it is written. Let the discussion progress naturally, without intervening needlessly, but ensure the discussion does not get out of hand either.

As the participants provide initial responses to each main discussion question, probe and investigate further if some issues arise that are principally relevant to the topic. Use your judgment in determining when to probe further. For example, you may decide that the group has adequately covered a certain topic and that you do not need to ask any probing questions from the FGD Guide; or you may add a follow-up question that was not in the tool but which naturally flows from the direction of the conversation. This will provide valuable insights to the topic of discussion. However, do not waste too much time as you need to make sure all the key questions in the FGD Guide are answered within the time assigned for the discussion. Ask for specific examples if you don't understand what the participants are saying.

c. Managing the discussion

Be patient and don't stop the participants from speaking. However, you need to ensure that every individual is given an opportunity to express themselves. Avoid taking too active a role in the discussion. The idea is to create a discussion among participants and not a conversation between the facilitator and the participants.

If some participants remain silent whilst someone dominates the discussion, thank the dominant participant for their input and ask other participants to express their views. Make eye contact while asking probing questions to engage with less interactive participants. Purposefully ask participants who are quiet to share their opinions. Ask questions, for instance: "What do others think? Who else thinks this way? Who has a different opinion?" Don't interrupt if the conversation diverts from the topic, but use the first opportunity to summarize what has been said, then redirect the conversation.

If an individual want to leave the discussion, allow them to do so. Participation is voluntary and participants have the right to withdraw at any time without providing a reason. Be sure to thank those who leave.

c. Group Consensus

The facilitator should not drive for consensus at the group level. It is acceptable if participants have diverse opinions on the discussed topics.

d. Closing The Discussion

Thank participants for their participation. Explain what will happen with the information shared at the FGD. Answer any questions participants may have and provide them with contact information should they want to offer additional input or ask questions.

e. Taking Notes

Notes from the FGDs are important as they ensure the quality of the data and maximize the benefits of the effort. If notetaking is inefficient, the effort taken to prepare and conduct the FGD may be futile. The notes should be detailed, reflect the content of the discussion and indicate non-verbal communication (such as participants' facial expressions, body language and types of interaction among participants). The discussion should be noted in the language the participants used, retaining their original phrases and grammar. This reduces the risk of misrepresentation of the information and ensures all details are recorded, including examples or anecdotes.

Tips for an effective note taker:

- Use one book for every FGD.
- On the first page, record the date, time, the facilitator's name, and the note taker's name, and who you are talking to (type of respondents and number of participants in the FGD).
- As soon as the participants are seated in a semi-circle, draw a seating arrangement chart on the first page of the notebook. Indicate an alphabet or number for each person present (for example, P1, P2, P3). This will simplify the notetaking process so that each comment is allocated to the person giving it.
- Start each question on a new page.
- Start every new respondent's comment on a new line, starting each response or comment with the respondent's unique code to identify who said what. An individual saying something five times is still the view of only one person, and should not be misjudged as a shared group opinion. Records of what each individual in an FGD says are not meant to support analysis of the individual's opinion or insight. It is to indicate whether a specific person was dominant or had systematically opposing views to all issues discussed.
- Try to record what people say word-for-word or write the main content of their responses word-for-word. Don't summarize or rephrase what people say in your own words. Try to write what each respondent says in their own dialect. Summarizing or paraphrasing responses can be a

misrepresentative. For example, an exact reply: 'Yes, indeed! I fully agree!' loses its intensity if noted merely as "Yes."

- To ensure precise capturing of the discussion, which can be very lively and dynamic sometimes, the note taker may use shorthand, abbreviations or symbols. This should be expanded into full sentences during the reviewing of notes.
- If you notice that some of the questions from the FGD Guide have been missed, notify the facilitator before the closing section of the FGD Guide.

6. CONDUCTING FOCUS GROUPS IN A SECOND LANGUAGE

If the team member or researcher does not speak the language of the participants, translators are required to assist in the session. The direct translations of each response to the moderator by interrupting the discussion is not advisable and sensible. Therefore, when translation is required, it is necessary to have a team of four members (two moderators, an observer and a translator).

7. WHAT ARE PROBES AND HOW TO USE THEM

Probes are impartial questions, phrases, sounds, and gestures moderators can use in focus groups to encourage participants to explain their answers further or indicate how and why. Suggestions for probes are occasionally outlined in the focus group guide, but can also be used by the moderator's discretion. The specific probe used is dependent on the answer given by the participant. It is for this reason that probing requires the moderator to listen attentively and engage with the participants.

The moderator can use probes when a participant's answer or contribution is brief or indistinct. Probes can also be used when an individual seems to have additional information on the topic. Probes should be used often to attain more details about what the participant thinks, feels, and experiences in connection to the topic of interest. Do not assume that you can comprehend the intent of a brief response, use probes to confirm your understanding. However, do not use probes excessively. You need to know when to probe and when to move on to the next question. It is best to move on to the next question when there is repetition or if a participant becomes angry or upset about prolonging the topic of interest.

8. ONLINE FOCUS GROUP DISCUSSIONS

8.1. Adjust, consider and plan more

- ✓ When conducting online FGDs, it is recommended to limit the number of each group to 4–8 participants. This allows for all participants to have an opportunity to express themselves, remain engaged, and decrease stress on the moderator. Added effort may be required to ensure the correct profiles and samples are recruited. An additional online FGD may be conducted in order to include all the necessary recruitment profiles.

- ✓ An online confidentiality agreement or participant consent can be sent to each participant before the scheduled FGD, or collected online using a tool such as signable. Alternatively, the agreement can be read before the start of the session by asking each participant to agree by voice and the answer can be recorded (“Do you agree to...? Yes/No”).
- ✓ Incentives can be paid effortlessly through a bank transfer or with an online voucher, for example, a gift card or data voucher.
- ✓ The session should be between 40-60 minutes. This will enable participants to stay focused for the full duration and avoid certain distractions since many people are working from home.

8.2. Choose the right online platform and tools

8.2.1. Video- conferencing tools

The tools chosen should permit face to face interaction with the participants, video recording and streaming. If possible, participants should be able to join the session by clicking on a link without the need to install any software. Zoom, GoToMeeting, Teams, WebEx, Hangouts are some commonly used examples.

8.2.2. Collaboration tools

There are stimulating collaborative tools to support remote focus groups, for instance, WhatsApp, Microsoft Teams and Zoom. These tools are not a substitute to the videoconferencing tool, but can be used to conduct brief exercises with the participants during the session. They are used to replace the whiteboard or flipchart that is used in face to face sessions.

8.3. Adjust the discussion guide

- The discussion guide should be adapted to be conducted online and therefore include 3 to 5 key topics in order to remain within the allocated time.
- There should be sufficient time included for introductions, allowing participants to become comfortable in the session which enables them to interact with one another.
- Carefully think about how information or artefacts/stimuli will be shared amongst each other.

8.4. A moderator or note-keeper

All the typical skills for moderating groups are still required therefore make sure you have a skilled moderator. The moderator should not be afraid of technological challenges. The moderator should be familiar with technology and assist if participants are experiencing any difficulties such as, can't hear the person speaking. It is vital to have a note-taker to ensure the moderator can focus on the group.

8.5. Test the technology with participants before conducting the FGD

Make sure participants are familiar and able to use the designated platform by sending them a test link to try before the session. Certain platforms offer a test link. Alternatively, use different links for each group so that

they can test out the link using the same meeting identity as the one for the research to minimize any confusion.

Participants should test the link on the platform as well as on the device they will participate with in the precise location to ensure there are no problems including security concerns which might stop them from downloading some plug-ins. This should be conducted well before the scheduled session in case troubleshooting is needed.

8.6. Conducting the FGD

All the typical skills for conducting a group session apply but the following might be considered:

- Ask participants to sign in 10–15 minutes before the session so you have time to interact with each participant to ensure cameras, mics, etcetera, are working.
- If required, concerns and problems should be discussed offline with participants at the end of the session.

8.7. Collect data, report and present results

This will be the same as for an in-person FGD.

9. The South African Pioneer Worksite Intervention Study

Tool		Face to Face	Online
FGD	Recruitment	Participants (all employees) will be purposively recruited with the goal of identifying information-rich individuals who represent diverse groups at the worksite	Participants (all employees) will be purposively recruited with the goal of identifying information-rich individuals who represent diverse groups at the worksite

Tool		Face to Face	Online
		<p>(different sexes, age groups, positions). Flyers will be distributed strategically at canteen site/s requesting individuals interested in participating in the FGDs to contact the researcher by phone or email. The flyer will also be shared through the staff intranet. The outcome of the FGD will be explained together with all details of the interview. The interviews will be scheduled at a time and place convenient to the participants and time contributions from participants would be estimated as 45-60 minutes. A schedule of all FGDs will be shared to all interested participants to choose from over email and this will be followed up by phone call for the confirmation of a FGD slot.</p>	<p>(different sexes, age groups, positions). A flyer to participate in the FGDs will be posted on the staff intranet through the Human Resources on a weekly basis for a month requesting individuals interested in participating in the FGDs to contact the researcher via email or phone. The outcomes of the FGD will be explained together with the details of the online interview. A schedule of the online data collection dates will be shared to participants to choose the most suitable date. The interviews will be scheduled at a time and place convenient to the participants and time contributions from participants would be estimated as 40 - 60 minutes. For all non-responding potential participants, a follow up email will be sent. Potential participants</p>

Tool		Face to Face	Online
		Potential participants details will be recorded and consent will be sought.	details will be recorded and consent will be sought.
	Consent and scheduling follow up	Participants will be given the option of completing the informed consent form on email or consent will be obtained in person before data collection. Participants will be reminded over email or by phone about the interview a week before, a day before and on the day of the interview.	The researcher will share the informed consent and letter of information over email. For consenting participants, scheduling of online data collection activities will be done over email. Participants will be reminded over email about the interview a week before, a day before and on the day of the interview.
	Management of the interview	A trained moderator will use a semi-structured interview guide to conduct the interview. All interviews will be audio-recorded with a digital recorder. A note taker will transcribe the discussion.	A trained moderator will use a semi-structured interview guide to conduct the interview. The note-taker's role will be extended to manage written chats and questions during the online call. All video and audio will be enabled. In the case a participant loses connectivity a 2-minute

Tool		Face to Face	Online
			rule will be used to allow them to reconnect.
	Incentive	Participants will be provided with refreshments and an incentive voucher for their participation.	Participants will be given a data voucher in place of the refreshments that was to be provided for the face to face meeting. In addition all participants will receive an incentives voucher for their participation.

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APPENDIX A1: In-depth interview guide for worksite managers



IN-DEPTH INTERVIEW GUIDE

Hello! I'm [insert name]. Thank you for agreeing to meet today.

I am interested in talking with you because we are collaborating with your workplace to start a program to help employees be healthier. For the healthy lifestyle program to be a success, it is very important that we get input from management staff such as yourself. So, we are interviewing you, along with other managers, to get your opinion about how to make the program work well for your workplace and employees.

I am interested in hearing your thoughts and your input about the program. So, please don't feel shy and feel free to share your honest opinions. There are no right or wrong answers. Your views and suggestions are very valuable. We will use what we learn from our discussion to plan the program to suit the employees at your workplace.

I have a list of questions I would like to ask you. Feel free to bring up any topics you feel are related to our discussion.

Also, I want to let you know that your participation in this interview is completely voluntary. If you want to stop at any time or don't feel comfortable answering a question, please let me know.

I would like to record our discussion so that I don't miss anything you say. Our discussion will remain completely confidential. The information you give will only be used to help create a program that fits the needs of your workplace and employees, and your name will not be identified.

Do you agree to participate in the interview?

Is it okay to record the discussion?

The interview will last about 30 to 40 minutes. Do you have any questions before we start? *[Answer any questions.]*

Let's begin!

[Start the recorder]

WARM-UP

1. What is your job title?
2. What are your responsibilities day-to-day?

PROBES

- Supervision of employees

Healthy eating

I would like to talk about the second part of the program. It will include changes to the workplace to help employees eat healthier during the workday.

Let's start with healthy eating.

By healthy eating, I mean eating mostly vegetables, fruit, and whole grains, healthy fats, and healthy proteins like chicken, lentils, and beans. Not eating a lot of fried foods and drinking water instead of sugary beverages is also a part of healthy eating.

3. What changes can be made at your workplace to help employees eat and drink healthier?
 - Pause rooms, tea rooms, coffee shop
 - Conferences and events
4. What changes can be made to the canteen(s) at your workplace to help employees eat and drink healthier?

PROBES

- Choose healthier food options
 - Avoid choosing unhealthy food options
5. How can managers such as yourself encourage employees to eat and drink healthier?
 6. What factors do you think are important when developing a canteen menu?

PROBES:

- Nutrition
- Price
- Staff hours for food preparation
- Age of employees
- Packaging
- Seasonal availability

7. What facilitates healthy eating and drinking at the worksite canteen?

PROBES:

- Special events, For example: Diabetes Day
- Management

8. What prevents healthy eating and drinking at the worksite canteen?

PROBES

- Employee preferences
- Cost
- Skills to prepare meals
- Wastage

9. Are there any healthy eating programs implemented at the worksite canteen? If so, explain.

10. Pre and post COVID-19, did you notice any changes with food and beverage consumption?

WRAP-UP QUESTIONS

11. What else should we consider when designing the healthy lifestyle program for your workplace and employees?

12. Do you have anything else to add to our discussion today?

CONCLUSION

Thank you for taking time to talk with me! You have shared important information and given us a lot of ideas. Your input will be very valuable for planning the healthy lifestyle program at your workplace.

[Stop the recorder]

Annexure A1: In-depth interview guide for worksite managers (isiZulu)



Indlela yokwenza i-interview

Sawubona (igama lakho), ngiyabonga ukuthi uvumile ukuhlangana nami namhlanje.

Kungaba yintokozo ukuxoxa nawe njengoba nje sizobe siqala ukwenza uhlelo oluzosiza kakhulu abasebenzi ngokuphila kangcono.

Ukuze loluhlelo lube yimpumelelo, kusemqoka kakhulu ukuthi sithole amava kubaphathi abafana nawe. Ngakho sizobe sikubuza imibuzo Kanye nozakwenu ukuze sithole imibono yenu mayelana nokuthi singasebenzisa ziphi izindlela ukuze loluhlelo lukwazi ukunisebenzela kanye nabasebenzi benu.

Ngifisa ukuzwa imicabango yenu nalokho enifisa ukukuphawula ngaloluhlelo. Ngakho ke ngicela ukhululeke ungesabi ukubeka uvo lwakho. Zonke izimpendulo zamukelekile, Imibono yakho isemqoka kakhulu, yiyona imibono yenu ezokwenza sifunde lukhulu ukuze sikwazi ukwenza uhlelo oluzokhulumisana nqo nabasebenzi bakulendawo.

Nginemibuzo engizocela ukukubuza yona. Uvumelekile ukuletha noma yisiphi isihloko ocabanga ukuthi siyingxenye yalenkulumo.

Okunye, Ngifisa wazi ukuthi ukuba yingxenye yaloluhlelo kuyinto okuzomele uzikhethile wena ngokuthanda kwakho, futhi Uma uzizwa ungathandisizi ukuphendula umbuzo ngicela ungazise, noma uma usufuna ukushiya uhlelo ungazise.

Ngicela ukuthi ngiqophe konke esizokuxoxa ukuze kungabi bikho engizokukhohlwa kulokhu ozokusho. Konke esikuxoxayo kuyimfihlo phakathi kwam nawe. Ulwazi oyongipha lona luyosiza imboni osebenza kuyona kanti futhi negama lakho alizukuvezwa.

- Ingabe uyavuma ukuba yingxenye?
- Uyangivumela ukuthi ngiqophe?

Ngizodinga imizuzu yakho engama-30 kuya kuma-40. Ingabe kukhona imibuzo onayo ngaphambi kokuthi siqale? *[Yebo noma cha.]*

Asiqale ke!

[Qala ulungele ukuqopha]

Isilungiselelo

13. Ingabe usebenza msebenzi muni?

14. Yiziphi izinto ozenzayo nsukuzonke emsebenzini?

- Ukulawula abasebenzi

Uhlelo lokunakekela impilo

Ngifisa ukuthi sixoxe mayelana nohlelo lwesikompilo esifisa ukulwenzela imboni ngokusizwa nguweni. Okuyiyona nhloso yaloluhlelo ukuthi sisize abasebenzi baphile kancono futhi bavikele nezifo eziphathelele nenhliziyo, sifisa usilekelele ngolwazi lwakho ukuze loluhlelo lube yimpumelelo. Loluhlelo luhlukene ngezigaba ezimbili. Uhlelo lokuqala lumayelana nenkantini bese olwesibili luzobe lufundisa abasebenzi mayelana nokuvikela izifo. Isigaba ngasinye sizobe sithatha ihora elilodwa.

15. Yisona siphi isikhathi ocabanga ukuthi singasisebenzisa ukwenza ikilazi lezempilo?

- Kungani?

16. Iziphi izikhathi ezingafanele sibe nekilasi ngazo?

- Kungani?

Yiziphi izindawo esingazisebenzisa ukufundela kuzona?

- Kungani?

17. Ucabanga ukuthi bengazizwa kanjani abafundi uma bezofundiselwa emoyeni (online)?

- Ama-device nama-datha sinawo
- Nezindlela zokufunda emoyeni (online) sinazo

18. Abasebenzi bazohlukaniswa kusukela kwi-15 kuya kuma-20. Wena ubungahlukanisa kanjani, kungani?

- Ngokobulili?
- Ngokwesikhundla?
- Kusemqoka kangakanani ukufunda ngaloluhlobo?
- Ingabe isimo sendlela yokufunda sizoba nomthelela yini kubafundi?

19. Yiziphi izihlokwana ezithinta ukudla okunempilo noma izinto zokuzivocavoca emzimbeni ocabanga ukuthi ozakwenu bengazithokozela? Kungani?

- Sihlukanisa abantu ngokwezigaba zabo (isibonelo: abasebenzi besilisa kanye nesifazane, noma abaphathi Kanye nabasebenzi)?

20. Yini engakhuthaza abasebenzi ukuze bazinikele kulezizifundo? kungani?

- Ukusayina
- Ukuphumelela nsuku zonke
- Ukwesekwa kwabaphathi
- Ukwesekana kwabasebenzi bebodwa
- Ukwesekwa wumndeni

21. Yiziphi izingqinamba ezingaba khona ukuphazamisa lezizifundo?

- Ukusebenzisa isikhathi somsebenzi

22. Yilona luphi ulimi oluzosetshenziswa?

Imibuzo yokuzilungiselela

23. Ingabe kukhona ofisa sibe nakho emqondweni ngaphambi kokuqala lamakilasi?

24. Ingabe kukhona ofisa ukuthasisela ngakho kulengxoxo?

Isiphetho

Ngyabonga ngesikhathi sakho! Usisize kahulul ngolwazi lwakho olunzulu, amava akho ayosisiza ukuhlela kangcono uhlelo lokusiza abasebenzi ukuze behlale bephilile.

[ukuqopha kuyamiswa]

APPENDIX A2: In-depth interview guide for canteen managers



IN-DEPTH INTERVIEW GUIDE

Hello! I'm [insert name]. Thank you for agreeing to meet today.

I am interested in talking with you because we are collaborating with your workplace to start a program to help employees be healthier. For the healthy lifestyle program to be a success, it is very important that we get input from management staff such as yourself. So, we are interviewing you, along with other managers, to get your opinion about how to make the program work well for your workplace and employees.

I am interested in hearing your thoughts and your input about the program. So, please don't feel shy and feel free to share your honest opinions. There are no right or wrong answers. Your views and suggestions are very valuable. We will use what we learn from our discussion to plan the program to suit the employees at your workplace.

I have a list of questions I would like to ask you. Feel free to bring up any topics you feel are related to our discussion.

Also, I want to let you know that your participation in this interview is completely voluntary. If you want to stop at any time or don't feel comfortable answering a question, please let me know.

I would like to record our discussion so that I don't miss anything you say. Our discussion will remain completely confidential. The information you give will only be used to help create a program that fits the needs of your workplace and employees, and your name will not be identified.

Do you agree to participate in the interview?

Is it okay to record the discussion?

The interview will last about 30 to 40 minutes. Do you have any questions before we start? *[Answer any questions.]*

Let's begin!

[Start the recorder]

WARM-UP

13. What is your job title?

14. What are your responsibilities day-to-day?

PROBES

- Supervision of employees

Healthy eating

I would like to talk about the second part of the program. It will include changes to the workplace to help employees eat healthier during the workday.

Let's start with healthy eating.

By healthy eating, I mean eating mostly vegetables, fruit, and whole grains, healthy fats, and healthy proteins like chicken, lentils, and beans. Not eating a lot of fried foods and drinking water instead of sugary beverages is also a part of healthy eating.

15. What changes can be made at your workplace to help employees eat and drink healthier?

- Pause rooms, tea rooms, coffee shop
- Conferences and events

16. What changes can be made to the canteen(s) at your workplace to help employees eat and drink healthier?

PROBES

- Choose healthier food options
- Avoid choosing unhealthy food options

17. How can managers such as yourself encourage employees to eat and drink healthier?

18. What factors do you think are important when developing a canteen menu?

PROBES:

- Nutrition
- Price
- Staff hours for food preparation
- Age of employees
- Packaging
- Seasonal availability

19. What facilitates healthy eating and drinking at the worksite canteen?

PROBES:

- Special events, For example: Diabetes Day
- Management

20. What prevents healthy eating and drinking at the worksite canteen?

PROBES

- Employee preferences
- Cost
- Skills to prepare meals
- Wastage

21. Are there any healthy eating programs implemented at the worksite canteen? If so, explain.

22. Pre and post COVID-19, did you notice any changes with food and beverage consumption?

WRAP-UP QUESTIONS

23. What else should we consider when designing the healthy lifestyle program for your workplace and employees?

24. Do you have anything else to add to our discussion today?

CONCLUSION

Thank you for taking time to talk with me! You have shared important information and given us a lot of ideas. Your input will be very valuable for planning the healthy lifestyle program at your workplace.

[Stop the recorder]

Annexure A2: Indepth interview guide for canteen managers (isiZulu)



Indlela yokwenza i-interview

Sawubona ngingu [igama lakho]. Ngiyabonga ukuthi uvumile ukuhlalana nami namhlanje.

Kungaba yintokozo ukuxoxa nawe njengoba nje sizobe siqala ukwenza uhlelo oluzosiza kakhulu abasebenzi ngokuphila kangcono.

Ukuze loluhlelo lokuphila impilo kangcono lube yimpumelelo, kusemqoka kakhulu ukuthi sithole amava kubaphathi abafana nawe. Ngakhoke sizobe sikubuza imibuzo kanye nozakwenu ukuze sithole imibono yenu mayelana nokuthi singasebenzisa ziphi izindlela ukuze loluhlelo lukwazi ukunisebenzela kanye nabasebenzi benu.

Ngifisa ukuzwa imicabango yenu nalokho enifisa ukukuphawula ngaloluhlelo. Ngakho ke ngicela ukhululeke ungesabi ukubeka uvo lwakho. Zonke izimpendulo zamukelekile. Imibono yakho isemqoka kakhulu. Sizosebenzisa lokhu esikufundile kulenkulumo ukuhlela uhlelo oluzofanela abasebenzi kwindawo yakho yokusebenzela.

Nginohla lwemibuzo engingathanda ukubuza yona. Zizwe ukhululekile ukuletha noma ngabe yisiphi isihloko osizwa simayelana nalenkulumo yethu.

Okunye, Ngifisa wazi ukuthi ukuba yingxenywe yale-Interview kuyinto ozikhethela wena ngokuthanda kwakho. Uma ufuna ukuyeka noma kungasiphi isikhathi noma uzizwa ungakhululekile ukuphendula umbuzo, ngicela ungazise.

Ngingathanda ukuyiqopha lenkulumo yethu ukuze kungezokuba bikho lutho okuzongidlula kulokhu ozokusho Lenkulumo yethu izohlala iyimfihlo ngokupheleleyo. Ulwazi ozoluletha luzosiza ukwakha uhlelo oluzofanela izimfanelo zendawo yakho yokubesebenzela neyabasebenzi bakho, kanti futhi negama lakho alizukuvezwa.

- Ingabe uyavuma ukuba yingxenywe yale-Interview?
- Ingabe kulungile ukuqopha lenkulumo?

Le-Interview izoba yimizuzu engamashumi amathathu (30) ukuya kwengamashumi amane (40). Ingabe kukhona imibuzo onayo ngaphambi kokuba siqale? *[Yebo noma cha.]*

Asiqale ke!

[Qala ulungele ukuqopha]

UKUZILUNGISELELA

12. Ingabe usebenza msebenzi muni?

13. Yiziphi izinto ozenzayo nsukuzonke emsebenzini?

- Ukulawula abasebenzi

Ukudla ukudla okunempilo

Ngingathanda ukukhuluma ngesigaba sesibili saluluhlelo. Izobandakanya ushintsho endaweni yokusebenzela ukusiza abasebenzi ngokudla ukudla okunempilo ngezikhathi zokusebenza.

Asiqale ngokudla okunempilo.

Ngokudla ukudla okunempilo, ngiqonde ukudla kakhulu imifino nezithelo, kanye nokusanhlamvu okuphelele, nokunamafutha alungile, kanye namaprotheni ayimpilo afana nenyama yenkukhu, ama-lentils, kanye nobhontshisi. Ukungadli ukudla okuningi okuthosiwe kanye nokuphuza amanzi esikhundleni seziphuzo ezinoshukela omningi yingxenye yokudla ukudla okunempilo.

14. Yiziphi inguquko ezingenziwa endaweni yakho yokusebenzela ukusiza abasebenzi ukuze badle ukudla okunempilo.
15. Yiziphi izinguquko ezingenziwa kwinkantini endaweni yakho yokusebenzela ukusiza abasebenzi ukuze bedle ukudla okunempilo?
 - Kongakhetha kukho, ketha ukudla okunempilo
 - Kongakhetha kukho, gwema ukhetha ukudla okungenampilo
16. Bangenza njani abaphathi abanje ngawe ukugqugquzela abasebenzi ukuba badle ukudla okunempilo?
17. Yiziphi izici ocabanga ukuthi zibalulekile uma usungula imenyu yenkantini?
 - Okunomsoco
 - Amaxabiso
 - Amahora wabasebenzi ukulungiselela ukudla
 - Iminyaka yabasebenzi
 - Ukupakisha
 - Izikhathi zokutholakala kokuthile
18. Yini elulaza ukudla ukudla okunempilo endaweni yenkantini?
 - Imicimbi ekhethlekile. Isibonelo, Usuku loshukela
 - Ukuphatha
 - Izinsizakalo zezokudla zakwaFedics
19. Yini evimbela ukudla ukudla okunempilo endaweni yokusebenzela enkantini?
 - Ukuzikhethela kwabasebenzi
 - Izindleko
 - Amakhono wokulungisa ukudla
 - Imfucuzo
20. Ingaba zikhona izinhlelo zokudla ukudla okunempilo eziphumelelisiwe endaweni yokusebenzela eyinkantini? Uma kunjalo, chaza

IMIBUZO YAMAPHETHELO

21. Yini enye esingayibheka uma senza loluhlelo lokuphila impilo engcono endaweni yakho yokusebenzela kanye neyabasebenzi.

22. Ingabe kukhona okunye ofisa ukukwengeza kwinkulumo yethu yanamhlanje?

ISIPHETHO

Ngiyabonga ngesikhathi sakho osithathile ukukhuluma nami! Usicobelele ulwazi olubaluleke kakhulu kanye waphinda wasinika nemibono eminingi. Amava wakho ayobaluleka kakhulu ekuhleleni uhlelo lokuphila impilo engcono endaweni yakho yokusebenzela.

[misa ukuqopha]

APPENDIX B



FOCUS GROUP DISCUSSION: DEMOGRAPHIC DETAILS QUESTIONNAIRE

Please answer the following questions in the spaces provided, circle or tick the most appropriate options.

1. Age.....

2. Are you: (please tick as necessary) Male ☐ Female ☐

3. What is your job title?

5. How many years of experience have you had in this current job?

☐ <1 Year ☐ 1-2 Years

☐ 2-5 Years ☐ 5-10 Years

☐ >10 Years

Thank you for taking the time to complete this questionnaire

FOCUS GROUP DISCUSSION GUIDE

Welcome and thank you for volunteering to take part in this focus group. You have been asked to participate as your point of view is important. I realise you are busy and I appreciate your time.

Introduction: This focus group discussion is designed to assess your current thoughts and feelings about the, provision, drivers and barriers of healthy eating at your worksite. The focus group discussion will take no more than one hour. May I tape the discussion? (If yes, switch on the recorder).

Anonymity: Despite being taped; I would like to assure you that the discussion will be anonymous. The tapes will be kept safely in a locked facility until they are transcribed word for word, then they will be destroyed. The transcribed notes of the focus group will contain no information that would allow individual subjects to be linked to specific statements. You should try to answer and comment as accurately and truthfully as possible. I and the other focus group participants would appreciate it if you would refrain from discussing the comments of other group members outside the focus group. If there are any questions or discussions that you do not wish to answer or participate in, you do not have to do so; however please try to answer and be as involved as possible.

Ground rules

- The most important rule is that only one person speaks at a time. There may be a temptation to jump in when someone is talking but please wait until they have finished.
- There are no right or wrong answers.
- You do not have to speak in any particular order.
- When you do have something to say, please do so. There are many of you in the group and it is important that I obtain the views of each of you.
- You do not have to agree with the views of other people in the group.
- Does anyone have any questions? (answers). • OK, let's begin. **Warm up**
- First, I'd like everyone to introduce themselves. Can you tell us your name?

Introductory question

I am just going to give you a couple of minutes to think about your perceptions of healthy eating at your worksite.

Guiding questions

- What do you understand by healthy foods and beverages?

- What do you understand by unhealthy foods and beverages?
- What are the factors that determine your food and beverage choices?
- What facilitates you to choose healthy food and beverages?
- What obstructs you from choosing healthy food and beverages (At home and at work)?
- What would be the best way to organize lifestyle classes at your worksite (location, time of day, composition of groups)
- What would facilitate your participation in lifestyle classes?
- What would facilitate your participation in lifestyle classes?
- In your opinion, do you consume the same, less or more food and beverage when you meet with family and friends?

Probe - And is this consumption pattern the same at home vs at work?

- Pre and post COVID-19, did you notice any changes with your food and beverage consumption?

Concluding question

- Of all the things we've discussed today, what would you say are the most important issues you would like to express about this checklist?

Conclusion

Thank you for participating. This has been a very successful discussion

- Your opinions will be a valuable asset to the study
- We hope you have found the discussion interesting
- If there is anything you are unhappy with or wish to complain about, please contact the local PI or speak to me later
- I would like to remind you that any comments featuring in this report will be anonymous
- Before you leave, please hand in your completed personal details questionnaire

[Stop the recorder]

Imibuzo ebhekiswe emaqoqweni: Imibuzo mayelana nemvelaphi yabasebenzi.
Phendula imibuzo elandelayo ngokujobelela izimpendulo ngokononina ezikhaleni.

1. Ubudala.....

2. Ubulili ☐ Owesilisa ☐ owesifazane ☐

3. Usebenza msebenzi muni?

5. Ingabe usunamava angakanani kulomsebenzi wakho?

☐ <1 unyaka ☐ 1-2 iminyaka

☐ 2-5 iminyaka ☐ 5-10 iminyaka

☐ >10 iminyaka

Ngyabonga ngokuphendula imibuzo

Imibuzo yamaqoqo: umgudu wokubuza imibuzo

Wamkelekile futhi ngiyabonga ukuthi uvume ukuvolontiya njengxenye yaleliqoqo Kanye nokusipha imibono yakho ebalulekile kakhulu. Ngiyazi umatasa ngakoke ngiyasibonga isikhathi osiphe sona.

Isingeniso: Inhloso yalamaqoqo ukuthi sikwazi ukuthola imicbango yenu eyamanje ngezindlela Kanye nezinto eziyizingqinamba ezidala ukuthi abantu bengadli kahle ngokwezempilo kulemboni. Loluhlelo luzothatha ihora linye voNgicela ukurikhoda loluhlelo ukuze ngizokwazi ukuthi ngithole konke? (uma ekuvumela usungaqala ukurikhoda)

Ukungadalulwa: Noma ngabe urikhodiwe kodwa ngifisa ukukuqinisekisa ukuthi angeke igama lakho lidalulwe;Ngifisa ukuqinisekisa ukuthi konke esikukhulumayo kuyimfihlo phakathi kwethu lana, konke okuqoshiwe kumathephu kuzokhiyelwa endaweni ephephile kuze kushicilelwe kahle emva kwalokho kuyobe sekuphelile, konke okuqoshiwe kuyobe nacho sekucishwa unomphela.Ngicela umuntu akhulume akhululeke futhi kube yiqiniso neqiniso lodwa, sinabozokwathu siyafisa ukuthi esikukhuluma lapha ekilasini kugcine lapha kungaphumeli ngaphandle. Uma ungafuni ukuphawula unelungelo lokwenzenjalo kodwa sngiyafisa ukuthi wonke umuntu abambe iqhaza ukuze sizothola ulwazi.

IMIGOMO

- Umthetho osemqoka kunayoyonke ukuthi kukhuluma umuntu oyedwa ngesikhathi, kuyenzeka uzizwe usufisa ukukhuluma ngesikhathi omunye esakhuluma kodwa mawungakuvumeli lokho, linda eze eqeda osuke esnikwe ithuba.
- Zonke izimpendulo zamkelekile, azikho ezinhle futhi azikho ezingafanele.
- Akudingi uze ushintshe indlela okhuluma ngayo.
- Uma kukhona ofisa ukukusho khululeka ukhulume, njengoba nibanengi nje name ngifisa ukuzwa imibono yenu nonke.
- Akuphoqelekile ukuthi uvumelane nemibono yabanye ozakwenu.
- Ingabe ukhona onombuzo? (yebo). • Kulungile sesingaqala.

Ukuzilungiselela

- Okokuqala nje, ngicela umuntu azethule asazise igama lakhe?

Imibuzo yokwandulela

Ngizonipha imizuzwana ukuthi nicabange ukuthi yini efikayo emqondweni uma sikhuluma ngendaba yokudla okunempilo.

Imibuzo eqondile

- Yikuphi okuqondayo mayelana nokudla okunempilo?
- Yikuphi okuqondayo ngokudla okungenampilo?
- Yiziphi izinto ezinomthelela ekukhetheni ukudla okudlayo?
- Yini eyenza ukhethe okudlayo enkantini emsebenzini?
- Yiziphi izinto ezikuvimbela ekutheni ungakhethi ukudla okunempilo emsebenzini?
- Iyiphi indlela ongayisebenzisa ukkwenza amakilasi afundisa ngokudla okunempilo, indawo, isikhathi, amaqoqo, ungafisa ukuthi nibonane ubuso nobuso noma ungafisa kufundwe online.
- Yini engakwenza ukuzwazi ukubamba iqhaza kulamakilasi akhuluma ngokuziphatha?
- Yikuphi okungakwenza kulamakilasi akhuluma ngokuziphatha?

- Yikuphi ukudla okuthengiswa enkantini okuhehayo Kanye nokungahehi?
- Yikuphi ukudla okuyaye kudliwe uma kunemihlangano okuhehayo Kanye nokungahehi?

Imibuzo yokugcina

- Kukhokonke esikuxoxile namuhla, yikuphi okuzwe kubonakala kusemqoka kakhulu yikhona kuphi ofisa sikubhale phansi ukuze kuzolungiswa?

Isiphetho

Ngiyabonga ukuthi ubeyinxenye.

- Imibono yenu izosiza kakhulu ukulungisa isimo ngohlelo lwethu.
- Ngiyethemba ulithokozele lelilikasi.
- Uma kukhona ongathokozile ngakho ngicela ukhulume nomphathi noma uxhumane name uma sengiqedile nje maduze.
- Ngifisa ukukukhumbuza ukuthi konke ebesikukuluma kulelikilasi kuyimfihlo futhi igama lakho angeke lidalulwe.
- Ngaphambi kokuthi uphume ngicela ushiye iphepha lakho obuphendulela kulona.

[Cisha umshini wokuqopha]



LETTER OF INFORMATION

Title of the Research Study: Informed design of a worksite intervention to lower cardiometabolic risk in South Africa.

Principal Investigator/s/researcher:

Shivneta Singh, B-Tech in Consumer Science: Food and Nutrition.

Co-Investigator/s/supervisor/s:

Dr. Ashika Naicker, PhD Nutrition, Mrs. Evonne Singh, MEd, Dr Heleen Grobbelaar, Phd: Food and Nutrition.

Brief Introduction and Purpose of the Study:

The purpose of the study is to develop an acceptable, appropriate and feasible worksite intervention in order to design a canteen and behavioural intervention to lower cardio-metabolic risk at a worksite in South Africa. The first step to designing lifestyle interventions to be implemented in worksites is to understand the worksite food and physical environment to identify potential interventions and to understand the existing barriers and facilitators to implement those interventions in these settings. Then, a multi-component worksite intervention will be designed and implemented that will consider the characteristics of the setting and will be informed by the views of workers, managers and supervisors on the design and format of delivery of the intervention. This study is the formative research component of the South African Pioneer Worksite Intervention Study at your worksite. The South African Pioneer Worksite Intervention Study will measure the effectiveness of a canteen and a behavioural intervention on cardiometabolic risk among employees at your worksite by evaluating the change in number of individuals reaching two or more cardio-metabolic risk goals, namely reductions in blood pressure, triglycerides, and glycosylated hemoglobin (HbA1c).

Outline of the Procedures:

- A rapid assessment of the built environment through structured observations of the canteen and physical environment will be conducted
- Semi-structured in-depth interviews (IDIs) with worksite and canteen managers, and focus group discussions (FGDs) with employees will be conducted to understand the appropriateness, acceptability and feasibility to changes at the worksite.
- Worksite readiness to implement change will be assessed through the Organizational Readiness for Implementing Change (ORIC) online questionnaire directed to employees.
- An intervention rating scale will be applied to canteen intervention components and delivery strategy to worksite managers and canteen operators.
- A scoping review on Front of Pack (FOP) labelling schemes will be conducted to inform the selection of a FOP labelling scheme best suited for canteen foods at worksites in South Africa.
- The canteen and a physical environmental intervention programme will be developed using the findings from this formative study.
- The intervention training manual will be developed and canteen operators will be trained for the implementation of the food environmental intervention.

Risks or Discomforts to the Participant:

There are no potential risks to you should you participate in this study.

Benefits:

If the program is shown to be feasible, acceptable, effective and cost effective at your worksite, the results of this study will be used to make recommendations and dissemination plans on how to implement and sustain lifestyle interventions at other worksites in South Africa. Current evidence indicates that health and wellness programs at worksites provide numerous benefits with respect to altering cardiovascular risk factor profiles. Implementing health programs at worksites allows for the opportunity to continually engage adults for positive and sustainable lifestyle choices. It is also envisaged the findings of this research will be published in peer reviewed journals and presented at national and international conferences. The researcher will benefit by obtaining the necessary data required to complete a M-Tech Degree.

Reason/s why the Participant May Be Withdrawn from the Study:

Participation will be voluntarily, and you will be allowed to withdraw at any time of the study.

Remuneration:

You will not receive any remuneration for participation in this study.

Costs of the Study:

No costs will be expected to be covered by you if you choose to volunteer to participate in this research study.

Confidentiality:

The information gathered will be of a confidential nature and will not seek to jeopardize the company's status nor the identity or your status should you participate in the study. No form of identity will be required from you which will further ensure confidentiality of the data. The data collected will be stored in the Department of Food and Nutrition in a lockable cupboard for 5 years after which it will be disposed for shredding.

Persons to Contact in the Event of Any Problems or Queries:

Principal researcher: Shivneta Singh, B-tech: Food and Nutrition, cell number 0672134244 or email sshivneta@gmail.com. Supervisor: Dr A. Naicker, PhD: Nutrition, cell number: 0313732333 or email ashikan@dut.ac.za or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support Dr L Langaniso on 031 373 2577 or researchdirector@dut.ac.za.



INCWADI YEMINININGWANE

Isihloko socwaningo: Ukuhlela indawo yokusebenza ephephile, futhi ezogwema ukubeka abasebenzi engcubeni yezifo eziphathelele nehliziyo kwizwekazi iNingizimu Afrika.

Umnini cwaningo/ noma umphenyi wolwazi:

Shivneta Singh, B-Tech in Consumer Science: Food and Nutrition.

Uzakwabo Womninicwaningo:

Dr. Ashika Naicker, PhD Nutrition, Mrs. Evonne Singh, MEd, Dr Heleen Grobbelaar, Phd: Food and Nutrition.

Umyalezo ofinqiwe wesingeniso ne nhloso yalesi sifundo:

Inhloso yalesi sifundo ukuthuthukisa, nokwenza izindlela ezamukelekile futhi nezilula ezindaweni lapho kusebenzela khona abantu, ukuze sakhe indawo yokudlela ukudla Kanye nokwakaha imikhuba noma ukuziphatha okuzonciphisa amathuba okuphathwa yizifo eziphathelele nehliziyo kwizwekazi iNingizimu Afrika. Isinyathelo sokuqala ukwenza indlela okufanele baziphathe ngayo ezindaweni lapho besebenzela khona, lokhu kuzodinga siqale ngokubhekisisa kabanzi ngezinhlobo zokudla abazidlela kulezo zindawo kanye nendawo abasebenzela kuyona, ngaleyondlela sizobe sesithola umongo okuyiwonawona oyingqinamba bese siqwazi ukuza nesisombululo kulenkanga. Siyobe sesibeka izinhlobo ezahlukene ezizoba wumgogodla wesixazululo, zonke izinhlobo nezinsiza sizobe sizithole kubona abantu abasebenza kulezozindawo, okungaba abasebenzi, abaphathi Kanye nezimenenja. Lesisifundo siyinxenye futhi sesekwe yithimba lezocwaningo i-South African Pioneer Worksite Intervention ebhekelele impilo yendawo yokusebenza. Lenhlangano yocwaningo iyobe isibheka umthelela walolucwaningo ezindaweni ezidayisa ukudla emsebenzini Kanye nendlela abaziphatha ngayo abasebenzi, bese ibheka ukuthi kungabe ukuziphatha kwabo ngendlela abadla ngayo ngabe akubabeki yini engcupheni yokuhlaselwa yizifo eziphathelele nesifo senhliziyo, Izobe isibona ukuthi bakhona yini abantu asebenoshintsho abazifundisa ukugwema ukudla okungababeka engcupheni yezifo, ngokugwema ukudla okunamafutha nokungaba yimbangela yalezizifo ukwehla komfutho wegazi, Kanye noshukela emzimbeni (triglycerides, and glycosylated hemoglobin (HbA1c)).

Imibandela esizosebenza ngayo:

- Ukubheka indlela izindawo zokudla ezakhiwe ngayo Kanye nendawo ezakhelene nayo
- Sizobe sibheka futhi ukuthi ingabe lendawo yokudla inabo yini abasebenzi abanolwazi olunzulu ukwenza ukudla okunempilo, sizobe sinohla lwemibizo esizocela ukuba bayiphendule abasebenzi bakuyona indawo yokudla.
- Sizokwenza nohlelo lokubuza imibuzo ejulilele esizoybhekisa kuba nini bendawo yokudla, nalapho esizobe sixoxisana kabanzi sisebenzisa amaqoqo abasebenzi ukuze sibone ukuthi ingabe ushintsho lungamkeleka nokuthi luzofika ngendlela enokuthula.
- Indawo yokusebenza yona sizoyivivinya ukuthi isikulungele yini ukwamkela izinguquko, lokhu sizokwenza ngokusebenzisa uhlelo olunzulu oluwumkhakha obhekelela ukuthi ngabe imboni ikulungele yini ukwamukela indlela entsha yokwenza izinto (Organizational Readiness for Implementing Change, ORIC). Sizofaka imibuzo eqondene nabasebenzi abazobe beyiphendula kwi-internet.

- Sizobe sibheka nokuthi izinga lokuthengiwa kokudla okungenampilo enkantini lingakanani.
- Sizosebenzisa uhlelo olubizwa nge- South African Food Based Dietary Guidelines (SAFBDGs) okuyiyona ebeka umhlahlandlela nomgudu maqonadana nokudla okwenziwa lapha e-Mzansi Afrika, kuzosetshenziswa nemithombo yaphesheya ukuthekela ucwaningo, sizobe ke sesikwazi ukubalula ukudla okwase nkantini njengokudla okungenampilo.
- Sizobe sesenza uhlelo olukhulumisana nendlela yokudla, imikhuba yethu ekudleni Kanye nendawo ekuyona inkantini, ukwenza loluhlelo lube yimpumelelo sizobe sisebenzisa amava nemiphumela esizobe siyiqoqe ngeskhathi senza ucwaningo, sizobe sisebenzisa lonke lololwazi ukwenza umqulu ozobe uqukethe ulwazi esizolusebenzisa ukuqeqesha abasebenzi basenkantini Kanye nokuthuthukisa ulwazi olubhekelele izindawo lapho okusuke kunenkantini khona.

Izinto ezingaba yizinkinga noma kulabo esizoba sifisa ukuthi sixoxisane nabo:

Empeleni nje abukho ubungozi uma uzobe uyingxenywe yocwaningo.

Okuzuzwayo:

Uma lolucwaningo lubonakala ukuthi luhamba kahle, luyamkeleka futhi lubukeka luzoletha inzuzo enhle endaweni yakho yokuthengisa ukudla, imiphumela yalolucwaningo izosetshenziswa ukwenza kangcono nokuthuthukisa indlela iNingizumu Africa engenza ngayo ukwenza ukuthi abasebenzi babe nomkhuba wokudla okunempilo. Ubufakazi obunzulu busikhombisa ukuthi izinhlelo zokufundisa abasebenzi ngokudla okunempilo kuleli zinomphumela omuhle kakhulu. Ukwandisa izifundo nezinhlelo ezifundisa ngezempilo eziphathelene nokudla kwenza ukuthi abantu asebekhulile bafundiseke futhi babe nentshisekelo okwenza izinqumo ezinhle ngabakudlayo. Sifisa ukuthi imiphumelo yalolucwaningo ishicilelwe kuma jenali futhi ethulwe kuleli Kanye naphesheya kwezilwandle ezinkomfeni. Umcwaningi uyohlabana ngolwazi olusemqoka ukuphuthula izifundo ze- M-Tech Degree.

Isizathu/izizathu ezingaba yimbangela yokuhoxa kulolucwaningo:

Ukuba yingxenywe umuntu uzikhethela yena, futhi kuvumelekile ukuhoxa nanoma yinini

Umholo:

Awutholakali umholo ngokuba yingxeye yocwaningo

Inani Locwaningo:

Kumahhala ukuba yingxenywe akulindelekile ukuthi ukhokhe

Ukwethembeka:

Ulwazi lonke oluzozuzwa luzohlale luyimfihlo angeke lusetshenziswe ukudicilela phansi igama lemboni yakho uma kade uyingxenywe. Akudingeki imininingwane yakho, ulwazi oluyotholakala luyogcinwa uvalelekile endaweni ephaphile emnyangweni i-Department of Food and Nutrition iminyaka emihlanu emva kwalokho uyobe usukhishelwa ukuhlakazwa.

Ongaxhumana nabo uma ufisa ukwazi kangcono noma uma kukhona inkinga

Umnini cwaningo: Shivneta Singh, B-tech: Food and Nutrition, cell number 0672134244 or email sshivneta@gmail.com. Supervisor: Dr A. Naicker, PhD: Nutrition, cell number: 0313732333 or email ashikan@dut.ac.za or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the DVC: Research, Innovation and Engagement, Prof S Moyo on 0313732577 or moyos@dut.ac.za.



CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, _____ (name of researcher), about the nature, conduct, benefits and risks of this study -Research Ethics Clearance Number: _____.
- I have also received, read and understood the above written information (Participation Letter of Information) regarding the study.
- I am aware the results of the study, including personal details regarding sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant

Date

Time

Signature

I, _____(name of researcher) here with confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Date

Signature

Full Name of Witness (If applicable)

Date

Signature

Appendix O: Published article – Categorizing foods by relative healthfulness: A scoping Review

Link to the article: <https://www.mdpi.com/1358632>

Article

Categorizing Foods by Relative Healthfulness: A Scoping Review of Front of Pack Labelling Shivneta Singh *, Ashika Naicker and Sinenhlanhla Ntokozo Memela

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Abstract: Worksites are a suitable platform for employees to engage in behavioral change towards a healthy lifestyle by the modification of the food environment. Grading canteen foods at worksites into categories of relative healthfulness is an important indicator in the planning of food environmental interventions. However, in the absence of mandatory front of pack (FOP) labelling in South Africa, categorizing packaged and cooked food at worksite canteens is challenging. A scoping review was conducted on FOP labelling schemes to inform the selection of a FOP labelling scheme best suited for canteen foods at worksites in South Africa. The results of the scoping study, tabulated into a narrative summary, showed that there are several well-developed approaches to classifying foods by relative healthfulness through nutrient profiling and different forms of expression. It is recommended that because worksite canteen food sales in South Africa include both packaged and cooked food, and that a general test of various labelling schemes should be conducted to determine if a directional change is made towards purchasing healthier foods. Grading foods using interpretational aides such as an adapted FOP nutrition label to the South African context into categories of relative healthfulness can be a practical tool to inform food environmental interventions at worksite canteens and beyond.

Keywords: canteen; front of pack (FOP) labelling; healthfulness; worksite; countries; intervention

1. Introduction

Non-communicable diseases (NCDs) have emerged as a worldwide pandemic in recent years, with incidences alarmingly greater in third world countries [1]. Non-communicable diseases account for 41 million fatalities annually, or 71 %of all deaths [2]. Unhealthy diets are a major cause of mortality and disability across the world, with approximately 1 in every 5 fatalities, equating to 11 million deaths each year. Obesity and diet-related NCDs such as hypertension, cardiovascular disease, type 2 diabetes, and certain cancers are fuelled by the unparalleled availability, accessibility, and affordability of processed and pre-packaged foods [3].

Over the years, there have been significant changes in food systems, and diets have increasingly become more westernized in low to middle

income countries (LMIC) [4]. As a consequence of the progress of multi-national food companies, the liberalization of international trade and investment in food and the rise in advertising of unhealthy food items, conventional raw-based diets are replaced by ready-to-eat, energy-dense, and non-nutritious meals or snacks [5]. Many of the ready to eat meals are highly processed which increases the risk of developing chronic diseases [6].

In South Africa, after the post-apartheid government allowed international trade and foreign direct investment, there has been a drastic shift in diets. Big Food companies (large commercial corporations leading the food and beverage environment) dominate the food supply with more affordable and inexpensive products [7]. This has led to a shift in the normative food culture, making more items accessible, which has catalyzed a shift in eating habits in rural and urban areas [8].

Society relies heavily on the working population [9]. Company sustainability and growth are directly influenced by the health of workers and are connected to national economic development, progress and social stability. The functioning and efficiency of individuals (usually 18–65 years) can be affected by many unhealthy behaviors. The World Health Organization (WHO) recommends that the workplace plays a vital role in health promotion [10]. There are many reasons why the worksite is an excellent location for health promotion; employees spend most of their waking hours at work, the working population is moderately healthy, the worksite is appropriate for long-term health interventions and follow-ups, and the workplace can provide participants with infrastructure and management support for lifestyle interventions. The United States Centers for Disease Control and Prevention (CDC) also supports health promotion services in the workplace through successful health promotion programs because of the benefits to employers, workers, employee families, and communities [11].

During the workday, many employees eat at least one or more meals, and therefore workplace interventions have the ability to affect a wide number of individuals, including people who are unlikely to engage in preventive health behavior [12]. Worksite interventions, in addition to boosting food intake at work, can positively impact employees and their families outside the work environment by secondary improvements in lifestyles [13]. Long term, they can also influence social norms around food choices and physical activity. In a recent review, it was noted that interventions targeting food quality or quantity, interventions targeting a client's information, education, or motivation, and interventions targeting food choice at point of purchase have the potential to produce positive health related behaviors at worksites [14]. In this review, nine studies using FOP labelling significantly increased the sales of healthy food and beverages through traffic light labelling and healthy food logos [14].

Worksites have a wide range of choices to improve the supply and accessibility of nutritious food. FOP labelling assist consumers to make informed healthier food choices. Consumers require a simple and straightforward method for making healthy choices from the wide selection of items offered [15]. Concise


FOP labels that are easily visible and take minimal time to examine are preferred by consumers [16]. While there are currently a range of FOP labelling schemes adopted internationally, simple, negative warning labels that easily determine unhealthy items tend to be the most successful for reducing the selection of energy-dense and highly processed food preferences thus far [15]. Warning labels are permitted to be displayed on the front of an item if the food and beverage does not match a particular nutritional standard [17]. These labels indicate whether the item is high in sugar, saturated or trans-fat, sodium, or calories, as required, which assist consumers in easily identifying unhealthy foods. FOP warning labels might similarly motivate food manufacturers to enhance the nutritional quality of their products. Nutrient-specific warning labels serve as summary indicators which present data on overall quality of a specific product [15]. This type of label also contains an interpretive system which depicts both numeric information and color-coded data which allows consumers to make a nutrient evaluative judgement when choosing foods. Table 1 indicates FOP labelling scheme adopted in various countries to classify food into categories of relative healthfulness.

Whilst the history of FOP labelling schemes is short, there has been a high level of activity globally. In 1989, the first interpretive FOP scheme was introduced [18]. The Swedish National Food Administration devised a symbol known as the “Green Key-hole” to help consumers select fat-free and fibre-rich food substitutes, exclusive of the need to read comprehensive nutritional labels. The Green Keyhole is displayed prominently on the packaging, but it can also be used on unpackaged items such as fish, vegetables, and fruit (such as berries) [18,19]. In 2004, the WHO Global Strategy on Diet, Physical Activity, and Health sparked the debate on interpretative FOP labelling as a policy tool to fight obesity [20]. In 2009, Nordic countries received permission to use the Green Keyhole symbol and cooperatively established the catchphrase “Healthy choices made easy” [21]. In 2013, the United Kingdom introduced a voluntary traffic light system, and since then it has become a voluntary mandate for producers under the Food Information Regulation [22]. In this system, a mix of color coding (traffic lights) and nutrition facts is used to indicate whether an item is high (red), medium (amber), or low (green) in fat, saturated fat, salt, and sugars, as well as how much energy (calorie and kilojoules) it supplies, at a glimpse. The Australian Health Star Rating (HSR), which came into effect in June 2014, is a nutrient-based FOP labelling scheme that rates products on a score of 0.5 to 5 stars for their proportion of ‘risk’ and ‘positive’ nutrients [23]. It allows consumers to quickly compare similar pack-aged meals and select the healthier alternative. The number of stars is determined by the amount of caloric, saturated fat, salt, and sugar in packaged foods as well as the amount of fibre, protein, fruit, vegetable, nut, and legume content. Health Star Ratings also incentivize food producers to modify their products to increase their star rating, which may result in consumers having access to healthier packaged meals [24]. Chile’s Food Labelling and Advertising Law was introduced in 2016, the first nationwide regulation to necessitate FOP warning labels, limit marketing aimed at children, and prohibit sales of all products that consist of added sugars, sodium, or saturated fats that surpasses nutrient or calorie cutoffs in schools [25]. The Nutri-Score label was first established as a voluntary label in France in 2017 and has subsequently been adopted by a few other countries in Europe [15]. The Nutri-Score is a summary indicator of product healthfulness which incorporates a color spectrum similar to traffic light labels, as well as letter grades. The summary score is based on a nutrient profile model that considers

the health hazards and benefits of product constituents (for example, fibre, legume, nut, protein, fruit, and vegetable). In South Africa, between 2013 and 2017, the draft Regulations pertaining to the labelling and advertising of foodstuffs (R.429) were established for voluntary FOP labelling which advocated traffic-light nutrient labelling, with red, yellow, and green indicating the quantities of vital nutrients such as energy, total sugar, fat, saturated fat, and total sodium [26] but never endorsed. Currently in South Africa, Guideline Daily Amounts (GDAs) is a voluntary labelling system designed to assist consumers in making smart food choices [27]. It provides a summary of a product's percentage of energy and important nutrients per serving. It specifies the amount of energy, fat, saturated fat, sugar, and sodium in the product. Guideline Daily Amounts are computed based on an average diet and can assist consumers in understanding what is in the food they consume. Guideline Daily Amounts recommendations are not determined for an individual's nutrient needs, but rather as a baseline for the general population, because consumers differ in various aspects, for example, height, age, and gender. Consumers, especially those with poor education, have a difficult time deciphering nutritional information from the GDA labelling scheme, and would prefer a simpler method of presenting this information that would aid them in making a quick assessment of a product's nutritional characteristics [28]. Presently, policies are being reviewed in South Africa to determine what FOP labelling scheme will be most suitable for South African consumers. As more countries work towards choosing and implementing the most appropriate FOP labelling scheme, more recently in 2020, the WHO published a manual to guide countries in implementing an effective FOP nutrition labelling scheme using a five-step process for developing and implementing an evidence-based FOP labelling scheme to assist consumers in making better food choices [29].

The South African Pioneer Worksite Intervention Study, made up of three phases, aims to measure the effectiveness of a canteen and behavioral intervention on cardio-metabolic risk at a worksite in South Africa. This scoping review forms part of phase 2 of the South African Pioneer Worksite Intervention Study. Phase 1 involves the recruitment of a suitable worksite, phase 2 involves the development of an acceptable, appropriate, and feasible worksite intervention that will inform the design of the food environment and behavioral intervention, and phase 3 involves the implementation of the worksite intervention to lower cardio-metabolic risk in South Africa. In the absence of mandatory FOP labelling in South Africa, the aim of the scoping review was to guide the selection of a FOP labelling scheme best suited for categorizing packaged and cooked canteen foods sold at worksites in South Africa.

Table 1. Front of Package labelling scheme used in various countries to classify food into categories of relative healthfulness.

Form of Expression	FOP Labelling Scheme	Logo/Symbol with Graphic Example	Brief Description	Nutrients/Ingredients Included	Country where the System is Used or Proposed
Summary Labels					
Simple	Endorsement Logo	<p>Choices Logo</p> 	Green logo with a “healthy choice” text that displays healthy options (including bread, milk, fruit, and vegetables) within specific categories essential to a healthy diet.	Saturated and trans-fat, sodium, added sugar across all foods.	Poland, Belgium, Czechia, Netherlands (until 2016)
			Blue logo with “conscious choice” text to help customers make better decisions for non-basic items.	Energy criteria for non-basic food groups.	

Green Endorsement Logo

Endorsement
Logo



Squiggle within a green circle.

Sugar, sodium, saturated fat, and fiber (criteria not yet available). Israel

Healthy Living Guarantee Mark

Endorsement
Logo



Green cloud with text "Live Well".

Total fat, saturated fat, sugar, sodium, and fiber. Croatia

Heart Symbol

Endorsement
Logo



Heart symbol with encircling text "Better choice".

Total fat, saturated and unsaturated fat, sodium, sugar, and fiber. Finland

Keyhole Logo

Endorsement
Logo



Green with a white keyhole, followed by the registered trademark symbol.

Total fat, saturated and trans-fat, added sugar, salt, dietary fiber, and whole grains.

Iceland,
Lithuania,
Denmark,
Norway,
Sweden

Protective Food Logo (Little heart Logo)

Endorsement
Logo





List below heart symbol gives the product's specific nutritional properties that make it a healthier option compared with other food products in the same category.

Fat, ratio of fatty acids, salt, added sugar, energy, and fiber.

Slovenia

Nutrient-Specific Labels

	Nutrient-	Color-coded	%RI	Traffic light	color	coding:	
Color-Coded	(Recommended intake)			Interpretive	(color)	and non-	
				indicates	high (red),	medium	
				(amber),	and low	(green) levels	

	specific interpretive system	<div><p>Each grilled burger (94g) contains</p><table><tr><td>Energy 924 kJ 220 kcal</td><td>Fat 13g</td><td>Saturated 5.9g</td><td>Sugars 0.8g</td><td>Salt 0.7g</td></tr><tr><td>11%</td><td>19%</td><td>30%</td><td><1%</td><td>12%</td></tr></table><p>of an adult's reference intake</p><p>Typical values (as sold) per 100g: Energy 966 kJ / 230 kcal</p></div>	Energy 924 kJ 220 kcal	Fat 13g	Saturated 5.9g	Sugars 0.8g	Salt 0.7g	11%	19%	30%	<1%	12%	of negative nutrients. Energy is depicted in greyscale.
Energy 924 kJ 220 kcal	Fat 13g	Saturated 5.9g	Sugars 0.8g	Salt 0.7g									
11%	19%	30%	<1%	12%									
Warning Labels	Nutrient-specific warning label	<div><p>Red warning label</p><div></div></div>	Single symbols used for sugar (spoon), sodium (saltshaker) and saturated fat (solid fat and knife), with text “high in nutrient”.	Sugar, sodium, and Israel saturated fat.									
			Back of pack displays the amount of calories, sugar, sodium, and saturated fat in bold font.										
	Nutrient-specific warning label	<div><p>The Chilean System</p><div></div></div>	The words “alto en...” (“high in...”) calories, sugars, saturated fats, or sodium are written in a black octagon with white borders on the front of the food or beverage package.	Saturated fats, sodium, calories, and sugar. Chile, Uruguay, Peru, Israel, Brazil, Canada, India.									

Adapted from Jewell and Kelly (2019) [19].

2. Materials and Methods

A scoping review was carried out to gather data from empirical findings on the categorization of healthy foods through FOP labelling schemes. The reporting of this analysis was influenced by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for Scoping Reviews (PRISMA-ScR) guidelines. The search strategy included keywords such as “endorsement logo”, “categorizing food”, “front-of-package labelling”, “nutrient profiling”, “traffic light labelling”, “Nutri-score”, “food choice”, “canteen”, “worksite”, “countries”, and “food symbols”. PubMed, Scopus, and Google Scholar were the three databases used to search for relevant articles. All papers, including titles and abstracts, were imported into an endnote database and duplicates were removed. One independent reviewer screened the article’s titles and abstracts using a pre-specified inclusion criterion. The inclusion criteria included population group (adults and employees, both males and females), type of environment (food environment, worksites, and canteens), language (English), and effectiveness of the grading system. Further information was extracted based on studies that have previously used FOP symbols/logos to categorize food into healthfulness. The studies included were not confined to the worksite and canteen but also included studies reporting on the effectiveness of FOP labelling. Studies based on FOP labelling targeting children (below the age of 18 years), unpublished articles, studies that include FOP labelling that has not been implemented or adopted by the country, and non-English articles were excluded from the review.

3. Results

Several articles ($n = 2513$) were identified and screened after excluding duplicates ($n = 2474$). Overall, 1347 articles were excluded from the study because their abstracts and titles did not match the qualifying criteria (Figure 1). The grounds for withdrawing the other studies ($n = 921$) were that they did not meet the requirements for inclusion. A total of six articles was used in the qualitative analysis after a full-text review of the remaining articles. The six studies in the final review included countries such as Europe, France, Australia, Chile, Denmark, and the Eastern Mediterranean Region. Table 2 summarizes the studies reviewed to categorize foods according to the FOP labelling scheme.

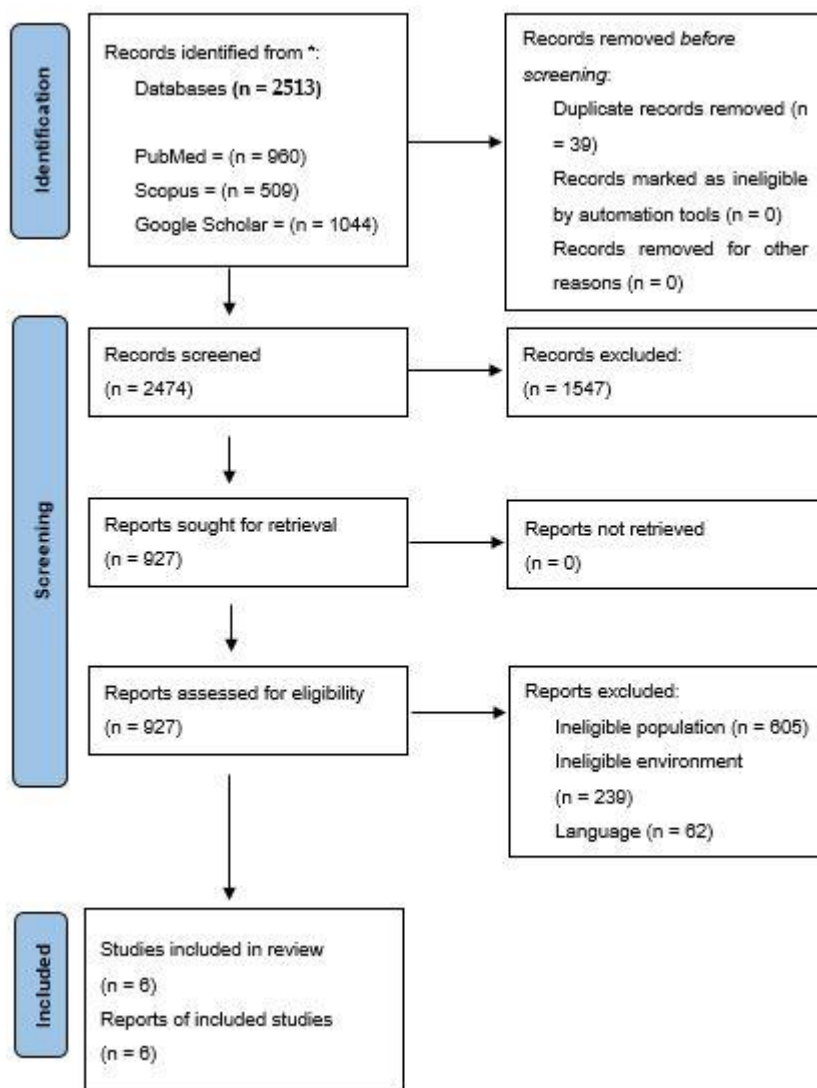


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow [30].

* Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

Table 2. Review on FOP labelling scheme studies to categorize food by relative healthfulness.

FOP Scheme	Labelling	Author, Location	Year,	Population	Results of Study	Limitations
Endorsement Logo		Jewell and Kelly (2019) [19] Europe		13 countries: Croatia, Czechia, Denmark, Finland, France, Iceland, Israel, Lithuania, Norway, Poland, Slovenia, Sweden and the United Kingdom, Belgium, and Netherlands. Study population not reported.	The aim of the logo is to suggest options that are better for you but provide no clear details to suggest whether a product is unhealthy. Front of packaging labelling (FOLP) policies were supported by government in three countries that provided directive details on product healthiness. This included nutrient-specific warning labels, a summary indicator system providing information on the overall nutrition quality of a product, and an interpretive system providing both numerical and color-coding information on the contribution a food makes to a nutrient 's prescribed daily intake.	Lack of information on formal provisions for the assessment of FOPL policies as part of label implementation, while scholarly reviews have provided proof in encouraging the consumer and reformulation objectives.

Summary indicator system: Nutri-Score information system	Hurtado et al. (2020) [31] France	Study population not reported.	The nutritional profiles developed by the United Kingdom British Food Standards Agency Nutrient Profile System (FSA-NPS) were used as the for the scoring criteria for the nutritional profiles of Food Standards the Australian and New Zealand, the model of nutritional profiles in South Africa and the model of nutritional profiles in Ireland. The FSA algorithm consists of a basic scoring system in which points are assigned on the basis of per 100 g of product nutrient material.	FOPL development: it may not be considered acceptable to use a dichotomous scoring system (with binary scoring suggesting the definition of good and bad food products). Taking this into account, Santé Publique (Public Health) France, in collaboration with the University of Paris, created five nutritional quality categories based on the British FSA-NPS, in order to ensure a high degree of discrimination within each food and beverage division, while retaining a core category in order to avoid classifying food items as good or bad.
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Nutrient-specific interpretive system: Traffic Light Labelling	Al-Jawaldeh et al. (2020) [32] Eastern Mediterranean Region	Study population not reported	<p>Three countries in the area have been reported as introducing front-of-pack nutrition labelling schemes, and three more schemes are under progress. In the area, the regimes listed fell into three categories:</p> <ul style="list-style-type: none"> • The nutrient-specific traffic light labelling (Islamic Republic of Iran, Kingdom of Saudi Arabia, United Arab Emirates); • The Nutri-Score summary graded label (Morocco); • Health or endorsement logos (Abu Dhabi and Tunisia). 	In real world environments, there is not enough testing. No conclusive proof exists as to which particular scheme is most successful. The most suitable FOP labelling scheme can differ from country to country, so policy makers need to select the scheme that is most appropriate for their unique national background.
Endorsement Logo—Keyhole logo	Mork et al. (2017) [33] Denmark	Males older than 35 years old with poor educational standards	In two out of three supermarket outlets investigated, the initiative had a positive impact on sales of keyhole labelled items. Sales of keyhole branded goods increased by approximately 20% in these two retail chains. There was a slight decline in sales of keyhole branded goods in the third chain. The impact varied considerably between categories of goods. Interview data analysis found that shoppers with poor education had a greater likelihood of mentioning health as a purchase motive by the end	The findings are based on a few selected stores examined. As the frozen ready to eat meal counter was not very well visited, the observation / interview portion of the analysis is restricted by the range of product categories and may be one of the

				of the campaign, and there was a higher general propensity to search for nutrition information.	categories where a nutrition label may have a reverse effect. The experiments were also carried out within a short time frame, and it was therefore not possible to calculate the long-term impact of the initiative.
Nutrient-specific interpretive system: Australian Health Star Rating System	O'Connor Anderson (2019) [34] Australia	and	Males and females aged 17–83 years old from the community and psychology students from the Queensland University of Technology.	<p>The purpose of this study was to see how the Australian HSR effects consumer decision-making in various comparative processing scenarios.</p> <p>Individuals were asked to complete six binary forced-choice comparisons wherein the appearance of the HSR and the nutritional status (high or low) of the cereal products were both changed. Participants were also asked to rate their willingness to buy the products. As opposed to prior research, consumers did not interpret the existence of the HSR as a sign of a healthier alternative. This indicates that the level of cognitive processes required to assess the HSR system is suitable for successful decision-making.</p>	<p>The participants in this study were predominantly women, aged 17–24, with secondary school education. One of the limitations in the study is that the results may not be reflective of the average working-class Australian household. Future studies should include a more diverse group as results that are used to inform public policies must be generalizable.</p>

			<p>When evaluating a product excluding a HSR label to a product including a HSR label, individuals who did not review the back-of-pack (BOP) nutritional information were more likely to make less informed choices. Irrespective of BOP viewing, consumers' capacity to choose healthier items was enhanced when both products exhibited a HSR (namely a mandated labeling). This shows that consumer decision-making is influenced by the sort of comparison environment. Consumers' propensity to purchase products with low and high nutritional content was also found to be affected differently by nutrition knowledge.</p>	<p>Another limitation is that when respondents had no apparent product preference, the forced-choice method may have inadvertently altered consumer decision.</p>
Endorsement Logo	<p>Reyez et al. (2019) [35]</p> <p>Chile</p>	<p>Study population not reported.</p>	<p>Information on general text, for example, short wording and design characteristics (such as use of the logo, use of red or black colors), was presented in the literature review and qualitative stage; 15 prototypes were produced and quantitatively evaluated on the basis of the selected characteristics. A black and white stop sign and a black-and white hand were preselected in the first survey. In the second survey, in terms of visualization, intention to buy and willingness to</p>	<p>The FOP warning label suggested in this article was introduced by the Chilean Minister of Health by replacing the words 'Excess of 'with' High in 'because the language of the legislation did not permit the use of' Excess.'</p> <p>A communication</p>

change the planned purchase, the stop sign saying 'Excess of <nutrient>' had a considerably higher score than the hand.	campaign to present the latest alert message was launched to ensure that individuals correctly interpreted the significance of 'High in'. The use of the term 'High in' as a beneficial food attribute (that is, high in vitamins) was forbidden.
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4. Discussion

Food labeling is defined as any written, printed, or graphic material that is featured on the label, accompanies the food, or is exhibited near the food, including that with the aim of encouraging its sale or discarding [36]. Food labels have two purposes: to inform consumers and to help in the sale of the product [37]. However, food labels have developed over the years in terms of the information they represent due to the influence of food legislation, food corporations, merchants, public authorities, and consumers. The component of a food label that expressly discloses nutritional content is known as nutrition labelling [38]. Nutrition labelling is functional, according to the Codex Alimentarius, when it offers information about a product to assist consumers in making healthy eating decisions [39].

There is a substantial and expanding body of research on nutrition labels, involving multiple literature studies that have been undertaken since 1991 [40]. The results were largely comparable, with self-reported utilization of nutrition labels being common. Consumers, on the other hand, have had difficulty interpreting quantitative information on labels, and some have considered varied nutrition label forms, and thus too much information supplied on the label, to be perplexing. Consumers preferred visual content, such as a logo, over the typical nutrition information table [41]. According to a comprehensive study conducted by Campos et al., nutrition labels were considered to be a very reliable source of nutrition information as many consumers utilize nutrition labels as a guide when purchasing food items [40]. The usage of nutrition labels, on the other hand, differs greatly amongst populations as results indicated that younger adults and middle-aged females are more likely to utilize nutrition labels. The findings from an investigation conducted by Bosman et al., highlights that consumers in South Africa are able to deduce and interpret nutrition information on food labels to a certain level [42]. In contrast, other consumers expressed doubts about their comprehension of the information presented. Consumers also had difficulty deciphering nutrition labels because of the font size of the nutrition information and the wording included in the ingredient list [43]. Consumers do not read labels for a variety of reasons, including disinterest, time constraints, cost, and inveterate buying. The taste of a product is more pertinent to some consumers than its nutritional value [44]. This underscores the importance of educating consumers on how to make healthier food choices while utilizing the information supplied on food labels, but within the constraints of the identified components, such as educating consumers on how to compare nutrition information presented on food labels for products within a particular price category.

In the six studies reviewed in this article, four studies were based on endorsement logos [19,32,33,35]. Endorsement logos are one of the four main types of FOP labelling [19]. This provides information on the nutrient levels combined to provide an overall assessment of healthfulness and positive evaluative judgment on better-for-you foods. A product may only be eligible to display an endorsement symbol if it meets a nutrition standard and nutrient cut-off points binary. Front-of-packaging labelling can be useful tool to communicate simple nutrition information to consumers, increasing their ability to make healthy

food choices and therefore creates a rise in point-of-sale. According to the study conducted by Mork et al., two out of three retail stores had a positive sales outcome regarding the purchase of Green keyhole-labelled products (20% increase) [33]. Interpretative summary indicator labels such as graded summary system (Nutri-score and health logos) are useful to consumers who want to compare various substitutes when purchasing to select the healthiest product. Research shows that interpretative labels are more effective than reductive labels when motivating consumers to make healthier food choices [45]. Analysis by Grunert and Wills indicates that consumers typically prefer the convenience of overview labels, but endorse formats that also provide them with sufficient detail on the product's nutritional content [46]. According to the findings of a study undertaken in the Western Cape [47], focus group discussions' (FGDs) participants were optimistic regarding a single Health Endorsement Logo (HEL), suggesting that it would render food labelling less complicated since the various HELs used were not understood. Participants suggested that terminology related to 'better choice' or 'healthy choice' and health and/or food related photos or symbols should be used in the logo. HEL was planned and tested by consumers. After further testing, three prototypes were sent to the national health department to be considered for implementation as a method to assist in resolving the high incidence of non-communicable diseases in South Africa. The limitations for endorsement logos include population groups and geographical aspects due to ethnic groups, literacy levels, language, and access to resources. Studies should include the evaluation and effectiveness of endorsement logos for acceptability and comprehension in various regions to accommodate all types of consumers.

For reasons related to disease prevention and health promotion, nutrient profiling is defined as the science of classifying or ranking foods by their nutritional composition [48]. Nutrient profiling can be used for a wide variety of purposes, including children's food promotions, health and nutrition statements, logos or icons for product labelling, knowledge and education, the supply of food to public institutions, and the use of economic instruments to direct food consumption. Nutrient profiling can, for example, be used to create requirements for food descriptions falling into two key types: descriptions that apply to food nutrient levels (for instance, high in fat, sugar, or salt) or descriptions which directly refer to the effects of eating food on the health of a person (example, "good for you"). According to Table 2, two out of the six studies were based on nutrient profiling [31,34]. The first study resulted in the development of nutritional profiles by the United Kingdom British Food Standards Agency Nutrient Profile System (FSA-NPS), which used a simple scoring system. The scoring system was implemented by assigning a point to 100 grams of nutrients present in the food item [31]. The second study identified the effectiveness of the HSR on consumers' decision making process [34]. The results indicate that consumer's nutrition knowledge plays a vital role on their buying decisions. Products exhibiting a mandated labelling such as the HSR enhance consumers' capacity to identify and choose healthier food items even if they did not view the BOP nutrition information. In addition, a recent study conducted by Kupirovic et al. showed that all front-of-package nutrition labelling systems will make it easier for customers to make healthier decisions so they can follow dietary recommendations and distinguish within a category between healthy and less healthy items [49]. The limitations for nutrient profiling include not enough evidence as to which labelling scheme is most suitable and successful. The most

suitable front-of-packaging labelling varies from country to country due to national backgrounds [32], therefore policy makers need to decide and select the scheme that is most appropriate to their distinctive nationality.

5. Limitations and Future Directions of the Study

There is limited evidence on the most suitable FOP labelling scheme. Comparative studies should be conducted to assess multiple core aspects of labelling systems instead of being simple variations of a certain geographical format. For instance, if a warning system is being proposed, it should be compared to a graded label (for example, nutrient-based—Multiple Traffic Light, or summary—Health Star Rating System or the Nutri-Score), and conversely.

6. Conclusions

Front-of-pack nutrition labelling is one of the evolving structural initiatives undertaken to enhance the food environment to address the steadily rising burden of diet-related NCDs. It is an inexpensive method that delivers simple and at-a-glance nutritional information to support consumers in making informed food choices at the point of purchase. In attempt to address the NCD crisis in South Africa, an intervention, such as the promotion of a healthy diet through the supply of proper nutrition information on food labels, along with consumer education to help understand nutrition labels, is required.

Grading foods into categories of healthfulness through evidence of key nutritional dimensions is a practical tool to inform food environmental interventions that may assist in public health promotion by influencing consumer choice in workplace canteens and beyond. It is recommended that because worksite canteen food sales in South Africa include both packaged and cooked food, a general test of various labelling schemes should be conducted to determine if a directional change is made towards purchasing healthier foods. Grading foods using interpretational aides adapted to the South African context into categories of relative healthfulness can be a practical tool to inform food environmental interventions at worksite canteens and beyond.

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Worksite Canteen Intervention Training Manual

South African Pioneer Worksite Lifestyle and Food Environment Intervention



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✓ BACKGROUND

South Africa is experiencing a quadruple burden of disease; HIV/AIDS epidemic, high burden of tuberculosis, high maternal and child mortality and a growing prevalence of non-communicable diseases (NCDs). Risk factors of NCDs such as diet and physical activity are modifiable through appropriate and effective interventions. The worksite is a suitable platform to engage in behavioural change as this is an environment where individuals spend much of their waking hours. The ability of employees to perform and add value in the workplace is affected by their health. Employees who are healthy have better physical and mental well-being. Healthy eating, physical activity, and a positive mind-set can lead to:

- ☑ lower risk of acquiring NCDs such as heart disease and certain types of cancer
- ☑ lower levels of anxiety and stress
- ☑ increased energy, mood, and self-confidence

✓ PURPOSE OF THE MANUAL

A healthful eating setting makes it simple for everyone to make healthy food choices. This comprises of dining areas, food storage, preparation, and serving equipment, along with encouragement for a healthy eating culture. Employees may put healthy eating into practice with the aid of a supportive work environment, as well as nutrition knowledge, awareness and skills. The **Worksite canteen training manual** was developed to provide information and help canteen staff to encourage employees to enhance their health status. This manual may be used in combination with wellness programmes and interventions to improve the eating healthy aspect of your workplace.

✓ WHAT IS HEALTHY EATING?

One of the most powerful tools to combat diseases like cardiovascular disease, diabetes, obesity, and some cancers, is to eat well and make good dietary choices. A small change may have a significant impact on employees' health. Healthy eating is obtained through the provision of a variety of foods that provide positive health outcomes. A good healthy eating plan includes mixed meals. Mixed meals include food from two or more of the food groups and are usually eaten three times a day (breakfast, lunch and supper). Most mixed meals will include an unrefined starchy food, chicken, fish, meat or eggs, legumes, dairy products, vegetables and fruit. Variety also refers to the preparation of foods using various cooking methods. Cooking methods that utilise less fat (oil) or no fat, sugar, and salt are important aspects of healthy eating. Furthermore, the amount of food consumed should be adequate to fulfil a person's nutritional needs.

Individuals can attain healthy eating habits by following the messages of South Africa's 2012 food-based dietary recommendations (FBDGs) (also known as the guidelines for healthy eating). The FBDGs are a tool that defines the type and amount of food that should be consumed to maintain optimal health. key messages on healthy eating based on the FBDGs are provided below. The FBDGs promote and encourage the use of a wide range of healthful, minimally processed foods. To appeal to customers

(employees) and be culturally acceptable, the items must be appetising and well-presented. This idea should be reflected in the foods and beverages available at the canteen.

✓ SOUTH AFRICAN FOOD BASED DIETARY GUIDELINES

South Africa first published FBDGs in 2003. A revised version was launched in 2012. The South African guidelines were developed by the Nutrition Society of South Africa in partnership with the Department of Health, the Medical Research Council, academics, food producer organisations and United Nations agencies. They were adopted by the National Department of Health, Directorate of Nutrition.

The South African food guide displays seven food groups to be eaten regularly: starchy foods; vegetables and fruits, dry beans, peas, lentils and soya; chicken, fish, meat and eggs; milk, *maas*, yoghurt; fat and oil; and water. It only shows food groupings (composed of local and affordable foods) that are necessary for healthy eating, and unlike other food guides, it does not include items whose consumption should be limited, such as highly processed foods high in sugar, fat and salt. The size of each food group segment reflects the volume the group should contribute to the total daily diet.



General Food Based Dietary Guidelines for South Africans:

- Enjoy a variety of foods.
- Be active!
- Make starchy foods part of most meals.
- Eat plenty of vegetables and fruit every day.
- Eat dry beans, split peas, lentils and soya regularly.
- Have milk, *maas* or yoghurt every day.
- Fish, chicken, lean meat or eggs can be eaten daily.
- Drink lots of clean, safe water.
- Use fats sparingly. Choose vegetable oils, rather than hard fats.
- Use sugar and foods and drinks high in sugar sparingly.
- Use salt and food high in salt sparingly.

Key healthy eating messages based on the South African Food Based Dietary Guidelines:

→ Make starchy food part of most meals

Whole grain starchy foods such as whole wheat bread, brown rice, oats, whole wheat pasta and barley, instead of refined cereals. Refined cereals include white bread and white rice. Fibre rich foods keeps you fuller for longer, assist in digestion, reduces constipation and is associated with a lower risk of heart disease.

Add foods from other food groups to the starch food to make good mixed meals. For example, brown rice and lentils.

Choose starchy foods that do not have added fat, sugar or salt.

A large serving of starch can be replaced with a smaller serving. Vegetables should be included in the meal.

→ Eat plenty of fruit and vegetables everyday

Eat vegetables in at least one or two mixed meals a day. Fruit can be eaten with meals, or as a snack between meals.

Consume at least one unit of vegetable or fruit a day that provides beta carotene. Examples include carrots, pumpkin, butternut, spinach, mango and pawpaw.

Fruit and vegetables should be prepared with little (if any) added fat, sugar and salt.

Soup can be made from fresh vegetables instead of packet soup. This is more nutritious and lower in salt.

Vegetables and fruit juice are not recommended as a regular replacement for fresh vegetables and fruit. They do not have much fibre and are high in sugar.

→ **Eat dry beans, split peas, lentils and soya regularly**

Every week plan to include meals that use dry beans or soya instead of meat or chicken.

Use dry beans, lentils, peas and soya as an ingredient in mixed dishes, such as samp and beans; rice and lentils; beans in vegetable sauce with pasta; beans on toast; and peanut butter on toast.

Dry beans or soya can be included with meat or chicken dishes. This improves the overall nutritional value of the dish.

Regular consumption of food in this group contributes to a lower risk of developing non communicable diseases such as diabetes, obesity and aids in the maintenance of healthy blood sugar levels.

1.1 5 Tips for preparing and cooking legumes

Most legumes are either canned or dried and found in the bulk section of a grocery store. The choice between the two comes down to personal preference and time allowance—dried legumes require an extra step before they can be cooked. Follow these tips to prepare and cook legumes:

1. **Drain canned legumes.** Pour off the liquid from the can and give the beans a rinse to eliminate some of the sodium they're packed in. Heat them up in a pan with added seasonings.
2. **Sift dried legumes and pick out foreign debris.** Sometimes bits of debris can wind up mixed in with the legumes when harvesting and packing.
3. **Rehydrate dried legumes in the refrigerator.** Many dried legumes, except for split peas and lentils, need to be rehydrated before they are cooked to make them easier to digest. They can be put into a pot of water to soak in the refrigerator for four to 12 hours. Use three cups of water for every one cup of legumes. When ready, drain the water before cooking them.
4. **Rehydrate dried legumes on the stove.** For a quicker rehydration method, legumes can be put into a pot of water (one cup of legumes to three cups water) and brought to a boil on the stove. Simmer for an hour or remove the pot from the heat and leave the legumes to soak for two to four hours. Drain the water, and they're ready to cook.
5. **Cook rehydrated legumes in water.** To cook legumes after they're rehydrated, add them to a pot using the same ratio of one cup legumes, three cups water. Always change the water between soaking and cooking. Bring them to a boil on the stovetop, adding herbs and spices. Reduce to a simmer for 45 minutes to an hour, until they are soft and can be easily mashed with a fork.



Samp and beans is a popular South African dish.

→ **Fish, chicken, lean meat or eggs could be eaten daily**

The guideline explains that foods from this group could be eaten daily – not that they should be eaten daily.

Food products include organ products from animals such as liver and kidney.

Cheese is also included in this food group but should not be consumed often as it is high in fat and salt.

Lean and fresh protein like fish, eggs, skinless chicken, lean mince and ostrich meat instead of processed and fatty meats such as polony, vienna's, salami, sausages and sandwich ham.

Omega 3 fatty acids are present in fish with fatty flesh (pilchards, sardines, mackerel, and salmon), which are a nutrient available in relatively few dietary sources.

→ **Drink milk, maas or yoghurt every day**

Milk, maas and yoghurt are the three main types of milk products.

Use low fat or fat free (skim milk) and milk products, this is to lower the amount of saturated fat in the eating plan.

Use milk and milk products with little or no added sugar

Some dairy products are high in fat, and low in the essential nutrients supplied by low fat milk such as ice cream and milk based frozen dessert.

Use fat sparingly: choose vegetable oils rather than hard fats

Fat is an essential nutrient in the eating plan, the type of fat and the amount eaten are important.

Reduce unhealthy fats like saturated and trans fats which can raise cholesterol levels. These can be found in foods such as fatty and processed meats, chicken skin, butter, ghee, cream and hard cheeses, pies, pastries, biscuits, and deep-fried foods.

Choose healthy fats such as sunflower, canola and olive, avocado, peanut butter oils.

Choose cooking methods that require little or no added oil or fat such as baking instead of frying.

→ **Use sugar and food and drinks in sugar sparingly**

Sugar can be enjoyed in a healthy eating plan, when used sparingly.

A small amount of sugar can be added to foods and beverages such as soft porridge or tea to enhance the taste.

Foods made with sugar, for example, jam, may be used to make a mixed meal or a snack.

Sweets and sugar sweetened beverages may be consumed occasionally but should not be replaced by mixed meals.

Frequent consumption of sweetened cold drinks and fruit juice can lead to obesity, when the total energy value of the eating plan is higher than needed.

Non-nutritive sweeteners (NNSs)

Artificial sweeteners are widely used in beverages and food products by offering a sweet sensation without the added kilojoules. There are two types of artificial sweeteners: nutritive and non-nutritive, both of which improve the flavour and texture of food. Nutritive sweeteners contain carbohydrates and provide kilojoules (energy). Non-nutritive sweeteners (NNS) are kilojoule-free or extremely low-kilojoule sweeteners that contain little or no carbohydrates or energy.

Activity: identification of NNS

→ Use salt and foods high in salt sparingly

A high salt intake is linked to hypertension. The recommended daily intake of salt is 5g (1 teaspoon).

Tips:

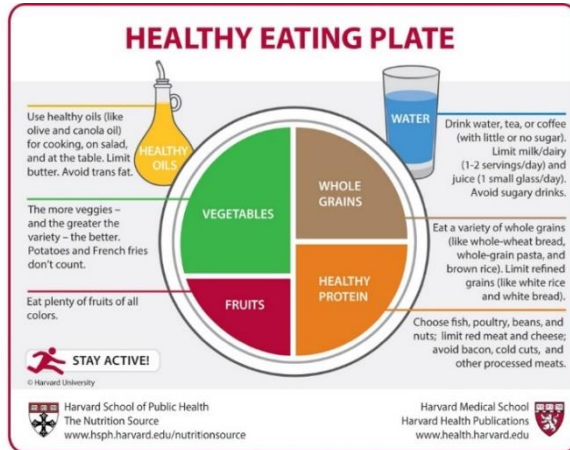
Reduce the salt added to your food during cooking and at the table.

Make use of fresh and dried herbs, spices, garlic or lemon juice to add flavour to your food, without adding extra salt or salty seasonings like chicken or barbeque (BBQ) spice.

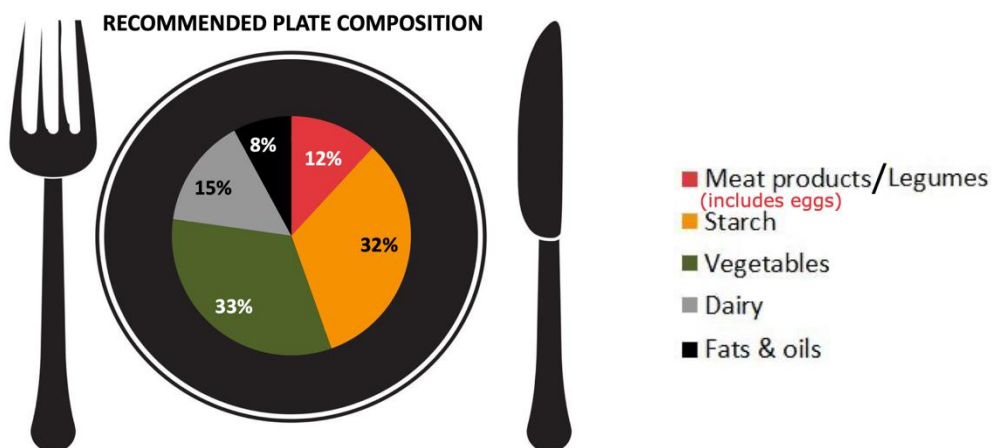
Foods like packet soups, stock cubes, gravies, cheese, many breakfast cereals, breads, salty

✓ The Healthy Eating Plate, The EatWell Plate and the South African Plate of the Nation

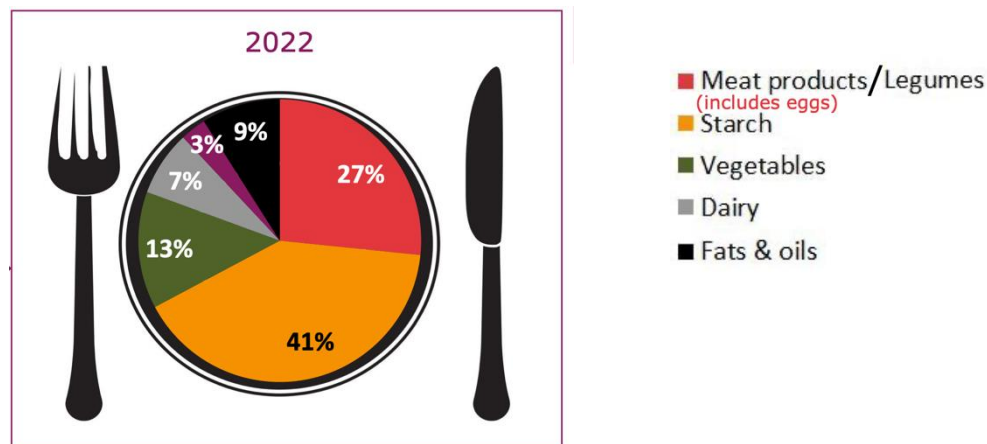
Healthy Eating Plate



The EatWell Plate



The South African Plate of the Nation



The Healthy Eating Plate

Building a Healthy and Balanced diet

- Make most of your meal vegetables and fruits – $\frac{1}{2}$ of your plate.
Aim for variety and colour, and keep in mind that potatoes don't count as vegetables on the Healthy Eating Plate due to their blood glucose impact.

- Go for whole grains – $\frac{1}{4}$ of your plate.
Whole and intact grains—whole wheat, barley, wheat berries, quinoa, oats, brown rice, and foods made with them, such as whole wheat pasta—have a milder effect on blood sugar and insulin than white bread, white rice, and other refined grains.

- Protein power – $\frac{1}{4}$ of your plate.
Fish, poultry, beans, and nuts are all healthy, versatile protein sources—they can be mixed into salads, and pair well with vegetables on a plate. Limit red meat, and avoid processed meats such as bacon and sausage.

- Healthy plant oils – in moderation.
Choose healthy vegetable oils like olive, canola, soy, corn, sunflower, peanut, and others, and avoid partially hydrogenated oils, which contain unhealthy trans fats. Remember that low-fat does not mean “healthy.”

- Drink water, coffee, or tea.
Avoid sugary drinks, limit milk and dairy products to one to two servings per day, and limit juice to a small glass per day.

- Stay active.
The red figure running across the Healthy Eating Plate's placemat is a reminder that staying active is also important in weight control.

The main message of the Healthy Eating Plate is to focus on diet quality:

- The kind of carbohydrate in the diet is more significant than the amount of carbohydrate in the diet, because certain carbohydrate sources are healthier than others, such as vegetables (other than potatoes), fruits, whole grains, and legumes.

- The Healthy Eating Plate also recommends customers to avoid sugary beverages, which are a key source of kilojoules in the diet, generally with little nutritious benefit.
- The Healthy Eating Plate encourages consumers to utilise healthy oils and does not specify a maximum proportion of kilojoules from healthy sources of fat per day.

✓ The Eatwell Guide

The Eatwell Guide divides the foods we eat and drink into 5 main food groups and indicates how much of what we eat overall should come from each food group to achieve a healthy, balanced diet. You do not need to achieve this balance with every meal, but try to get the balance right over a day or even a week.



- Eat at least 5 portions of a variety of fruit and vegetables a day



Most of us still are not eating enough fruit and vegetables. They should make up over a third of the food we eat each day.

Aim to eat at least 5 portions of a variety of fruit and veg each day. Choose from fresh, frozen, tinned, dried or juiced.

Remember that fruit juice and smoothies should be limited to no more than a combined total of 150ml a day.

Fruit and vegetables are a good source of vitamins, minerals and fibre.

- Base meals on potatoes, bread, rice, pasta or other starchy carbohydrate



Starchy food should make up just over a third of the food we eat. Choose higher fibre wholegrain varieties, such as whole-wheat pasta and brown rice, or simply leave skins on potatoes.

There are also higher fibre versions of white bread and pasta.

Starchy foods are a good source of energy and the main source of a range of nutrients in our diet.

- Have some dairy or dairy alternatives (such as soya drinks and yoghurts)



Milk, cheese, yoghurt and fromage frais are good sources of protein and some vitamins, and they're also an important source of calcium, which helps keep our bones healthy.

Try to go for lower-fat and lower-sugar products where possible, like 1% fat milk, reduced-fat cheese or plain low-fat yoghurt.

- Eat some beans, pulses, fish, eggs, meat and other protein



These foods are good sources of protein, vitamins and minerals. Pulses, such as beans, peas and lentils, are good alternatives to meat because they're lower in fat and higher in fibre and protein, too.

Choose lean cuts of meat and mince, and eat less red and processed meat like bacon, ham and sausages.

Aim for at least 2 portions of fish every week, 1 of which should be oily, such as salmon or mackerel.

- Choose unsaturated oils and spreads, and eat in small amounts



Unsaturated fats are healthier fats and include vegetable, rapeseed, olive and sunflower oils.

Remember all types of fat are high in energy and should be eaten sparingly.

- Eat foods high in fat, salt and sugar less often and in small amounts



These foods include chocolate, cakes, biscuits, sugary soft drinks, butter, ghee and ice cream.

They're not needed in our diet, so should be eaten less often and in smaller amounts.

- Drink plenty of fluids – the government recommends 6 to 8 cups or glasses a day

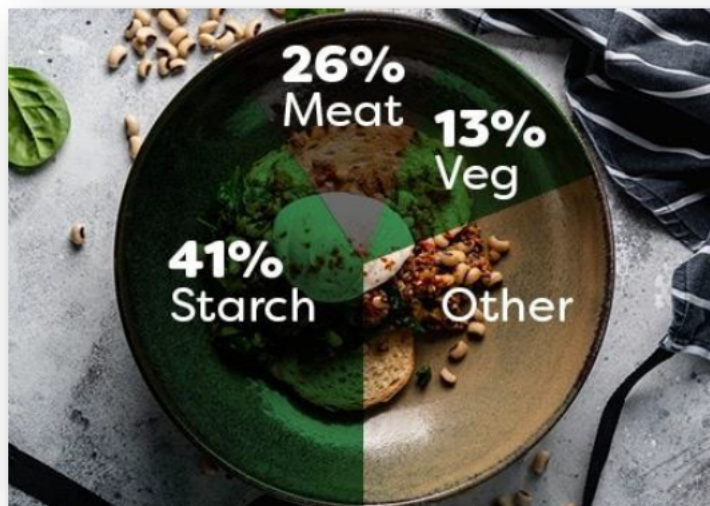


Water, lower-fat milks and lower-sugar or sugar-free drinks, including tea and coffee, all count.

Fruit juice and smoothies also count towards your fluid consumption, but they contain free sugars that can damage teeth, so limit these drinks to a combined total of 150ml a day.

The South African Plate of the Nation

So, what exactly is on our plates?



The current South African plate has a large proportion of meat and starch but is lacking in vegetables. The current plate consists of **41% starch and 26% meat with only 13% vegetables and the rest composed of fats and oils, dairy and legumes**. This is consistent across all areas and population groups.

What should be on our plates?

Here are four ways to change up your menu that can provide employees with a more balanced and nutritious plate:

[Add More Nutrition to your Meat Dishes](#)

Meat, fish and poultry are excellent sources of protein, iron and zinc. Low iron levels can lead to tiredness, the reduced ability to work and less resistance to infection. Improve the nutritional value of your meat dishes by combining them with a mix of tasty vegetables, increasing your wholegrain ingredients, and ensuring that the dishes you serve have a balance of all the essential ingredients your

body requires. When preparing red meat, opt for lean meat. Also try experimenting with sustainably-sourced fish, beans and legumes, dairy and chicken.

Plant-Based Protein Options

The easiest way to add plant-based protein dishes to your menu is to substitute meat protein with plant-based options. Good sources of plant-protein include legumes such as beans, peas, lentils, as well as nuts, seeds and soy products. These foods provide employees with iron and zinc, which are important for maintaining a strong immune system.

Add Vegetable-rich Recipes to your Menu

Add more vegetables to your dishes or change up the commonly used vegetable options with less common vegetables such as sweet potatoes, baby marrow, mushrooms and broccoli. An example of a vegetable packed dish a good stir-fry!

Wholegrain Options

Carbohydrates are necessary for a healthy, energised and well-fuelled body. They are also an important source of fibre. Ingredients available to use range from grains, to breads and cereals; however, the key is to ensure that there is a variety of wholegrain ingredients in your menu. Try substituting white bread with whole-wheat bread or white rice with brown rice to help boost the nutrition of your dishes.

By putting these 4 points into action, you can assist in fixing the Plate of the Nation.

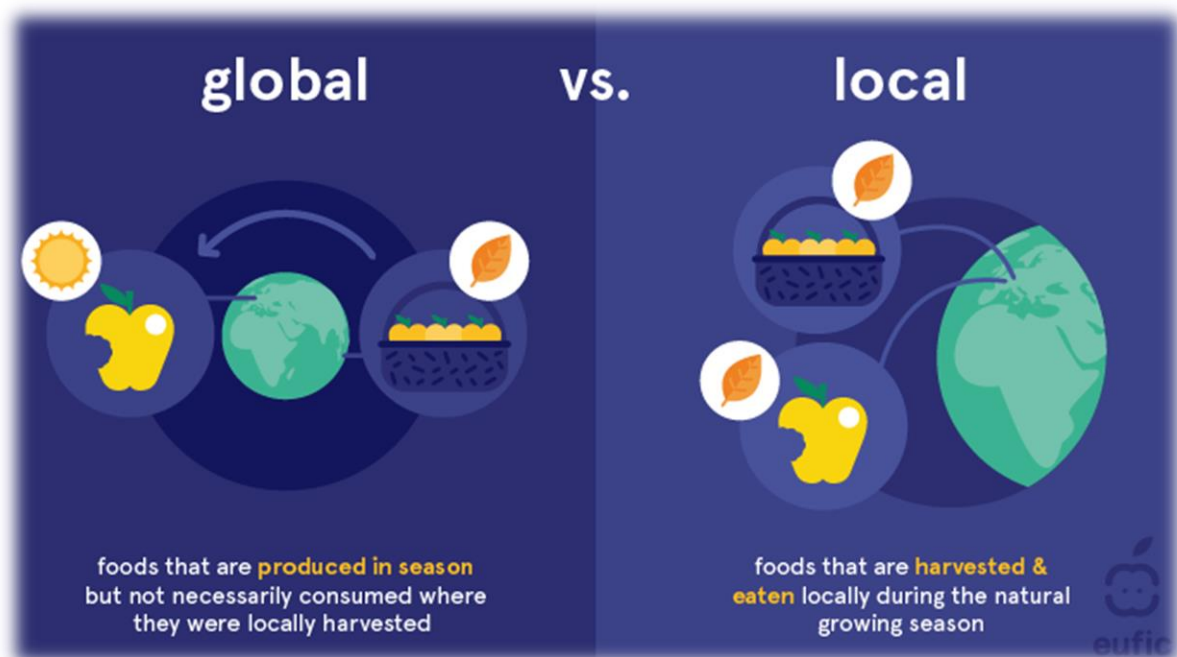
✓ SEASONAL AVAILABILITY OF FRUITS AND VEGETABLES IN SOUTH AFRICA

Fruit and vegetable globalisation and mass distribution enables us to enjoy a broad range of products throughout the year. Increasing our consumption of seasonal fruits and vegetables has become a prominent concept for improving the sustainability of our diets. Fruit and vegetables are essential components of a healthy and sustainable diet as they supply important vitamins, minerals, and dietary fibre while having a smaller environmental effect than animal-based diets.

✓ What does the term "seasonal" imply?

Each type of fruit and vegetable have its own optimal growing and quality parameters. As a result, fruit and vegetables are produced and harvested throughout the year in various places and seasons. The main characteristics of seasonal foods are determined by when and where they were produced:

- Global seasonality is determined by where the food is produced. This refers to foods that are grown in season but not always consumed where they were harvested. Citrus, for example, is harvested in South Africa in winter but consumed in Europe throughout the summer seasons due to the import/export trade market.
- Local seasonality is determined by where the food is grown and eaten. During the natural growing season, this refers to foods that are harvested and consumed locally. In Europe, for example, apples are cultivated and plucked in summer and autumn, and consumed in October.



Why should locally grown, seasonal foods be included into your employee's diet?

More locally grown and seasonal foods in employees' diets provide several health and environmental benefits for them, the community, and the environment. Here are some of the reasons why they should eat seasonally and locally:

⇒ Minimise an employee's impact on the environment

Produce that has travelled across the globe to reach an employee's plate has a considerably greater environmental effect as it takes more energy to transport, refrigerate, and store, and frequently requires additional packaging to keep it fresh. An employee can assist in decreasing the environment costs associated with their meal by consuming local, seasonal foods.

⇒ Lower cost for a better meal.

Locally grown produce is more presumably to be ripened before being harvested and transported. This food is healthier, more appetising, and is fresher. Although buying local food might be more expensive, buying it in season ensures you receive it at its most affordable.

⇒ Support your local community

When you purchase food grown locally in South Africa, the funds remain in our country which can be used to help our farmers and communities.



⇒ It is simpler to understand what you're purchasing



When it comes to food, our globalised food system provides us with a wide range of options and convenience. However, as the distance between where food is grown and processed grows, it becomes more difficult to obtain information about how it was produced. Knowing where the food originates from is the simplest way to know the food that they are consuming.

⇒ You can make a difference in the fight against food waste!

The longer time food spends in storage and transit, the more likely it is to spoil and go to waste. The supply chain accounts for more than half of all food waste. Purchasing food in season and locally can help alleviate the danger of food going bad before it reaches the shelf.

Use this South African Seasonal Fruit and Vegetable Chart as a reference to gain ideas for cooking with different ingredients each season.

SEASON	FRUITS	VEGETABLES
<p>SUMMER (December, January, February)</p> 	<p>Apples, apricots, berries (blueberries, strawberries, mulberries, raspberries), bananas, cherries, figs, granadilla, prunes, grapes, guava, litchis, mangos, melons, nectarines, papayas, peaches, pears, pineapples, plums, pomegranates, watermelons, kiwifruit</p>	<p>Artichokes, asparagus, aubergines, baby corn, baby marrow, beans, beetroot, mealies, mushroom, patty pans, pepper, radishes, red onion, spinach, tomatoes, watercress, butternut, cabbage, green beans</p>
<p>AUTUMN (March, April, May)</p> 	<p>Apples, berries (blueberries, gooseberries, strawberries), granadilla, pomegranate, mandarin, papayas, peaches, pears, plums, avocado, oranges, grapes, lemon, sweet melon, watermelon</p>	<p>Aubergine, broccoli, beetroot, Brussel sprouts, cabbage, cauliflower, celery, green beans, horseradish, leek, mealies, mushroom, peas, spinach, sweet peppers, baby marrow, butter beans</p>
<p>WINTER</p>	<p>Apples, dates, gooseberries, granadilla, grapefruit, kiwifruit,</p>	<p>Asparagus, beetroot, broccoli, cabbage, broad bean,</p>

(June, July, August) 	lime, mandarin, naartjie, orange, papaya, pear, avocado	cauliflower, kale, leeks, mushrooms, spinach, spring onion
SPRING (September, October, November) 	Apples, apricots, avocados, bananas, gooseberries, cherries, coconuts, dates, grapefruit, guavas, lemons, limes, naartjies, nectarines, oranges, papaya, pears, pineapples, plums, strawberries, sweet melon, watermelon	Artichokes, asparagus, aubergines (eggplant), baby marrows, beetroot, brussel sprouts, cabbage, carrots, cauliflower, celery, corn, courgettes (zucchini), cucumber, kale spinach, leeks, lettuce, parsnips, potato, pumpkin, radishes, red onions, rhubarb, turnips, watercress

✓ FOOD PREPARATION

Healthy eating includes preparing food to preserve nutrients.

✓ Healthy meal preparation

Steaming, broiling, grilling, and roasting are all healthy cooking methods. Frying necessitates the addition of fat, and deep-fried meals contribute a significant amount of fat to the diet.

To retain water soluble vitamins like vitamin B and C, foods should be cooked in minimal water for a short time.

Use herbs and spices to enhance flavour, instead of salt.

Avoid packaged or processed foods, as they are more likely to include additional salt, sugar, or fats.

✓ Safe food preparation

If you work in the food industry, making sure food is prepared safely should be a primary focus. A food environment can provide a variety of food safety dangers, so it's critical to have control of hazards to avoid harming consumers.

✓ What are the fundamental principles of food safety and hygiene?

Cleaning, cross-contamination, chilling, and cooking are the four basic concepts of food safety and hygiene. As a foodservice industry, it's critical to follow these guidelines to guarantee that your food preparation is safe and sanitary, which will reflect well on your company.

☐ Cleaning

Ensure the environment and equipment that will be utilised are thoroughly cleaned and disinfected. This must be done before and after each cooking operation, and before and after your shift.

When handling food, make sure you have good personal hygiene standards, such as washing your hands properly, wearing clean clothes, tying your hair back, and wearing gloves.

☐ Cross-contamination

When pathogens from one type of food transmit to another type of food that should be kept separate, this is known as cross-contamination.

Germs may transfer across meals via hands, equipment, and surfaces. Make sure that all equipment and surfaces are well disinfected and cleaned between foods that must be kept separate. Raw meat and vegetables, for example, should be stored separately, and the equipment used to prepare these foods should be well cleansed in between.

Keep raw, cooked, and ready-to-eat foods separate to avoid cross-contamination.

Using color-coded chopping boards is a standard approach to reduce food safety risks. Food handlers should be aware of which colour chopping board to use for various types of food and should not be mixed: **red** - raw meat, **blue** - raw fish, **yellow** - cooked meat, **brown** – vegetables, **green** - salads and fruit and **white** - bakery and dairy.

☐ Chilling

If food needs to be chilled, it should be stored between 0°C and 5°C, therefore refrigerators should be adjusted to 3°C or 4°C.

Frozen foods must be frozen as soon as possible after delivery and before the expiration date. When defrosting, you can use the microwaves defrost mode, or store it in the fridge, where it will stay at a safe temperature, or in a sealed container under cold running water. Unless a manufacturer has instructed you to cook from frozen, you must verify that the product has been properly defrosted.

☐ Cooking

When cooking, make sure that the meal achieves an internal temperature of 75°C or 70°C for at least 2 minutes to guarantee that all germs are safely eliminated.

When cooking raw meat, make sure the fluids flow clear, there's no pink flesh remaining, and it's been at least 2 minutes at an internal temperature of 75°C or 70°C. A clean thermometer or probe can be used to ensure food is cooked at a safe internal temperature.

When hot holding food, such as on a buffet, it must be kept at 63°C or above. If the food has not been consumed after two hours, it should be reheated to piping hot or chilled to 8°C or lower. Food must only

be reheated once following cooking or hot holding. For safety reasons, food that has been left out for more than two hours must be discarded.



✓ PERSONAL HYGIENE

Follow these guidelines to avoid food poisoning through adequate personal hygiene:

- Before handling food, thoroughly wash and dry your hands, and wash and dry them again periodically throughout the day
- Use a clean towel, disposable paper towel, or an air dryer to dry your hands
- Don't smoke, chew bubble gum, spit, or eat in an area where food is handled or stored
- Don't cough or sneeze over food, or where meals is being cooked or stored
- Clean protective clothing, such as an apron and hair net, should be worn
- Personal items such as cell phones should be kept away from where food is prepared and stored
- Long hair should be tied or covered up
- Keep your fingernails clean and short. Avoid wearing nail polish as it may fall into the food or harmful dyes from the nail polish can contaminate the food
- Avoid wearing jewellery
- Use a wound strip or bandage to thoroughly cover any cuts and wounds
- If you have wounds on your hands, place disposable gloves over the top of the wound strip
- Change disposable gloves on a regular basis
- Notify your supervisor if you feel unwell and avoid handling food

WASH YOUR HANDS!!!



1. Wet hands and arms with water.
2. Apply soap.
3. Scrub for 20 seconds, palm to palm, between fingers, back of hands, base of thumbs, fingers and finger nails and wrists.
4. Rinse thoroughly under running water.
5. Dry using clean paper or cloth towel.
6. When handling any ready to eat food, be sure to wear gloves.

- During food preparation to prevent cross-contamination when changing tasks

- After touching any part of the body other than clean hands and clean exposed portions of arms

- After using the restroom

- After coughing, sneezing or using a tissue

- After smoking, eating or drinking

- When switching between working with raw food and working with ready-to-eat food

- After handling soiled equipment or utensils



DIFFERENT FOOD PREPARATION METHODS

Sautéing



is the process of transferring heat from a pan to food, which is typically coated with a thin layer of oil that averts food from sticking to the pan while also assisting in heat conduction, browning the surface of meat or vegetables.

Stir-frying



is a traditional Chinese cooking method in which ingredients are stirred or tossed in a wok while being cooked in a small amount of fat (oil).

Frying



either in shallow oil in a pan over heat or deep fat frying, in which the food is immersed in a deeper pan of hot oil.

Braising



is a method of cooking that combines wet and dry heats: the food is generally browned at a high temperature before being simmered in a covered pot with cooking liquid (for example, wine).

Steaming



is a type of cooking that necessitates the use of wet heat. Boiling water evaporates into steam, which generates heat. The steam cooks the food by bringing heat to it. The food does not come into direct contact with the water, unlike during boiling.

Baking



Food is generally cooked in an oven using dry heat.

Roasting



is a method of cooking that uses indirect, diffused heat to cook its ingredients slowly. It's a dry-heat cooking technique in which hot air surrounds the food and cooks it uniformly on all sides at a temperature of at least 150 degrees Celsius. An open flame or oven can be used to generate heat. Roasting is commonly used to improve the flavour of a meal by caramelizing and browning the food's surface. This method is best for cooking meats such as chicken and pork but it may also be used to prepare vegetables and seafood.

Grilling



Cooking food on a rack over a heat source, such as a charcoal fire or ceramic briquettes heated by gas flames, is known as grilling. Direct heat immediately sears the outside of food, resulting in unique strong, roasted, and occasionally delightfully burnt tastes as well as a lovely crust. When food is cooked over moderate heat, it develops a crust and a smokier flavour.

Broiling



is a preparation method that involves heating food using radiant heat upwards. Broiling is a great way to cook thinner, leaner meats like butterflied chicken breasts, pork tenderloin medallions and vegetables. Broiling baked or roasted food may also enhance colour, crispness, and taste.

Poaching



– is a moist heat technique of cooking in which food is submerged in a liquid such as milk or water and heated at a low temperature. This is a method for preparing delicate proteins including fish, poultry, and eggs, as well as various fruits and vegetables.

Searing



is a method that involves cooking food at extremely high heat with very little oil in a skillet. Searing beef, for example, caramelizes the natural sugars on the surface while browning the proteins. This results in a thick brown crust on the surface, which enhances the completed dish's savoury flavour. The goal is to generate a rich brown, caramelised crust on the exterior rather than cook the meal all the way through.

Stewing



is a combined cooking process that involves immersing small, homogeneous chunks of meat in liquid and slowly simmering them. The food and the liquid are served as a dish.

✓ TASTE TESTS

One of the key elements of market research for food and beverage items is taste testing. Taste testing is essentially the technique of allowing customers to taste products in a controlled setting and provide feedback.

Taste testing is a type of quantitative consumer research that is widely performed as part of the product benchmarking process. Benchmarking enables businesses to determine how well a product performs in comparison to competitors or if a new product formulation or recipe is worse, same, or much better than the original.

✓ Why is taste testing important?

Taste testing is necessary to determine how a product performs in the eyes of the intended consumer. This method is unbiased and provides vital information about how customers feel about a product. A simple controlled taste test might reveal an unanticipated concern that can be promptly resolved, putting a product on the fast track to success. However, in the lead-up to the introduction of a new product or the reinvention of an existing one, it's always ideal to do comprehensive taste testing to verify that the reported findings are statistically significant and that you've found every conceivable risk.

✓ What is involved in the taste-testing process?

In general, there are two types of testing: single product tests and multi-product tests. These tests entail panellists sampling a single product in isolation and thereafter providing feedback. As a company get closer to a market launch, these tests may be repeated at regular intervals to allow the organisation to notice any changes in tastes or perceptions of the product.

Panellists in comparison taste tests, on the other hand, taste many variations of the same product. This is great for discovering which formulations consumers like or seeing how a product performs against its competitors (product benchmarking).

Taste testing are conducted in a controlled setting at a centralised location. The products are tasted 'blindly,' which means the participants have no idea about which brand or formulation they are tasting. This eliminates any potential for prejudice as a result of a panellist's preconceived assumptions or opinions about a certain brand or product.

Canteens may provide samples of new food items for employees to taste. Employees may vote for their favourite item and this can be included in the next month's menu or menu cycle.



Example: The Hedonic Test

This test is used to determine the level of consumer acceptance and satisfaction with product attributes. It demonstrates the overall approval of a product and its competitors, acceptance of each attribute, relative significance of each attribute and attribute valuation. There is a categorical scale with an odd number of categories (five to nine), ranging from "dislike extremely" to "like extremely" with a neutral midpoint (neither like nor dislike).

On a nine-point scale, a mean liking score of 7 or greater is typically indicative of highly acceptable sensory quality; thus, a product reaching this score might be securely utilized as a suitable representation of 'target' quality. On this foundation, products from a research set can be chosen to serve as physical references for illustrating sensory quality that is realistically representative of the customers' acceptance limits.

9-Point Hedonic Scale	
9	Like Extremely
8	Like Very Much
7	Like Moderately
6	Like Slightly
5	Neither Like nor Dislike
4	Dislike Slightly
3	Dislike Moderately
2	Dislike Very Much
1	Dislike Extremely

✓ PORTION CONTROL

✓ The difference between portion control and serving size

Portion size refers to how much food you consume at once, be it from a prepacked meal, or a meal served at the canteen. An employee is in control of the portion consumed. Most foods that are sold as a single serving include numerous servings. The amount of food stated on a product's nutrition facts label is referred to as a serving size. All the nutritional values listed on the label are for the serving size recommended by the manufacturer on the product.

✓ Portion control

Portion Control is the technique for determining the amount of food to be used in preparing and serving a meal. Standard portions also imply consistency in terms of taste, quality, and quantity of food, which leads to customer satisfaction. Controlling portions is critical for any canteen's profitability since it has a significant influence on food costs. Exercising portion control helps eliminate food wastage.

There are several portion control techniques that can be used for worksite canteens:

✓ Standardised recipes

Standardised recipes are critical to the success of any foodservice establishment. A standardised recipe is a set of instructions for preparing and serving a meal. It specifies the amount of ingredients to be utilised as well as the portion size to be served to the employees. As a result, you will know ahead of time how many employees can be served from a single prepared meal. Standardised recipes should also contain the weight or volume of each ingredient, serving size, recipe yield, and the equipment and utensils to be used, in addition to the preparation instructions.

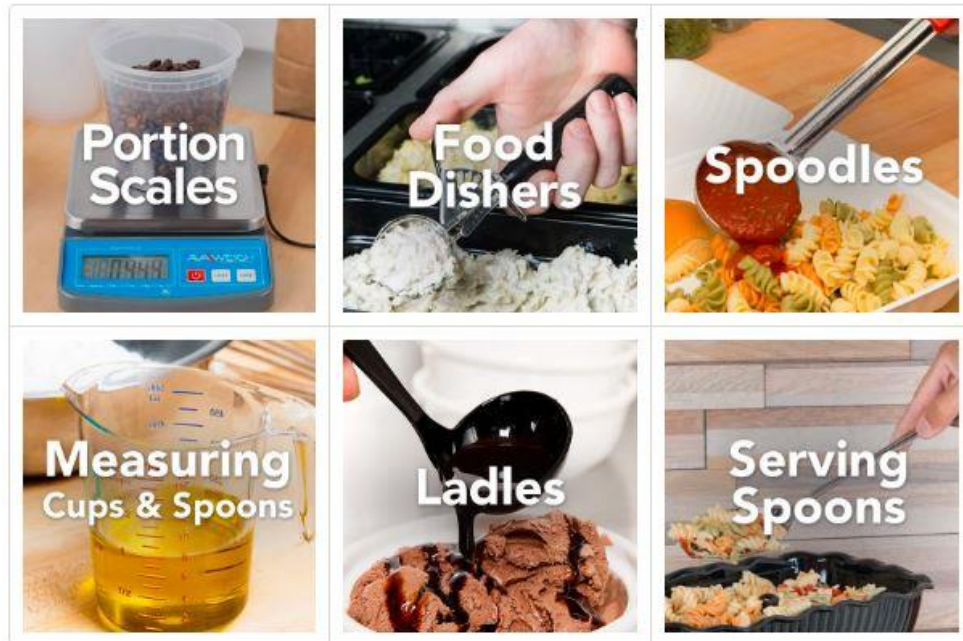
✓ Correct plating

Written plating guidelines, like Standard Recipes, are vital for assisting food and controlling portion size. To minimize any uncertain, write the plating instructions. It's also a great idea to have photos of the actual dish available for reference.



✓ **Correct measurements**

Portion scales, food dishes, and spoodles are some of the most common measurement instruments. Common kitchen items like measuring cups and ladles may help you keep track of your servings. Single-serving condiment packets (such as tomato sauce) is an example of portion control that can be used at the canteen.



✓ **Train staff**

For an effective implementation of portion control, your kitchen staff should be adequately trained. The chef should follow the recipe precisely to ensure the quantity is balanced. Regardless of the staff's skill level, correct measurement equipment must be utilised when cooking the meal. Make sure your team is well-versed in appropriately plating the food on the plate while keeping portion sizes and aesthetics in mind.

✓ **Purchasing**

Much of the portion control concerns may be alleviated by purchasing the right type of raw materials in correct quantities. It is vital to consider the item's product yield and the number of servings it produces. Keep track of the fresh and dry ingredients required in the kitchen, as well as their cost.

✓ FOOD LABELLING AND NUTRITION INFORMATION

✓ Understanding food labels

One of the greatest methods to ensure that you are purchasing and consuming healthy food and beverages is to understand the food label of a product and be able to discern between unhealthy and healthy options.

The table below can help you determine whether or not a product is healthy since it displays how much of each nutrient it contains. There are two columns for each nutrient: per 100g and per serving. Because serving sizes might vary, the 100g column is an excellent way to evaluate similar products.

The "per serving" column indicates how much of each nutrient and energy (kilojoules) you will consume if you consume the suggested serving. Keep in mind that the "suggested serving" is not usually the same as the package size. For example, on a 500ml bottle of sugary drink, the suggested serving is often only around 250ml, or half the packaging size.

According to the Heart and Stroke Foundation South Africa, the table below can be used to determine whether a food is high in fat, saturated fat, sugar, or sodium. Foods in the 'low' category can be consumed more frequently, whereas foods in the 'high' category should be consumed only on rare occasions.

Nutrient Per 100 g of food	Fat	Saturated fat	Sugar	Salt (Sodium)
Low Eat more often	< 3 g	< 1,5 g	< 5 g	< 120 mg
Medium Eat seldom	3-20 g	1,5-5 g	5-15 g	120-600 mg
High Avoid	> 20 g	> 5 g	> 15 g	> 600 mg

Ingredients are listed in descending order of weight (the most used ingredients listed first, followed by those used in lower amounts). The first three ingredients on the label often make up majority of the food product. Be aware of sugar, salt, and bad fats which may be listed by different names. Here are a few words to keep an eye out for:

Sugar	Brown sugar, concentrated fruit juice, corn syrup, dextrose, treacle, fructose, glucose, glucose syrup, golden syrup, honey, invert sugar, lactose, malt, malt extract, maltose, isomaltose, maltodextrin, maple syrup, molasses, raw sugar, sucrose, sugar, cane sugar.
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Bad fats	Animal fat, beef fat, butter, chocolate, carob, coconut oil, cream, dripping, ghee, hydrogenated oils, lard, margarine, milk solids, monoglycerides, palm oil, seeds, nuts, coconut, tallow, shortening, trans fats, vegetable fat.
Salt	Baking soda, salt, MSG (monosodium glutamate), any word containing the term sodium, nitrates, nitrites.

✓ **Reading food labels**

✓ **The Kilojoule Count**

In South Africa, a product's total energy is expressed in kilojoules (kJ). A calorie is equivalent to 4.2 kJ. The energy consumed from your food and beverages must balance with your overall energy expenditure to maintain a healthy weight. You will gain weight if you consume more kJ per day than your body requires. An individual's energy needs are determined by age, level of activity, and gender.

✓ **Carbohydrates**

The terms 'Glycaemic Carbohydrate' and 'Carbohydrate' refer to the overall carbohydrate content of a product, not its Glycaemic Index. The total amount of carbohydrates comes from both added and naturally occurring sugars, and complex (starchy) carbohydrates.

'Carbohydrate of Which Sugars' indicates how much sugar is in the food or beverage, and contains both added sugar and naturally occurring sugar found in fruits (fructose) and milk (lactose). Sugars such as sucrose, glucose, glucose syrup, invert syrup, maltose, and honey are examples of added sugars.

Remember that any carbohydrate, regardless of the source, will raise your blood glucose levels.

✓ **Protein**

Our bodies require protein for growth and repair. Lean meat, fish (ideally oily fish like mackerel, salmon, and sardines), lean meat, eggs, soya, beans, pulses, and lentils are all rich in proteins. You may lower the amount of saturated fat and kJ in your diet by choosing lean cuts of meat and eating more plant proteins.

Worth noting: carbohydrates are included in plant-based protein sources such as beans and soya; for example, a cup of beans contains approximately 15 g of carbohydrate.

✓ **Fat**

Consuming minimal fat (especially saturated fat) will help you maintain a healthy weight, enhance your overall health, and help regulate your blood sugar.

Saturated (trans fat) and unsaturated (polyunsaturated and monounsaturated fatty acids) fats are the two basic forms of fat. Unsaturated fats should make up majority of our daily dietary fat intake.

The 'total fat' content, and a breakdown of the different types of fats ("saturated fatty acids; monounsaturated fatty acids; polyunsaturated fatty acids and trans fatty acids") will be listed on product labels.

✓ Fibre

Fibre, commonly referred to as 'roughage,' is plant debris that your body is unable to digest. Fibre comes in two forms: soluble and insoluble, both of which are helpful to your health.

Soluble fibre, which may be found in beans, lentils, oats, fruits, and vegetables, aids in the creation of softer stool and the management of blood glucose and cholesterol levels.

Insoluble fibre, which may be found in wholegrain cereals and breads, beans, fruit, and vegetables, aids digestion and increases satiety.

Adults should consume 25 to 30 grams of fibre per day. A high-fibre product contains at least 4.8 to 6 grams of fibre per 100 grams

✓ Sodium (Salt)

Salt is natively included in several foods, such as meat and vegetables, but it is frequently added to enhance flavour and shelf life. It is advised that you consume no more than 2000mg sodium per day, which is equivalent to 5g (1 teaspoon) of salt in total. A 'low salt' product should have 120mg sodium per 100g of product or 300 mg salt per 100g of product (1g salt equals to 400mg sodium).

Salt (sodium) intake should be limited, according to the South African food-based dietary guidelines, since a high intake has been associated to a variety of diseases such as hypertension and cardiovascular diseases.

The image shows a yellow and red nutrition label with the following text:

NUTRITION INFORMATION
Servings per package: 8
Serving size: 33g

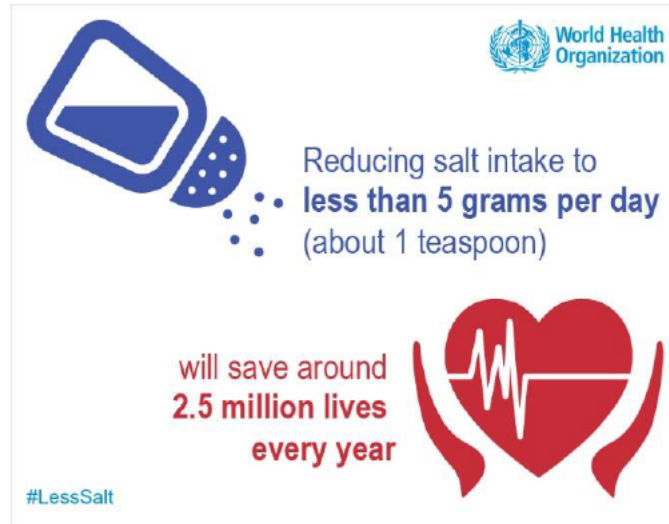
	Per serving	Per 100g
Energy	550kJ	1680kJ
Protein	2.4g	7.2g
Fat		
Total	3.6g	11.0g
Saturated	1.3g	4.1g
Carbohydrate		
Total	21.5g	55.1g
Sugars	10.1g	30.7g
Dietary Fibre	1.7g	5.1g
Sodium	20mg	70mg

Callout boxes with arrows pointing to the label:

- Points to 'Servings per package: 8': This tells you how many serves there are in the whole packet.
- Points to 'Serving size: 33g': This tells you the size of one serving of this food.
- Points to the 'Per 100g' column: This tells you the nutrients in 100g of this food. This is the best way to compare similar products.
- Points to the 'Per serving' column: This tells you the nutrients in a single serve of this food. In this case, it's per 33g.

✓ REDUCE YOUR SALT

The consumption of dietary salt (sodium chloride), which affects blood pressure, hypertension, and overall cardiovascular risk, is a significant factor. The World Health Organization (WHO) advises a daily salt intake of less than 5 grams (approximately 2 gram sodium) per person.



Reducing salt does not mean compromising on flavour. When cooking, you could experiment with herbs, spices, and seasoning mixtures. Here is a list of several ways to flavour your food without using excessive salt:

Poultry



Basil, dill, green pepper, lemon juice, oregano, paprika, rosemary, thyme

Beef



Basil, bay leaf, dill, dry mustard, green pepper, nutmeg, black pepper, rosemary, thyme

Fish



Dill, green pepper, lemon juice, oregano, paprika, rosemary, thyme

What flavours do you like?

If you like	Try one or more of these
Hot	cayenne pepper, chili (fresh, oil, powder or low sodium sauce), ginger, hot dry mustard, red pepper flakes, wasabi
Sour	lemon, lime, vinegar (balsamic, cider, rice, white, wine)
Peppery	pepper (black, brown, pink, white), or peppercorns
Sweet	cranberry sauce, fresh fruit, fruit juice, honey, molasses
Citrus	lemon, lemongrass, lime
Tomato	tomato (fresh or low sodium canned)
Other	anise, coriander, cumin, curry powder, dill, dry mustard, garlic, onion, paprika

General Tips:

Try different types of pepper, including black, white, green, and red to season food.

Hot spices and peppers, such as chilli, cayenne, jalapenos, paprika, dry mustard are useful.

Plain yoghurt mixed with seasonings can be used to marinate and tenderize meat.

Tomato paste is intensely flavoured, therefore a small amount can add a lot of flavour.

All members of the allium family, which includes onions and garlic, are excellent flavour enhancers. For a fresh flavour, chives and spring onions can be added at the end of cooking, while onions and garlic can be cooked gently at the start of a meal. Caramelised onions can also be used to enhance the flavour and appearance (colour) of the dish.

You can eliminate adding salt to vegetables, rice and potatoes without any noticeable difference in flavour. If you still want a touch of savoury flavour, cook with salt-reduced stock. A 50:50 blend of salt-reduced chicken stock and water is good in risotto, pilaf-style rice dishes, potatoes for mashing (don't add salt when you mash) and vegetable-based soups.

Citrus zest and juice (such as lemon, lime and orange) create bursts of flavour. Add zest to savoury dishes: in salads, on vegetable side dishes and in dressings. A dash of lemon or lime juice added at the end of pan-frying fish or chicken adds zingy flavour and makes for delicious pan juices.

ADD A SPRINKLE BAR TO YOUR CANTEEN AS A SALT SUBSTITUTE!

Flax seeds, chia seeds, peanuts, moringa, oats can be made available at your sprinkle bar.



Flax Seeds



Moringa



Chia Seeds

✓ SALT METER

There are several techniques available for determining sodium (salt) content in food. The precision that is required, the cost of the equipment, and the expertise level of the individual conducting the test play a significant role in the method's selection. The conductivity method, refractometry, Ion-Selective Electrode (ISE), and titration method are the most popular techniques for determining salt levels, however using a simple hand-held portable salt meter, one can test the amount of salt in cooked food per 100g. Knowing the actual salt content in cooked food, can assist to make small changes to the actual amount of salt added, without noticing any difference in the actual change in taste.



✓ CHOICE ARCHITECTURE

Choice architecture or nudge methods, often known as "hidden forms of persuasion" and "smart default choices," are used to encourage healthy behaviours that are hindered by unhealthful food and eating environments. In order to avoid or help lower the prevalence of obesity and diet-related NCDs, an objective of this strategy is to establish environments where individuals may obtain nutritious foods and drinks that reflect the economic, policy, and sociocultural conditions.

- ✓ **Voluntary changes made to the properties of the canteen environment and/or food, beverage and meal products served and sold in the canteen environment to influence customers' purchasing and consumption behaviours.**

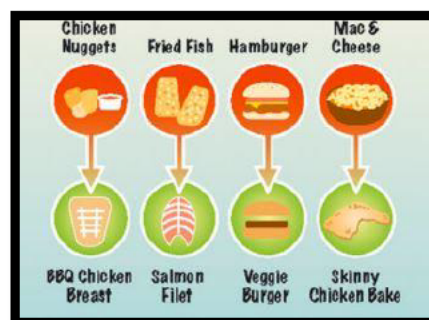
✓ Place

Place represents changes made to the internal setting (lighting or visual cues) of the worksite canteen to influence employees' expectations about the ambience or atmospherics to highlight healthy food and beverages that support healthy eating and drinking. It is also important for worksite canteens to create an ambience or atmosphere that reduces excessive stimuli that may influence employees to make impulsive decisions to purchase and consume energy-dense and nutrient-poor choices. Worksite canteens have many opportunities to influence ambience and atmospherics by using music, lighting, colour, decor and spatial layout to make healthy choices more appealing to employees.



✓ Profile

Change the nutritional profile, quality, smell, taste, texture and flavour of food and beverage products that meet recommended nutrient targets to support healthy eating and drinking.



✓ Portion

Reduce and/or standardize the portion size of food and beverages that meet recommended nutrient targets to influence customers' expectations about single servings and appropriate portions to support healthy eating and drinking.

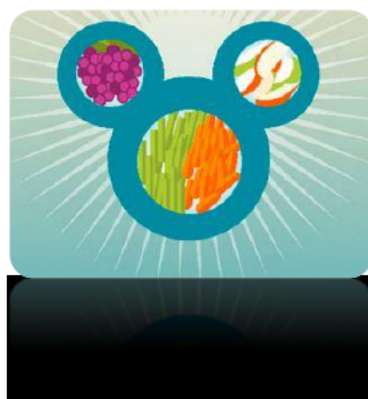
✓ Pricing

Pricing involves strategies such as proportionate pricing for smaller portions and limiting price promotions on large portions to increase sales and revenue for products that meet recommended nutrient targets to support healthy eating and drinking.



✓ Promotion

Use responsible food and beverage marketing practices (colourful packaging for smaller portions; changing the name, appearance of food or beverages, appeal and attractiveness of products) that meet recommended nutrient targets to support healthy eating and drinking. Menu design principles (graphics and placement) can be used to emphasize fresh, seasonal and minimally processed food and beverages for all employees.



- ✓ **Voluntary changes made to the placement of food, beverage and meal products served and sold in the canteen environment to influence customers' purchasing and consumption behaviours.**

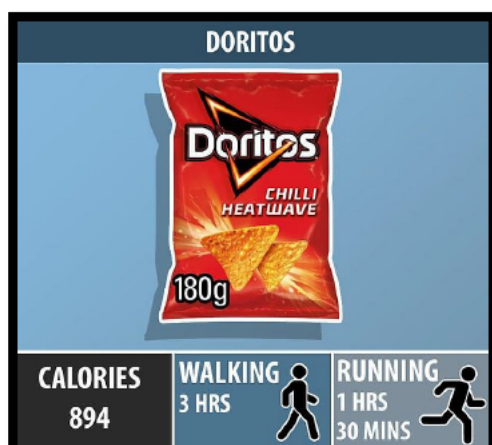
✓ **Healthy Default Picks**

Use environmental cues that are convenient, accepted and expected to socially normalize healthy default choices for side dishes and beverages for employees. The canteen can implement and enforce a policy to offer healthy default side dishes (example, fruits and vegetables) with bundled meals; healthy beverages (example, low-fat or non-fat milk, 100% juice and water); and whole grains with all meals sold to employees.



✓ **Priming or Prompting**

Priming or prompting involves using information such as menu labelling, symbols, icons, motivational messages and/or contextual information to help customers to select healthy products at point-of-choice (ordering at counters or on menus) and point-of-purchase (pre-payment at the cash register).



✓ Proximity

Proximity involves canteens placing healthy choices at eye level and physically closer to customers to make them more visible and easy to select. An example is to place fruits, salads and whole grains physically closer to employees' point-of-choice on restaurant buffet lines



Intervention Structure

Below is a list of interventions detailing the tools to be used and responsibilities for executing the six weeks intervention. Some interventions will run parallel to each other, and the dose of each intervention will vary e.g., parts of intervention theme one may run throughout the 6 weeks, whilst another intervention will be actioned for two weeks. The intervention will be audited weekly by RAs for compliance and to address any challenges to support canteen staff. Before the intervention starts, the top main selling meal will be sent to DUT food tech laboratory for nutritional analyses. Feedback on the analysis will be shared with the canteen operator.

	Intervention theme	Tools	Responsibilities
1	Water	<ul style="list-style-type: none">• Education materials on benefits, functions of water, ways to increase water-posters and table tents (English, iXhosa and isiZulu)• Infused water stand• Provision of water coolers at some sites without coolers• Suggestion box (for recommendations and commendations)	<ul style="list-style-type: none">• To be placed at the canteen (DUT RAs)• DUT to provide consumables for infused water• Canteen staff oversight of infused water and water coolers• DUT to provide (Canteen staff and DUT RAs to review weekly)
2	Lowering salt	<ul style="list-style-type: none">• Education materials on the benefits of lowering salt in the	<ul style="list-style-type: none">• To be placed at the canteen (DUT RAs)

		<p>diet, list of high and low sodium foods- posters and table tents (English, iXhosa and isiZulu)</p> <ul style="list-style-type: none"> • Testing of salt in prepared dishes using provided saltmeters and making small changes thereafter • Low sodium cooking demonstration and taste testing 	<ul style="list-style-type: none"> • DUT RAs to train canteen staff on how to test for the amount salt in prepared food. • Small change in salt amount and adoption of tips to reduce salt in meals (Canteen staff) • DUT RAs to conduct a cooking demonstration and taste testing for canteen users-employees visiting the canteen on low sodium cooking • Sensory feedback (DUT RAs to run these to test for acceptability of prepared food with a small reduction in salt)
3	Lowering fat-promoting healthy fats	<ul style="list-style-type: none"> • Education materials on the benefits of lowering fat in the diet and tips to lower fat through posters and table tents • Priming and prompting of a low-fat meal option • Seed sprinkle bar set up at each site 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • Priming and prompting of a low-fat meal (DUT to provide training and consumables for this) • Sensory feedback (DUT to run these to test for sensory acceptability)
4	Increasing fruit and vegetables	<ul style="list-style-type: none"> • Education materials on the benefits of increasing fruit and vegetables in the diet- posters and table tents • Show case highly flavoured veg dishes (variants each day of the week) 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • Priming and prompting of increased vegetable meals (DUT to provide training and consumables for this) • Sensory feedback (DUT to run these to test for sensory acceptability)
5	Increasing unrefined carbohydrates	<ul style="list-style-type: none"> • Education materials on the benefits of unrefined carbohydrates in the diet, including low GI foods- posters and table tents • Education materials on the amount of sugar in food and non-nutritive sweeteners • Show case one unrefined starch dish, pulses legume and 	<ul style="list-style-type: none"> • To be placed at the canteen (DUT RAs) • Priming and prompting of increased unrefined starch and legumes etc (DUT to provide training and consumables for this)

		indigenous foods (variants each day of the week)	<ul style="list-style-type: none"> Sensory feedback (DUT to run these to test for sensory acceptability)
6	Choice architecture	<ul style="list-style-type: none"> Education materials on calorific labelling Heart healthy labelling Traffic light labelling Healthy meal option 	<ul style="list-style-type: none"> Calorific, Heart healthy/traffic light/ healthy meal labelling of cooked and packaged foods- To be placed at the canteen (DUT RAs)

Appendix Q: Language Editing

To Whom It May Concern

Re: Editing of Masters Thesis entitled:

Design of a worksite intervention to lower cardiometabolic risk in SA

Researcher: Ms Shivneta Singh

This is to certify that I have recently edited this paper in terms of language usage and grammatical correctness.

I am an experienced editor and proof reader and have edited several academic dissertations/theses and various academic papers.

My academic qualifications are as follows:

Bachelor of Arts (English and Afrikaans) (UN Durban)

University Education Diploma (UED) (UN Durban)

Diploma in Translation (Afrikaans/English) (Unisa)

Prior to my retirement I was for several years initially a senior editor and subsequently a senior publisher with Via Afrika Publishers in Cape Town, which is the educational publishing arm of the Naspers/Media 24 company.

I was subsequently employed as a publisher on a one-year contract basis at Oxford University Publishers in Cape Town.

Michael Vermeer

Editor Proofreader Translator

20 November 2022