DURBAN UNIVERSITY OF TECHNOLOGY

KNOWLEDGE, ATTITUDE AND PRACTICES OF CAREGIVERS REGARDING VITAMIN A SUPPLEMENTATION IN CHILDREN BELOW FIVE YEARS OLD IN UGU DISTRICT

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DECLARATION

This certify that work is entirely my own and no any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Durban University of Technology or to any other institution for assessment or for any other purpose.

10 May 2024

Signature of student Date

Approved for final submission

10 May 2024

Dr D. G. Sokhela Date

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DEDICATION

I dedicate this study to God, Almighty, I am grateful for your rich grace that brought me this far, I would not be where I am if it was not for you. Not forgetting my foregone O-Mazeka, Thwaleni, Snqanda for watching over me.

My late grandmother Mashezi for offering your guidance and teaching me that the results of education are because of hard work and perseverance.

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ABSTRACT

Background: Vitamin A is an essential micronutrient for the health and well-being of infants and children, and is mainly responsible for good vision growth and development. Vitamin A deficiency (VAD) occurs due to a diet that lacks sufficient amount of vitamin A, and is common in developing countries where there is food insecurity. Vitamin A deficiency can result in night blindness, xeropthalmia, increased morbidity and mortality of children under five years old. The World Health Organisation (WHO) recommends supplementation with a high dose of vitamin A supplementation (VAS) oral drops to children from 6 to 59 months, in countries where deficiency is a concern. However, the programme is not reaching all targeted children, leaving them at risk of suffering from preventable illnesses.

Methods: A quantitative, descriptive cross-sectional survey design was used to determine the knowledge, attitude and practices of caregivers regarding VAS for children below five years old, in selected primary health care (PHC) facilities in Ugu District. Primary health care facilities were stratified according to different municipalities, and then those with the highest headcount of children under five years old were purposively sampled. Respondents from those PHCs were sampled using systematic random sampling. Data were collected through the use of a questionnaire and checklist and analysed using SPSS version 26.

Results: Respondents' level of knowledge was limited and they lacked vital information regarding VAS. Respondents indicated a positive attitude towards VAS as they perceived it to be an important and effective strategy for their children. Overcrowding and long queues of health facilities were noted as a challenge that could contribute towards low coverage of VAS.

Conclusion: Based on the results of this study, there is a need for effective and comprehensive health education on VAS. Use of mass media to accentuate critical aspects of VAS as it reaches large audience at a faster rate, and is commonly used by young mothers. One of the recommendations is for task shifting from professional nurses to integrated management of childhood illnesses by using Integrated Management of Childhood Illnesses trained enrolled nurses to relieve the heavy load

from professional nurses and reduce the long queues so that mothers do not forego this service.

Key words: Attitudes, knowledge and practices, caregivers, children below five years old, vitamin A supplementation.

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ACRONYMS

ACRONYM	FULL WORD/SENTENCE
AIDS	Acquired Immune Deficiency Syndrome
COVID-19	Coronavirus disease
DHIS	District Health Information System
DOH	Department Of Health
EPI	Expanded Programme Immunisation
HIV	Human Immune Deficiency Virus
IMCI	Integrated Management of Childhood Illnesses
IVACG	International Vitamin A Consultative Group
KZN	KwaZulu-Natal
MDG	Millennium Developmental Goals
NDOH	National Development of Health
PHC	Primary Health Care
RtHC	Road to Health Chart
RtHB	Road to Health Booklet
SANHESS	South African National Health and Nutrition Examination Survey
SAVCG	South African Vitamin A Consultative Group
SDG	Sustainable Developmental Goals
UNAIDS	United Nations Acquired Immune Deficiency Syndrome
UNICEF	United Nations Children's Fund
VAD	Vitamin A Deficiency
VAS	Vitamin A Supplementation
WHO	World Health Organisation
SPSS	Statistical Package For Social Science

DEFINITION OF TERMS

- **Appointment system –**A visitor scheduling system to reduce waiting time and improve customer experience.
- **Caregiver:** Any person who is a biological and/or legal parent/guardian of a child.
- **Health education –** Any health information given to people with the aim of preventing ill health and promoting and restoring health.
- **Healthcare facility** –Any health establishment.
- **Healthcare provider/giver** – Any category of nurses employed in a PHC.
- **Primary health care:** The 1st level of healthcare rendered mainly by nurses in a PHC facility.
- **Vitamin A**: A micronutrient responsible for good eye health and found in animal products such as organ meat, fish, egg yolk and in fruits and vegetables such as green leafy vegetables, yellow fruit and veg.
- **Vitamin A deficiency:** A serious health condition primarily caused by insufficient intake of vitamin A.
- **Vitamin A supplementation:** Administration of oral capsule drops containing a high content of vitamin A to children below five years of age.

CHAPTER 1: STUDY OVERVIEW

1.1 Introduction and background

Vitamin A is an essential micronutrient, required for normal growth and development of infants and children. It supports the normal functioning of the immune system and good eye health. It is found in animal products such as organ meat, fish, egg yolk and in fruit and vegetable products such as carrots, pumpkin, paw-paw, cabbage and green beans. Children below six months old receive vitamin A from breast milk (Barekzal, Sahar and Shinwari 2022: 1). Vitamin A deficiency (VAD) occurs due to a diet that lacks sufficient amount of Vitamin A; deficiency may cause dry eyes, night blindness, stunted growth, reduced immunity and may increase the risk of childhood infections such as measles and diarrhoeal infections even death in severe cases. Vitamin A deficiency is regarded as the most prevalent global micronutrient deficiency health problem, mainly affecting children in developing countries where an estimated 190 million of children under five years of age are affected, mostly from Africa and South-East Asia (Barekzal, Sahar and Shinwari 2022: 1).

The World Health Organisation (WHO 2019: 3) in 2011 published current guidelines that strongly recommends a vitamin A supplementation (VAS) programme in countries where vitamin A is perceived as a health problem. This includes countries where children under five years old have a mortality rate that is above 70 deaths per 1000 live births. High doses of vitamin A supplementation (VAS) must be administered to children from 6 to 59 months old at six month intervals. A VAS programme is used in conjunction with other interventions such as food fortification, where vitamins and minerals are added to commonly commercialised staple foods such as maize meal, bread and flour, and by diet diversification. Caregivers are encouraged to increase food containing a high content of vitamin A in children's diet and promote exclusive breastfeeding of children less than six months of age for better nutrition.

Berde, Bester and Kruger (2021: 01) state that the aim of implementing VAS programmes is to ensure that 80% of targeted children under five years receive VAS with two doses per year at six month intervals from the age of six months. Furthermore,

Marjan *et al.* (2021: 2) assert that supplementing children with high doses of vitamin A makes a positive contribution towards sustainable developmental goal number three (SDG 3), which ensures healthy lives and promotes the well-being of all ages and aims to eliminate preventable deaths in children under five years of age to at least as low as 25 per 1000 live births by 2030.

South Africa implemented a VAS programme in 2001 after receiving the report of the South African Vitamin Consultative Group (SAVCG) which identified VAD as a health problem. Vitamin A Supplementation was integrated into the Expanded Programme Immunisation (EPI) and Integrated Management of Childhood Illnesses (IMCI) for ease of administration of the programme (Mc Laren and Steenkamp 2022:3). This approach is followed by most of the countries where (VAD) is perceived as a problem including Kenya. About 94% of Kenyan health care facilities offer VAS to children from 6 to 60 months of age as a free service (Wasilwa 2020: 3).

The United Nations Children's Fund (UNICEF) (2018: 12) report on VAS programmes reveals the positive impact of VAS with marked reduction of VAD over the past decade from 39% to 30% globally. However, progress has not been seen in South Asia and sub-Saharan Africa where about 48% of children below five years of age are still affected by VAD.

1.2 Problem statement

Many countries have implemented VAS programmes to address VAD. This strategy has proven to be safe, cost-effective and is an equitable way of reaching children below five years of age, even those that are vulnerable, in sub-Saharan Africa (Berde, Bester and Kruger 2021: 1). More than one third of children under five years are in need of VAS in order to prevent children dying from preventable causes (UNICEF 2018: 17). In South Africa, there is good vitamin A coverage for children 6 to 12 months old, however, there is a decline in vitamin A coverage for children as the child grows, the reason given was that children are not routinely brought to health care facilities for immunisation from the age after 18 months Mc Laren and Steenkamp (2022:3). This means that VAS is benefiting the younger group, with the older age group remaining at risk of suffering from VAD.

The KwaZulu-Natal Department of Health (KZN DoH) (KwaZulu-Natal Department of Health [KZN DoH] 2021: 96) 2019-2020 annual report indicated a low vitamin A coverage in the province. Similarly, Ugu District Health Information System (DHIS2) (DHIS2:2021) reported a decrease in vitamin A coverage to 66% for the financial year 2019-2020 and a further decline to 55% in the year 2020-2021. Data indicates that knowledge, attitude and practices of caregivers for children from 6 to 59 months of age needs to be explored, to determine if they are associated with low VAS coverage in children below five years old.

1.3 Purpose of the study

The purpose of the study was to explore the knowledge, attitude and practices of caregivers regarding VAS for children under five years old.

1.4 Objectives

The objectives of the study were to:

- Determine the knowledge of caregivers regarding vitamin A supplementation of children between 6 to 59 months old.
- Determine the attitudes of caregivers regarding vitamin A supplementation of children between 6 to 59 months old.
- Determine practices of caregivers of children from 6 to 59 months old regarding vitamin A supplementation.

1.5 Research questions

- What knowledge do caregivers have regarding vitamin A supplementation programmes for children between 6 to 59 months old?
- What are the caregivers' attitude towards vitamin A supplementation programmes for children from 6 to 59 months old?
- What are the practices of caregiver with regard to vitamin A supplementation programmes for children from 6 to 59 months old?

1.6 Significance of the study

Health care providers: The results of the study might help health care providers to acknowledge and be aware of the level of knowledge, attitudes and practices of

caregivers regarding vitamin A. Information gathered can assist when devising new and effective strategies to ensure that there is improvement in this regard.

Caregivers and children: Caregivers will be empowered with knowledge and they will know the importance of taking their children to the clinic for VAS at due times.

Adhering to the vitamin A programme will promote growth and development of children who are the country's future generation. The risk and severity of illnesses related to VAD will decrease and the community will thrive.

A quantitative, descriptive cross-sectional survey design was used to determine the knowledge, attitude and practices of caregivers regarding VAS for children below five years old, in selected primary health care (PHC) facilities in Ugu District. Primary health care facilities were stratified according to different municipalities, and then those with the highest headcount of children under five years old were purposively sampled. Respondents from those PHCs were sampled using systematic random sampling. Data were collected through the use of a questionnaire and checklist and analysed using SPSS version 26.

1.7 Chapter summary

This chapter presented the background of the study and outlined the VAS programme. The consequences of VAD were presented. The problem statement of the study, which prompted the researcher to undertake the study, was outlined. The aim, objectives, research questions as well as the significance of the study were presented.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter sought to provide in-depth knowledge and an overview of relevant literature. The aim of a literature review is to gather facts on what is known about the topic and identify gaps that need further research (Burns, Grey and Grove 2016: 41). Search engines used were EBSCO Host, Pub Med, Google Scholar and Science Direct. Articles that had full text, were written in English, and not older than five years, were included in the review.

2.2 The global perspective on vitamin A

Bangladesh is amongst countries that are heavily addresses VAD as a serious health problem, with incidence rate of rate of 20.5%, followed by Pakistan with 51.5% and India with 62%. Bangladesh regards VAD as a serious health problem that is primarily caused by a diet that lacks vitamin A food sources such as green leafy vegetables, yellow fruits and organ meats. Lack of Vitamin A can result in devastating health complications such as impaired growth, reduced immunity, eye problems such as night blindness and xeropthalmia, and increased risk of measles and diarrhoeal infections (Marjan *et al*. 2021: 2).

2.2.1 The origins of VAS

Vitamin A supplementation began in 1962 after a global survey commissioned by the WHO revealed widespread xeropthalmia in Asia, Latin America and Africa. The International Vitamin A Consultative Group (IVACG) was formed in 1975 to address the global problem, with South Asia being the priority. Research studies in Indonesia reported an association between VAD and mortality rates in preschool children, and children with xeropthalmia had mortality rates approximately four times higher than those without xeropthalmia. Moreover, 16% of all deaths in children from 6 to 59 months were attributed to VAD, which became a centre of attention, and was regarded as a global public burden (WHO 2019: 2).

In the early 1990s, research studies reported that VAS decreased child mortality at least 34% and as a result VAS received increased recognition and support since 1992. The IVACG published its policy statement on vitamin A, diarrhoea and measles, recommending VAS as an essential programme to curb the consequences of measles and diarrhoea. Furthermore, in 1997 the WHO, UNICEF and IVCGA published guidelines for use of VAS in prevention and treatment of VAD and xeropthalmia in children from 6 to 59 months old (WHO 2019: 2).

In 2011 the WHO made available the current guidelines for VAS, which strongly recommended that countries that are affected by VAD should consider supplementation with high dose of Vitamin A for children from 6 to 59 months. The aim was to reduce child morbidity and mortality associated with VAD (WHO 2019: 3). Implementation of VAS was to ensure that 80% of targeted children receive two doses of Vitamin A per year at six months' intervals (UNICEF 2018: 12). This is one of the strategies for ensuring that sustainable developmental SDG 3 is met by 2030 to reduce preventable deaths of children under five years old to at least as low as 25 per 1000 live births by 2030 (Marjan *et al.* 2021: 2). The implementation and progress of SDG Agenda 2030 will be reviewed in a summit to be held on 18th to 19th September 2023 at the United Nations headquarters in New York; 2023 marks the mid-point of Agenda 2030 (UNICEF 2018: 12).

Some countries are doing well with VAS of children below five years old, while other countries are still struggling due to various reasons. In Guatemala, the prevalence of VAD was reported to be less than 5% and this resulted in a policy shift in 2016, where children from 6 to 24 months of age were to receive high doses of VAS (Tanumihardjo *et al*. 2019: 7).

2.2.2 The African perspective on VAS

The latest data from Nigeria reports inequities in VAS distribution and coverage, revealing that it is substantially higher in urban areas at 53.5% and lower in rural areas at 34.7% (Aghaji, Duke and Aghaji 2019: 6). The inconsistency contributes to unequal health for the entire population. Similarly, in Ghana and Sierra Leone, inconsistency in VAS distribution was also a contributing factor to low Vitamin A coverage rates where

children from 6 to 12 months had good vitamin A coverage and children from 12 to 59 months had low coverage, despite extensive dissemination of information and social mobilisation. Information was given at a community literacy level so was easily understood by people (Aghaji, Duke and Aghaji 2019: 6).

Abdulmalek and Benkhaial (2018: 2) argue that lack of knowledge is the issue that hinders progress in the coverage towards elimination of child mortality and morbidity from Vitamin A related illnesses. Furthermore, unemployed mothers were facing many challenges, including financial and social stress. They do not keep up with mass media, and tend to hear about VAS from their peers. On the other hand, employed mothers are exposed to technological advancement and have increased access to media (Berde, Bester and Kruger 2019: 4). In Kenya employment was found to be the barrier towards Vitamin A coverage. It was reported that mothers missed appointments due to busy work schedules, but they could benefit from the community and school health vitamin A campaigns (Wasilwa 2020: 2).

2.2.3 The South African perspective on VAS

In South Africa, VAS was introduced in 2001 following reports by a consultative group, which reported a 33% prevalence of low serum retinol concentration in children aged 6-59 months. In 2013, the South African National Health and Nutrition Examination Survey (SANHESS) reported that South Africa still faced a challenge of VAD with a prevalence rate of 43% (Tanumihardjo *et al*. 2019: 7). There are two main Vitamin A delivery strategies, which are aimed towards elimination of VAD; the first strategy is diversification and food fortification of wheat, flour, maize meal and bread with micronutrients. The second Vitamin A delivery strategy is supplementation with high dose of Vitamin A capsule for children from 6 to 59 months of age, in primary health care (PHC) facilities. Vitamin Supplementation and food fortification are reported to be feasible as it has a potential of reaching remote areas compared to diversification

It may not be affordable and accessible by the rural communities to address micro nutrient deficiencies due to economical constraints (Siwela et al 2020: 2). Hence child mortality rate continues to rise, despite various supplementation programmes, children below five years old remain vulnerable to hidden hunger and Vitamin Deficiencies, micronutrient deficiencies have negative implication for children well-being and

reduces future potential to actively contribute to the economy of the country (Zuma, Kolanisi and Modi 2018: 4).

Supplementation with high doses of vitamin A was integrated into the EPI and IMCI programme in PHC facilities. Due to a low coverage rate the government expanded delivery which included PHC re-engineering which has three main streams, namely: PHC outreach, school health services and district based clinical specialist team. These three streams, aimed to bridge the gap between health facilities and households and scale up nutrition and Vitamin A services for children (KwaZulu-Natal Nutrition Directorate 2016: 14). A cross-sectional study in Eastern Cape reported variations between Vitamin A supplementation and immunisation uptake, Vitamin A supplementation was reported to be poor as compared with immunisation schedule. It is believed that EPI provides a great opportunity for Vitamin A supplementation, as the result of these variations the study recommended that, authorities should re- evaluate Vitamin A supplementation distribution across all provinces to address data discrepancies (Mc Laren and Steenkamp 2022:3). There were quiet a few challenges identified by Mdlalose (2017: 10), such as a lack of knowledge and awareness where mothers heard about the programme but were not informed about the frequency and benefits of Vitamin A. Additionally, insufficiently trained staff and shortage of the capsule in other facilities were a concern. Mc Laren and Steenkamp (2022:3) reported the similar global trends, of decreased Vitamin A supplementation as the child grows older. The indirect effects of Coronavirus disease (COVID-19) were found to be contributing factor in reduced coverage of child health in South Africa, the facility attendance of children below 5 years old dropped with 42% in April 2020 during COVID-19 lockdown level 5 eThekwini district was the leading district with reduced numbers of child health, followed by King Cetshwayo and Zululand, the community based services and household services also dropped during this period (Jansen and McKerrow 2021:3). These results suggest that children missed their routine immunization and Vitamin A supplementation doses. Due to this background, the study explored the knowledge, attitudes and practices regarding Vitamin A supplementation of infants and in the South African context.

2.3 Theoretical framework

The theoretical framework that guided this study was the theory of planned behaviour (TPB). This theory is still applicable and widely used by variety of disciplines and context to explain human behaviour (Archie et al 2022:2).This theory was developed by Icek Ajzen and Martin Fishbein in 1980. These theorists believed that human behaviour is predictable and highly dependent on the person's attitude, influence from significant others and a person's beliefs related to the action (Ajzen1991: 1). Factors such as the environment, personal and demographic factors may serve as enabling and or disabling factors towards individual's decision-making regarding the intended behaviour (Figure 2.1). Performance of the behaviour is a joint function of intentions and perceived behavioural control, therefore measures of intent and perceived behavioural control must be congruent with the person's intentions to engage in a particular behaviour at a specific time and place (Ajzen 1991: 1). A caregiver that is knowledgeable, has a strong belief about a positive outcome and socialises with people that have a positive attitude about the programme, will be likely to conform to the DoH's vitamin A schedule for children under five years old. Contrary to that, if the caregiver lacks knowledge and is not motivated they will not participate in the programme.

The TPB has six constructs that collectively represent the person's control over the behaviour namely: personal attitude, behavioural intentions, subjective norms, social norms, perceived power and perceived behavioural control. All six constructs will be applied in this study, to predict the caregiver's decision and action towards VAS programme for their children.

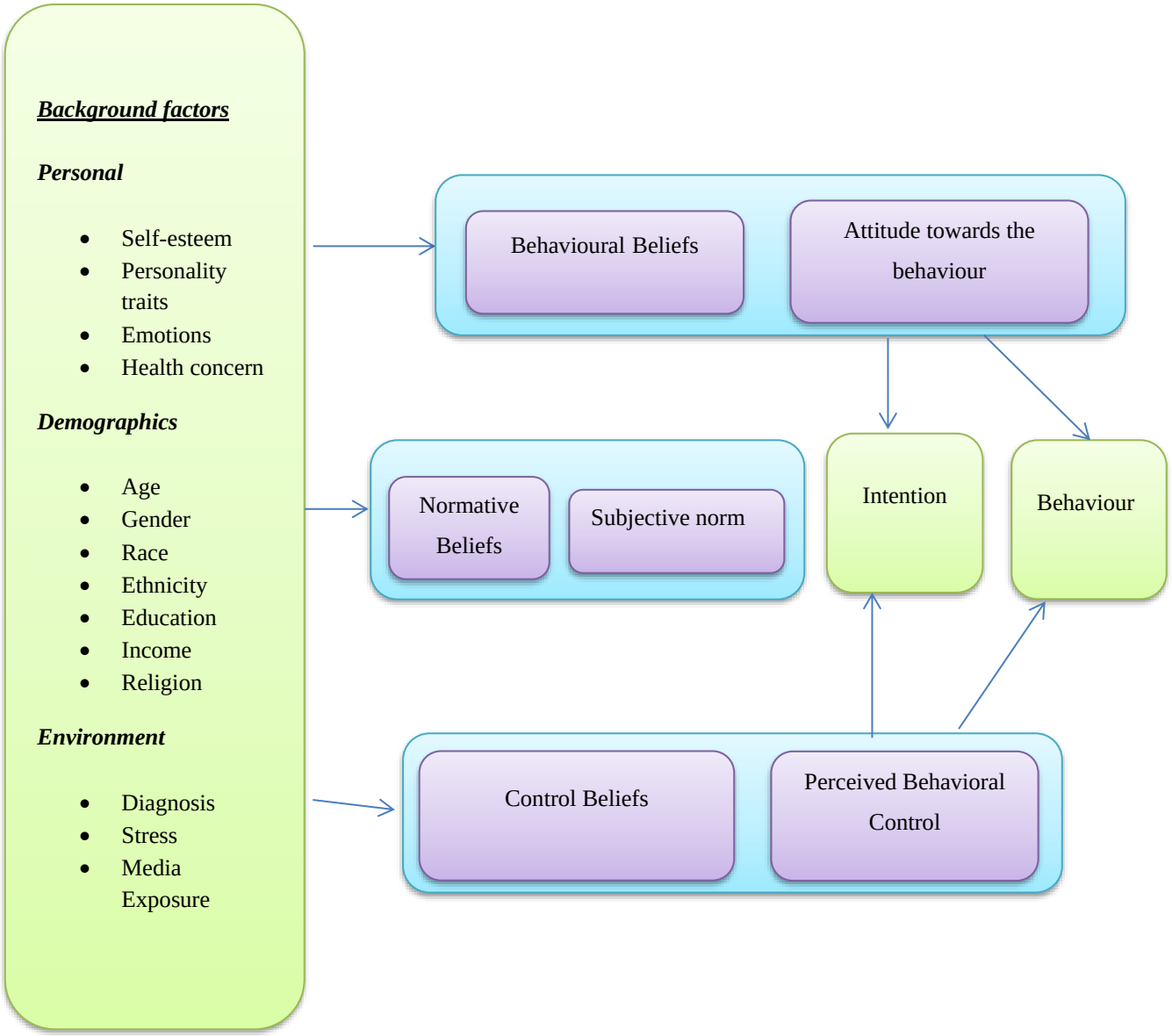

Figure 2.1: Theory of Planned Behaviour
Source: Ajzen 1991: 1

2.3.1 Personal attitude

This refers to a person's opinion about the behaviour, whether a person considers the behaviour to be favourable or non-favourable, outcome evaluation, and what a person wants to achieve (Ajzen 1991: 8). If a person believes that supplementing the child with vitamin A will help to prevent the consequences of VAD, that person will have a positive attitude towards the VAS programme. On the other hand, if they think that supplementing the child with a high dose of vitamin A while the child is benefiting from

fortified food will result in toxicity, then a person might have a negative attitude towards VAS. The researcher believes that attitude is best driven by a person's knowledge about the behaviour.

2.3.2 Subjective norms

According to Ajzen (1991: 211), a person's behaviour is shaped by what significant others say about the behaviour. These are normative beliefs of social groups and are concerned with the approval and disapproval regarding performing of a particular behaviour. These groups can be made up of friends, family members, community members and health care workers. If other people think that supplementing children with high dose of vitamin A is a good behaviour, this positively influences the other person's behaviour.

2.3.3 Social norms

Social norms are standards, rules and customs of a particular group of people that are significantly important to a person and regarded as social patterns and standard procedures to be followed by that particular group; they act as a guide towards certain behaviour (Ajzen 1991: 10). If VAS is perceived as a rule and custom of that group of people, most caregivers will adhere to NDoH standards of VAS. Nowadays social norms are greatly influenced by social media and by social influencers who have large numbers of followers; if they post something that opposes the true reflection of a health-related topic, more people will have misperceptions about the topic and will not engage in that behaviour due to the false belief of a certain individual in the social context.

2.3.4 Behavioural intentions

This refers to the motivational factors that influence the intention and people's opinion about the behaviour. What a person wants to achieve matters the most in behavioural intention. The willingness to perform the behaviour will be driven by the person's internal motivating factors and the person's efforts (Ajzen 1991: 8). If the personal attitude, social and subjective norms are positive, a caregiver is most likely to take the child for VAS every six months.

2.3.5 Perceived power

Perceived power refers to the factors that facilitate or hinder behaviour performance (Ajzen 1991: 11). These include money, feasibility, staff and stock availability in a health context. If a person has money to travel to the PHC facility and or the facility is located within easy reach, and staff and stock are available in the facility, that person will be more likely to perform the behaviour, which in the case of this study is taking the child for VAS as scheduled.

2.3.6 Perceived behavioural control

Perceived behavioural control refers to the persons perceptions of whether it is easy or difficult to perform a certain behaviour (Ajzen 1991: 11). If a caregiver is willing to take a child for VAS and there is no barrier which hinders her decision to conform, the caregiver will take the child for VAS. A smooth path is associated with a high level of conformity.

2.3.7 The use TPB in this study

The TPB was used to assist the researcher to identify and understand events, behaviours, associated factors and actions of caregivers to determine the caregivers' knowledge, attitudes and practices regarding supplementation of children with high doses of vitamin A. The main constructs of TPB were incorporated into the development of a data collection tool. The constructs of the theoretical framework were also used to frame the presentation and discussion of results.

2.4 Chapter summary

This chapter presented the current literature about VAS for children under five years old in various countries around the globe. Vitamin A supplementation is perceived as a cost-effective strategy for elimination of VAD, morbidity and mortality rate of children under five years of age. Research studies report that lack of knowledge contributes largely to low coverage. The majority of countries are still struggling to meet the WHO targets for VAS. The TPB was discussed as a guide used to predict human behaviour.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research methodology

Research methodology refers to the methods and techniques that a researcher systematically intends to use, to address the research problem. These methods must have an explanation and logic as to why they are used in the particular context of the research problem (Polit and Beck 2017: 56). This chapter outlines the research methods, including research design, which is known as the architectural backbone of the study, the study setting where the study took place, sampling, data gathering tools, data analysis and ethical considerations involved in this study.

3.2 Research design

A quantitative, descriptive cross-sectional survey design was used in this study. Quantitative research design focuses on numerical data to determine the cause and effects of variables; it aims to quantify and construct a statistical model in an attempt to explain what is observed (Polit and Beck 2017: 11). A quantitative research design collects data in a formalised, systematically suitable manner. This approach enabled the researcher to use a questionnaire to explore the knowledge, attitude and practices of women regarding VAS in children below five years old, in selected PHC facilities in Ugu district. The design made it easy to reach the targeted sample size and it saved time as respondents completed the questionnaire and it was collected on the same day.

3.2.1 Descriptive research

Descriptive research assists the researcher to identify, describe and estimate the association between variables statistically in a way that gives a clear meaning, through the use of frequency tables, ratios, percentages and standard deviations (Burns, Grey and Grove 2016: 200). This study used descriptive research to determine the knowledge, attitude and practices of caregivers regarding vitamin A supplementation in children below five years old, in selected primary PHC facilities in Ugu district.

3.2.2 Cross-sectional design

A cross-sectional design is a research strategy that examines the behaviours, patterns and trends of group subjects concurrently over a specified period of time so that inferences can be made (Polit and Beck 2017: 162).

3.2.3 Survey design

A survey design uses a questionnaire to gather data from a specific sample of the population (Polit and Beck 2017: 234). The purpose of surveys is to examine characteristics, opinions and feelings of the sampled respondents. Once data from surveys was collected in the current study, it was analysed numerically to clearly indicate the prevalence, occurrence and relationship between the variables that were being studied (Polit and Beck 2017: 234). In this study, a self-administered questionnaire was used to explore the knowledge, attitude and practices of caregivers regarding VAS in children below five years old.

3.3 Philosophical underpinning

The philosophical paradigm that underpinned the quantitative research design was the positivist paradigm. Positivists believe that phenomenon is examined as an absolute truth, in a systematic organised manner and that human behaviour can be scientifically measured. Research in quantitative studies is conducted through the use of traditional scientific methods under strict conditions to gather and assemble new information and explain the interrelatedness of trends, direction and the outcomes of human behaviour (Polit and Beck 2017: 11). A survey data collection tool collects objective data ensuring not to contaminate data and therefore results are valid. Positivists are concerned with fact finding. A research survey through a self-administered questionnaire was used in this study to gather information from caregivers of children under five years old about their knowledge, attitude and practices regarding VAS of their children.

3.4 Variables

- **Independent variables**: knowledge, attitudes and practices of VAS.
- **Dependant variables:** Caregivers of for children less than five years old.

3.5 Study setting

The study was conducted in PHC facilities of Ray Nkonyeni Municipality in Ugu district, which is one of the eleven districts of KwaZulu-Natal (KZN) in South Africa. The district has four municipalities and is located in the far south of KZN. It is bordered by the Eastern Cape to the south, eThekwini Metropolitan to the north, the Indian Ocean to the east and Harry Gwala District to the west. Ugu district has a total population of 759 1844, with the black ethnic group speaking isiZulu in the majority (Statistics South Africa 2011). The district is 84,6% rural and 16% urban, and has two community health care centres (CHCs), three district hospitals, 51 fixed clinics, 17 mobile clinics for easy access of people who are located far from the PHCs, one regional hospital, and three private hospitals. Economically Ugu is known for extensive commercial farms (sugar cane, bananas) and has the highest number of certified blue flag beaches in South Africa that meet the standards of the environmental management and serve as tourist attractions. The district faces challenges of high levels of poverty and unemployment and low levels of economic growth.

Table 3.1: Number of PHC facilities per municipality

Municipality	**Urban PHC facilities**	**Rural PHC facilities**	**Total PHC facilities**
Umzumbe		11	11
Umziwabantu	2	9	11
Umdoni	4	4	8
Ray Nkonyeni	10	11	21
Total	**16**	**35**	**51**

3.6 Study population

According to Polit and Beck (2017: 249), the population is defined as all individuals that the researcher is interested in, and who meet the designated criteria and contain all the variables of interest to the researcher. The target population refers to the aggregate of cases about which the researcher would like to generalise (Polit and Beck 2017: 249). In this study, the target population was made up of caregivers of children

below five years old attending clinics irrespective of their reasons for the visit such as immunisation, minor ailments and chronic treatment of their children, who were accessible and carrying the Road to Health Chart Booklet (RtHB)

3.7 Sampling

Polit and Beck (2017: 250) define sampling as the process of selecting a portion of the population to represent the population, to therefore allow inferences about the population. It involves selecting the elements such as people, behaviours and events relevant to the study.

3.7.1 Sampling strategy

Sampling strategy is a process of selecting a portion of the population, which represents the entire population (Polit and Beck 2017: 261). In quantitative studies probability sampling methods involving random sampling are generally used, where every respondent has an equal opportunity for inclusion in the sample. Sampling strategies to sample PHC facilities and caregivers are described below.

3.7.2 Recruitment of respondents

Recruiting people to participate in a study involves identification of eligible candidates and persuading them to participate in the study (Polit and Beck 2017: 261). A meeting regarding the study was held with the selected facility managers to gain permission and cooperation for face-to-face recruitment of respondents. The researcher obtained permission from managers and arranged with them on the best time to come and address the potential respondents. The researcher met potential respondents in the morning while they were in the waiting area before consultation on the day of data collection. They were told about the purpose of the study and how it would benefit them and their young children. They were informed that participation was voluntary and that they could withdraw from the study at any stage of the research without any compromise to them. An information letter was given out to read to ensure that caregivers of children below five years old understood the purpose of the study and therefore could make an informed decision regarding participation in the study. Caregivers who were willing to participate in the study were informed that they needed to sign a consent form. The researcher was available to clarify and answer questions that the potential respondents might have had. Respondents who participated in the

study were awarded a non-monetary incentive, which was a pen and small diary, as a token of appreciation for their participation in the study.

3.8 Sampling strategy for facilities and caregivers

3.8.1 Phase 1: Sampling strategy for facilities

There are 51 PHC facilities in Ugu district in four local municipalities, namely; Ray Nkonyeni with 21, Umziwabantu with 11, Umzumbe with 11 and Umdoni with 8 PHC facilities (Table 3.1). These PHC facilities were stratified according to their local municipalities and purposive sampling was used to select PHC facilities per municipality that had the highest under five-year-old headcount to represent the municipality. The District Health Information System (DHIS) was used to guide the researcher regarding which facilities had the highest number of the below five years headcount over the past three months. All PHC facilities that were sampled were given codes such as F1, F2, F3 up to F7 for confidentiality.

3.8.2 Phase two: Sampling strategy for caregivers

This study used simple random sampling to select respondents within the selected PHC facilities on the day of data collection, where every second caregiver that met the inclusion criteria, and agreed to participate in the study. They were sampled while waiting for consultation with the clinic staff. Those who were willing to participate were given consent forms to sign after reading and understanding to information letter.

Inclusion Criteria

- Caregivers of children from six months to 59 months attending the selected PHC facilities in Ugu District.
- Caregivers who were 18 years and older

Exclusion Criteria

- Caregivers of children above 59 months and below six months of age attending the selected PHC facilities in Ugu District.
- Caregivers of children from six months to 59 months whose children were severely ill on the day of data collection, as their primary concern was on the sick child and their ability to give accurate answers might have been impaired as their primary focus was on the sick child.
- All caregivers who were part of the pilot study were excluded from the main study.

3.9 Sample size

In quantitative studies, the sample size is generally large and predetermined. The larger the sample the more representative it is of the population being studied and the less are the sampling errors (Polit and Beck 2017: 270).

3.9.1 Sample size for PHC facilities

The sample size was determined by the number of children below the age of five years who attended the clinic in the previous three months. Fifty-one (51) PHC facilities from Ugu district were stratified according to the local municipality, these facilities were then divided according to their demarcation, Urban and rural facilities. The statistician assisted the researcher with the calculation of the sample size to ensure that it was fair and statistically significant (Table 3.2). A Total number of seven PHC facilities were sampled, three rural facilities and four urban facilities, Umzumbe local municipality only had rural facility because the municipality is surrounded by rural areas.

Table 3.2: Calculation of Sample size for respondents

Municipality	Population		Total	Sample				Total
	Urban	Rural		Urban		Rural		
				min	max	min	max	
Umzumbe		7421	7421			36	40	40
Umziwabantu	1511	7894	9405	28	35	46	63	99
Umdoni	6182	2770	8952	27	36	44	51	87
Ray Nkonyeni	10707	11549	2256	67	76	109	115	191
Total	**18400**	**29634**	**48034**		**179**		**269**	**448**

The average headcount of children below 59 months old over a three-month period; June to August 2021 period was 18 400 for rural facilities and 29 634 for urban facilities. The DHIS was used as a source document of the sample size. The sample size was calculated using the alpha value of 0.05 and a margin of error of 0.05, it was assumed that a total number of children below 59 months old was 48000 over a period of three months. The minimum sample size was calculated to be 381 using the Cochran's formula. An additional 67 (15%) respondents was added in case some questionnaire returned spoiled or incompletely filled which brought the sample size of respondents to 448 questionnaires (Table 3.2).

3.10 Data collection tool

A questionnaire with four sections was used to collect data from respondents. The tool was adapted from Qidwai *et al.* (2012: 2), available in open access. The contents of the questionnaire were developed after conducting literature review, consultation of supervisor's and experts, aimed addressing the research objectives, the questionnaire was validated by a qualified statistician. The advantage of using a questionnaire is that

it can be used by a larger audience and respondents can complete it without the researcher's assistance (Appendix A5).

- Section 1: Demographic data including other personal and professional questions.
- Section 2: Knowledge of the caregivers regarding vitamin A supplementation.
- Section 3: The attitude of caregivers regarding vitamin A supplementation.
- Section 4: Practices of caregivers with regards to vitamin A supplementation.

A checklist to check whether a child's VAS is up to date according to the current national schedule for routine treatment for children under five years old was used to gain more knowledge respondents about practices of VAS (Appendix A7).

The data collection instrument was translated from English to isiZulu by a qualified teacher who teaches at a high school and is fluent in both isiZulu and English. The supervisor translated it back to English to ensure that meaning was not lost during the initial translation (Appendix A6).

3.11 Pre-testing of the tool

The researcher conducted a pilot study to evaluate the effectiveness of the data collection tool. Facilities where the pilot study was conducted were randomly selected from the list of facilities which were not included in the main study. This was to ensure that the target population had similar characteristics to those involved in the main study. The researcher adhered to ethical principles at all times, with permission to conduct the pilot study being obtained from PHC facility managers. The researcher met the respondents in the waiting area, and gave them information about the study. The researcher handed the information letter (Appendices A1 and A3) to potential respondents and read it to enhance understanding. Respondents who were willing to be part of the pilot study signed the informed consent form (Appendices A2 and A4). Distribution of the questionnaire was done by the researcher and the questionnaire was completed in an unused consultation room. Data was analysed and it was evident that there were no confusing questions and amendments were not required. Respondents who participated in the pilot study and results obtained were not used in the main study.

3.12 Reliability and validity testing

3.12.1 Reliability

Reliability refers to the degree of consistency with which an instrument measures an attribute. Three key aspects of reliability of an instrument are stability, internal consistency, and equivalence. The stability of an instrument is the extent to which similar results are obtained on two separate occasions (Polit and Beck 2017: 582). The researcher purposefully sampled the selected PHC facilities in Ugu district and simple-random sampling was used to select respondents. A pilot study was conducted to pre-test the data collection tool on two different occasions, data was analysed and results were compared. Respondents who participated in the pilot study and the results obtained were not included in the main study. The pre-tested questionnaire was used during the main study for respondents who met the inclusion criteria until the required sample number was reached. Test-retest is the determination of consistency of the measurement technique, by correlating the scores obtained from repeated measures. Internal consistency was evaluated by performing a calculation of co-efficient alpha the – normal range of values of co-efficient alpha is between 0.00 and 1.00 (Burns, Grey and Grove 2016: 370).

3.12.2 Validity

Validity refers to the degree to which an instrument measures what it is supposed to measure (Polit and Beck 2017: 377). The questionnaire was given to all respondents that met the inclusion criteria and who consented to be part of the study. The researcher was available at all times during data collection to ensure that all respondents answered the same questionnaire and that no discussion occurred during completion of the questionnaire. The tool was translated from English to isiZulu for respondents who did not understand English. The researcher used content and construct validity.

3.13 Content validity

Content validity is the degree to which an instrument has an appropriate sample of items for the construct being measured and adequately covers the construct domain (Polit and Beck 2017: 377). Content validity is measured by checking the items on a

data collection tool against the research objectives and concepts in the theoretical framework to ascertain whether they measure all components of the study.

3.14 Construct validity

Construct validity is related to the degree to which an instrument measures the construct under investigation (Polit and Beck 2017: 379). The researcher ensured that the study measured the research objectives and question in accordance with theoretical framework.

3.15 Data collection process

Data collection began once the researcher received full approval from DUT Ethics (Appendix 17) committee and permission from the KZN DoH research committee was granted (Appendix 8). The researcher obtained permission from facility managers to collect data and arranged with clinic managers for a suitable day and time to collect data. Respondents were addressed in the facility waiting area and handed a letter of information. The researcher read the letter out loud for those who needed that, and provided clarity where necessary. Respondents who met the inclusion criteria, fully understood the information pertaining the study, and voluntarily agreed to participate in the study, signed the informed consent. After they were systematically sampled, they were led individually to an empty consulting room where confidentially for the task of completing the questionnaire was ensured. Windows were opened for good ventilation and there was sufficient light, to ensure good visibility. COVID-19 protocols were strictly adhered to. Both the respondent and the researcher wore face masks. Sanitiser was available to sanitise surfaces after every respondent and hands particularly after exchanging papers such as the consent forms and questionnaires. Confidentiality was maintained at all times: names of respondents were not be used, and questionnaires were allocated codes. The researcher collected consent forms and placed them in a sealed envelope before the respondents were given questionnaires. The questionnaires were collected checked for completeness and placed in a sealed envelope as soon as they had been completed.

3.16 Data analysis

Gray, Grove and Sutherland (2017: 79) define data analysis as a process of summarising, condensing, organising, evaluating and interpreting information that has

been collected. The main aim is to collect data that addresses the main research question. In the current study, collected data was coded and loaded into a computer programme, namely, the latest version of Statistical Package for Social Science (SPSS 22) and was analysed in a descriptive manner which allowed the researcher to organise data in a way that provided meaning and insight for the reader. Frequency tables and histograms were used to describe the data. The inferential statistical test chi-square was used on cross-tabulations to see whether a significant relationship existed between the two variables represented in the cross-tabulation. When conditions were not met, Fisher's exact test was used. Additionally, ANOVA and Pearson's correlation were used.

3.17 Data storage

Data will be kept safe for a period of five years according to the data management policy of the DUT. All hard copies are kept in a lockable cupboard; no unauthorised people will have access to data collected and will be shredded by the researcher. Electronic data will be kept secured through use of a password code that will not be shared with anyone who is not part of the study, and will be deleted by the researcher after five years.

3.18 Ethical principles

The following ethical principles were adhered to:

- *Permission:* Permission to conduct the study was obtained from DUT research ethics committee, KZN DoH, Department of Health district office, and PHC nursing managers before the data was collected.
- *Information:* The researcher had sessions with the respondents where the letter of information about the study, which included the purpose and possible risks involved and benefits, was explained in simple terms that were easily understood by the respondents. Consent forms were signed by respondents who were willing to participate in the study. The consent form was drawn up to safeguard both the researcher and the respondent therefore it was signed by the respondent and the researcher including the research assistant.
- *Voluntariness:* Respondents were informed that they had a right to choose whether or not to participate in the study, that no respondent would be forced,

threatened and or subjected to any form of coercion, and that they could withdraw at any time without any punitive measures being taken against them.

- *Beneficence:* Respondents were assured that there would be no risk and harm involved in this study.
- *Justice:* Fair treatment applied to all respondents who consented to participate, regardless of their age, race and or social background.
- *Privacy and confidentiality:* Precautions to protect the respondents were undertaken by the researcher: confidentiality codes were used to name the facilities which were part of the study, and no respondent's name was used on any data collection instrument. A quiet consultation room was used for data collection and information obtained was kept in sealed envelopes for safe safekeeping.
- *Avoidance of risk:* Respondents rights to participate in the study remained autonomous and were assured that if they experience any form of discomfort physical or psychological discomfort, they may withdraw from the study. Redress and counselling will be offered thereafter.
- *Respect and dignity:* Respondents were informed about data collection processes, and they were treated in discreet manner all times.

3.19 Chapter summary

This chapter outlined the research procedures followed including research design (quantitative), target population of the study, sampling method, data collection tool (questionnaire), and pilot study. Data analysis using SPSS 22 as well as the ethical considerations which guided the study were explained.

CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the research results findings obtained during data analysis. The results are in line with the research objectives which were: to determine the knowledge of caregivers regarding VAS of children between 6 and 59 months old, to determine the attitudes of caregivers regarding VAS of children between 6 and 59 months old, and to describe practices of caregivers of children from 6 to 59 months old regarding VAS. Data were collected from 448 respondents (100% response rate). The PHC facilities were stratified according to the local municipalities as well as urban and rural facilities. Purposive sampling was used to select PHC facilities with 7 PHC facilities being selected. A total number of 448 questionnaires were handed out to respondents and only 43 questionnaires were returned incomplete; however, they were captured to avoid skewed data

4.2 Test used for data analysis

Data was obtained using a questionnaire, coded and captured into an Excel spread sheet. The following tests were used to analyse data:

- Descriptive statistics including means and standard deviations, where applicable. Frequencies are represented in tables or graphs.
- Chi-square goodness-of-fit test: A univariate test, used on a categorical variable to test whether any of the response options are selected significantly more/less often than the others. Under the null hypothesis, it is assumed that all responses are equally selected.
- Chi-square test of independence: Used on cross-tabulations to see whether a significant relationship exists between the two variables represented in the cross-tabulation. When conditions are not met Fisher's exact test is used.
- Binomial test: Tests whether a significant proportion of respondents select one of a possible two responses.
- One sample t-test: Tests whether a mean score is significantly different from a scalar value.

4.3 Demographic data

This section focused on the demographic data of respondents who were caregivers who accompanied their children below five years, attending the clinic irrespective of their reasons for the visit such as immunisation, minor ailments, and chronic treatment of their children. Demographic data included age, marital status, residential area, race, academic level, and occupational status.

4.3.1 Age

Most respondents were between 21 and 30 years old (n = 173; 30.8%) and fewer were 60 years old and above with (n = 11; 2.5%) (Figure 4.1). This indicates that the most reproductive age group is between 21 to 30 years, which is considered as the main childbearing age in South Africa.

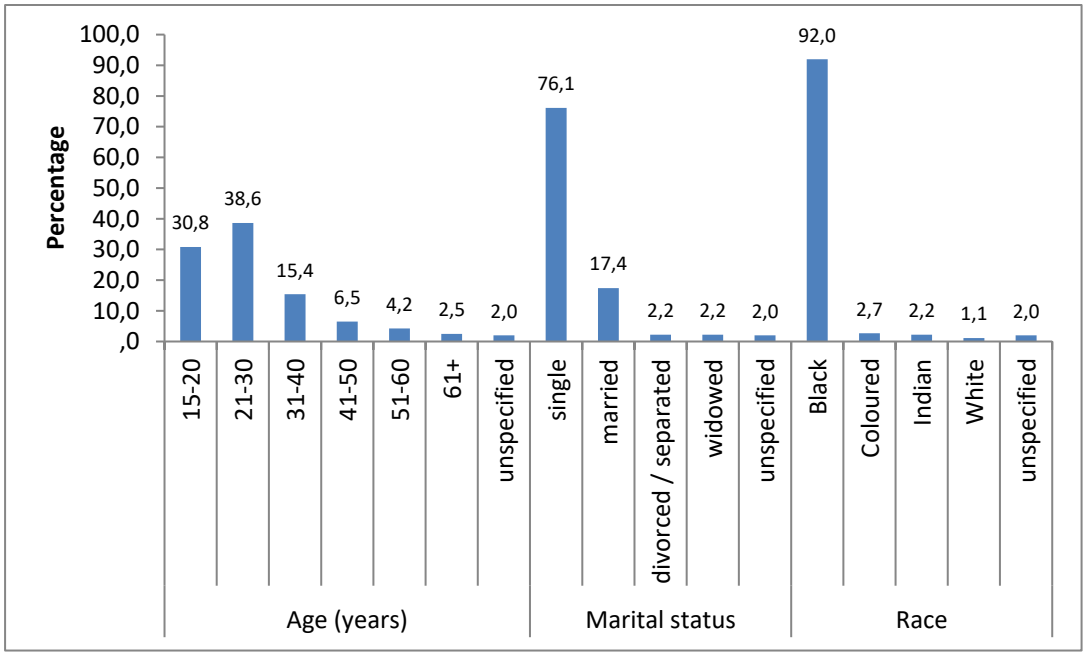

Figure 4.1: Age, marital status, and race

4.3.2 Marital status

The majority of respondents were single (n = 341; 76.1%) followed by married respondents (n = 78; 17.4) and the smallest group was widowed, divorced or separated (n = 10; 2.2%) (Figure 4.1). This indicates that women in South Africa are

becoming more independent, and marriage is no longer a priority. According Theory of planned behaviour, being single perceived as the motivating factor that enables women to take autonomous decisions about their children's health, without asking from their partner's approval

4.3.3 Residential area

The majority of respondents were from urban areas (n = 373; 83.3%) compared to rural areas (n = 63; 14.1%). By demarcation there were 11 rural and five urban facilities that were sampled, which indicates that patients that reside in rural areas prefer urban facilities for health care services.

4.3.4 Race

The majority of respondents (n = 412; 92.0%) were black and the smallest group was white (n = 5; 1.1%) (Figure 4.1). This indicates that the black population is more dependent on the public health services compared to other racial groups.

4.3.5 Academic level

The majority of respondents had secondary education (n = 301; 67.2%) and the lowest academic level were respondents with the primary level (n = 54; 12.1%) (Figure 4.2). Despite the existence of government funding for higher education with the National Student Financial Aid Scheme (NSFAS), young people are still unable to reach tertiary level.

4.3.6 Occupational status

The majority of respondents were employed (n = 290; 64.7%) and the smallest group were retired (n = 4; 0.9%) (Figure 4.2). This indicates that women in South Africa are becoming more financially independent, not depending on their husbands or partners for financial stability.

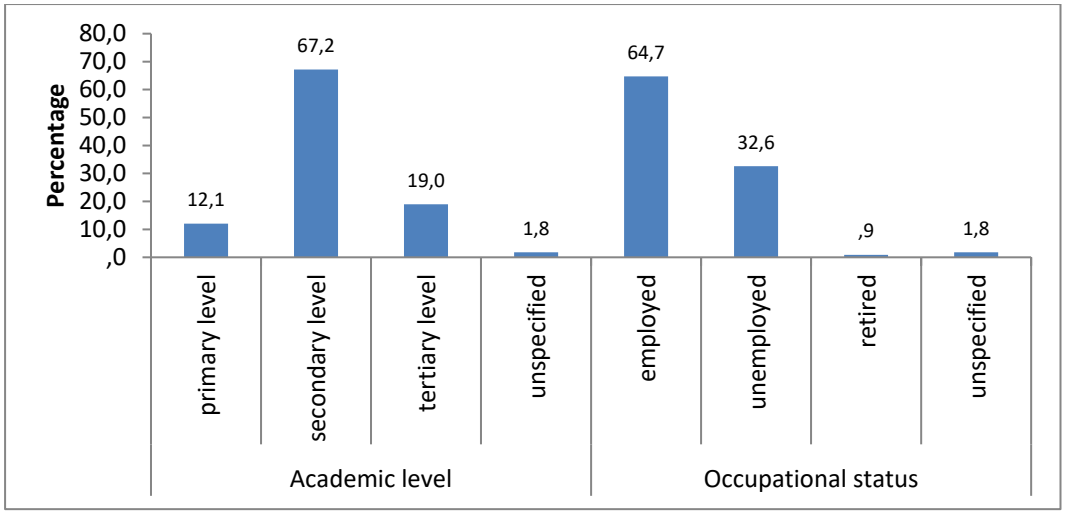

Figure 4.2: Academic level and occupational status

4.4 KNOWLEDGE OF RESPONDENTS REGARDING VITAMIN SUPPLEMENTATION

This section explores the knowledge of the respondents regarding VAS (Figure 4.2). The chi-square goodness-of-fit test was used to test whether any of the response options were selected significantly more or less often than the others and also a binomial test was also used to check whether a significant proportion of respondents selected one of a possible two responses.

4.4.1 Level of awareness of VAS

Respondents were asked to indicate their level of awareness of VAS for children below five years old, and were given four options to select from. The majority of respondents reported that they heard of it but know nothing about it (n = 237; 52.9%), heard of it and know a little about it (n = 119; 26.6%), have never heard of it (n = 74; 16.5%), have heard of it and know a lot about it (n = 11; 2.5%) (Figure 4.3).

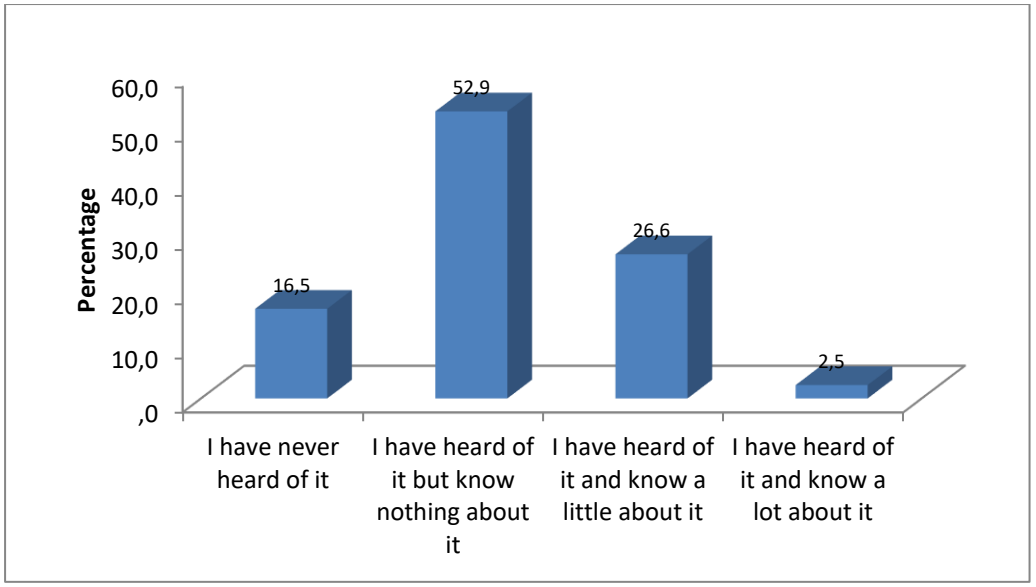

Figure 4.3: Level of awareness of VAS

The chi-square goodness-of-fit test reported that a significant 79.5% had heard of VAS but either knew nothing about it or knew only a little about it χ^2 (43) = 247.680, p < .001(Table 4.2).

Table 4.1: Chi-square goodness-of-fit test for level of awareness about VAS

Item	Responses as Frequency (%)				X^2	df	p-value
	I have never heard of it	**I have heard of it but know nothing about it**	**I have heard of it and know a little about it**	**I have heard of it and know a lot about it**			
Awareness of Vitamin A supplementation for children below five years of age	74 (16.5)	237 (52.9)	119 (26.6)	11 (2.5)	247.680	43	< .001*

* Indicates significance at the 95% level

4.4.2 Developing countries like South Africa regarding VAS to children aged 6 to 59 months

The following sections (4.5.2 to 4.5.14) are illustrated in Figure 4.4. The binomial test reported that the majority of respondents (n = 370; 82.6%) knew that developing countries like South Africa do give VAS to children aged 6 to 59 months. This was evidenced by an overwhelming number of respondents that selected the correct option, which was “yes”, South Africa does give VAS to children aged 6 to 59 months, and a minority of respondents (n = 78; 17.4%) selected the incorrect option which was “no”.

4.4.3 Symptoms that may indicate side effects of vitamin A on children

Respondents were asked which symptoms may indicate side effects of vitamin A in children. Almost an equal number of respondents (n = 244; 54.5%) chose the correct options which were nausea and vomiting diarrhoea, headache, and rash, while (n = 204; 45.5%) selected the incorrect option indicating coughing as the response.

4.4.4 After how long will the side effects appear after a dose of vitamin A

A significant number of respondents (n = 276; 61.6%) selected the incorrect options which were 36 hours, 48 hours, 72 hours and 80 hours while (n = 172; 38.4%) selected 24 hours which was the correct option.

4.4.5 After how long are these side effects are expected to disappear

The majority of respondents (n = 277; 61.8%) selected the incorrect options which were 24 hours, 36 hours, 72 hours and 80 hours while (n = 171; 38.2%) selected the correct option which was 48 hours. This means that respondents were not aware of the duration of the side effects.

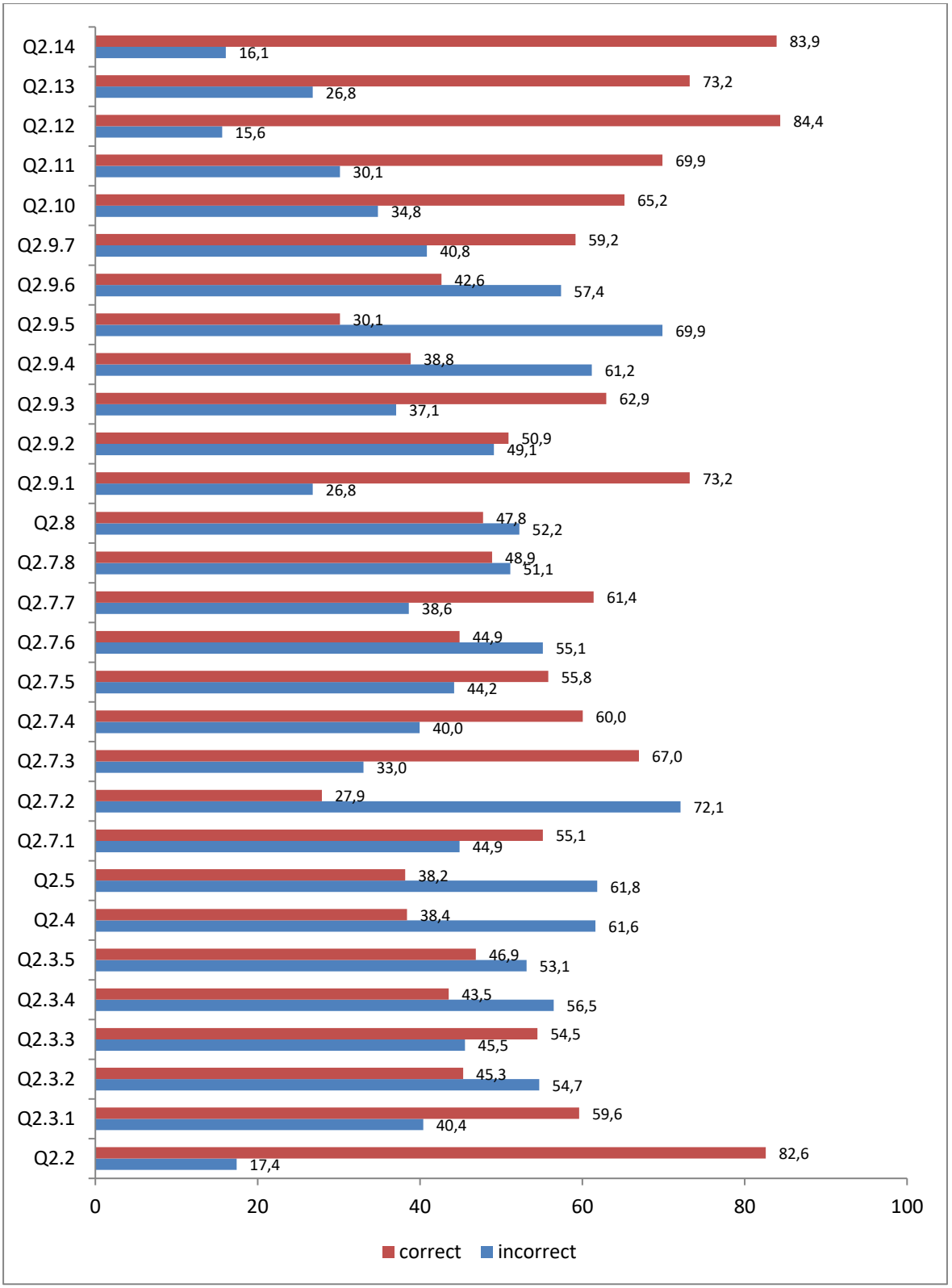

Figure 4.4: All the binominal results

4.4.6 Source of information about vitamin A

The majority of respondent (n = 306; 68.3%) indicated that they had heard about vitamin A supplementation from a healthcare worker followed by friends and relatives (n = 58; 12.9%), other (n = 69; 15.5%), and newspaper (n = 17; 3.8%) while only (n = 1; 0.2%) respondents had heard about vitamin A on radio/television. Despite the great influence of social media in the 21st century, not even one respondent heard about vitamin A through social media and Theory of planned behavior suggest social norms have a great influence on behavioral perception (Ajzen 1991: 10). If VAS is perceived as a rule and custom of that group of people, most caregivers will adhere to NDoH standards of VAS, the researcher believes that if distribution of information about vitamin A can be done using social media platform, it can have a great influence on publics perceptions about Vitamin A.

Table 4.2: Source of knowledge regarding VAS

Source of knowledge regarding Vitamin A supplementation	Frequency (%)		n	p-value
	Yes	No		
A friend / relative	58 (12.9)	390 (87.1)	448	<.001*
Health care worker	306 (68.3%)	142 (31.7%0	448	<.001*
TV / Radio	1 (0.2%)	447 (99.8%)	448	<.001*
Social media	-	448(100.0%)	448	<.001*
The newspaper	17 (3.8%)	431 (96.2%)	448	<.001*
Other	69 (15.4%)	379 (84.6%)	448	<.001*

* Indicates significance at the 95% level

4.4.7 Food containing a high content of vitamin A

Respondents were given the options to select which foods contain a high content of vitamin A. Spinach (n = 300; 67.0%), carrots (n 269; 60.0%), oranges (n = 247; 55.1%), and liver (n = 250; 55.8%) were correct options selected by respondents. The incorrect options were bananas (n = 323; 72.1%), strawberries (n = 275; 61.4%) and grapes (n = 247; 55.1%).

4.4.8 Dietary sources alone sufficient to maintain levels of vitamin A

Vitamin A deficiency is primarily caused by a diet that lacks the content of foods containing vitamin A. Diet alone, especially in developing countries, is not enough to curb VAD due to economic constraints and socio-cultural practices. Respondents were asked if diet alone is sufficient to maintain levels of vitamin A. The majority of respondents (n = 234; 52.2%) selected “yes” and the minority of respondents (n = 214; 47.8%) selected “no”.

4.4.9 Consequences of lack of vitamin A

Hair loss was the correct answer selected by the majority of respondents (n = 328; 73.2%), followed by good vision (n = 282; 62.9%), bone pain (n = 265; 59.2%). And the following responses night blindness (n = 313; 69.5%), increased risk of infection (n = 274; 61.2%), and delayed growth (n = 257; 57.4%) were incorrect options selected by respondents.

4.4.10 Dosing intervals for VAS

Respondents were asked to indicate the interval between doses of VAS. The majority of respondents (n = 292; 62.5%) were aware that every six months, children should be given VAS from 6 to 59 months old, and the minority selected incorrect responses (n = 156; 34.8%) which were every nine months and every 12 months.

4.4.11 Missed dose of Vitamin A / catch up dose

Respondents were asked, if the child misses a dose of vitamin A, can they bring them for a catch-up dose. The majority of respondents (n = 313; 69.9%) answered correctly by selecting the “yes” option and the minority answered incorrectly by selecting the “no” option (n = 135; 30.1%).

4.4.12 Side effects of Vitamin A overdose

The majority of respondents (n = 378; 84.4%) were aware that their children can suffer from side effects if they get a vitamin A overdose and the minority of respondents did not know the correct answer and selected option “no” or “unsure” (n = 70; 15.6).

4.4.13 Children that should be given VAS

Respondents were asked to indicate which children should be given VAS. The majority (n = 328; 73.2%) were aware that all children from age of 6 to 59 months should be given VAS and the minority (n = 120; 26.8%) selected the incorrect options which were children who are breastfed only, children who are bottle fed only, children who do not receive any milk, children who are HIV positive, and children who are HIV negative.

4.4.14 Administration of VAS

The majority of respondents (n = 376; 83.9%) were aware that vitamin A is administered orally or by mouth while the minority of respondents (n = 72; 16.1%) selected incorrect options which were by injection, in the bottle, and in the eye.

4.4.15 Binominal test results for knowledge

Binominal test was conducted to determine if a significant proportion knew or did not know the correct response to each question regarding knowledge of the respondents on VAS. As can be seen from Table 4.4, there was a significant difference in 23 of the 29 results. The following questions were answered correctly by a significant proportion: respondents were asked if other developing countries like South Africa give VAS to their children aged 6 to 59 months, and a significant (n = 370; 82.6%) responded “yes” which was the correct option. They were further asked if nausea and vomiting were symptoms that may indicate side effects of vitamin A on children and a significant proportion (n = 267; 59.6%) chose the correct response “yes”. The question of missed doses “If your child misses a dose of vitamin A, should you bring your child for a catch-up dose of vitamin A” was correctly answered with a “yes” by the majority (n = 313 69.9%). When asked if their children can suffer from side effects if they get vitamin A overdose, “yes” was the correct option (n = 378; 84.4%).

Table 4.3: Binominal results for significant difference between correct and incorrect answers

Knowledge	Frequency (%)		n	p-value
	Incorrect	Correct		
Q 2.2	78 (17.4)	370 (82.6)	448	< .001*
Q 2.3.1	181 (40.4)	267 (59.6)	448	< .001*
Q 2.3.2	245 (54.7)	203 (45.3)	448	.053
Q 2.3.3	204 (45.5)	244 (54.5)	448	.065
Q 2.3.4	253 (56.5)	195 (43.5)	448	.007*
Q 2.3.5	238 (53.1)	210 (46.9)	448	.202
Q 2.4	276 (61.6)	172 (38.4)	448	< .001*
Q 2.5	277 (61.8)	171 (38.2	448	< .001*
Q 2.7.1	201 (44.9)	247 (55.1)	448	< .033*
Q 2.7.2	323 (72.1)	125 (27.9)	448	< .001*
Q 2.7.3	148 (33.0)	300 (67.0)	448	< .001*
Q 2.7.4	179 (40.0)	269 (60.0)	448	< .001*
Q 2.7.5	198 (44.2)	250 (55.8)	448	< .001*
Q 2.7.6	247 (55.1)	201 (44.9)	448	< .016*
Q 2.7.7	173 (38.6)	275 (61.4)	448	< .033*
Q 2.7.8	229 (55.1)	219 (48.9)	448	< .001*
Q 2.8	234 (52.8)	214 (47.8)	448	.671
Q 2.9.1	120 (26.8)	328 (73.2)	448	.369
Q 2.9.2	220 (49.1)	228 (50.9)	448	< .001*
Q 2.9.3	166 (37.1)	282 (62.9)	448	.741
Q 2.9.4	274 (61.2)	174 (38.8)	448	< .001*
Q 2.9.5	313 (69.5)	135 (30.1)	448	< .001*
Q 2.9.6	257 (57.4)	191 (42.6)	448	< .002*
Q 2.9.7	183 (40.8)	265 (59.2)	448	< .001*
Q 2.10	156 (34.8)	292 (62.5)	448	< .001*
Q 2.11	135 (30.1)	313 (69.9)	448	< .001*
Q 2.12	70 (15.6)	378 (84.4)	448	< .001*
Q 2.13	120 (26.81)	328 (73.2)	448	< .001*
Q 2.14	72 (16.1)	376 (83.9)	448	< .001*

* Indicates significance at the 95% level

4.5 ATTITUDES OF RESPONDENTS REGARDING VITAMIN SUPPLEMENTATION

The researcher elicited the attitudes of respondents towards vitamin A supplementation for children below five years. Respondents were asked to indicate their level of agreement or disagreement with the given item using the Likert scale ratings from one to five. A one-sample t-test was applied to determine if there was significant agreement or disagreement on each item and the results are illustrated for this whole section in Table 4.5. The results of strongly agree and agree were combined and reported as agree, and disagree and strongly disagree were also combined and reported as disagree.

Table 4.4: Level of agreement and disagreement of the respondents' attitudes towards vitamin A supplementation

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree					
3.1 Vitamin A supplement is important	-	-	23 (5.1)	80 (17.9)	337 (75.2)	448	4.71 (0.556)	64.601	439	<.001*
3.2 All children under five years old should be given Vitamin A supplement	-	-	14 (3.1)	126 (28.1)	300 (67.0)	448	4.65 (0.547)	64.072	439	<.001*
3.4 Vitamin A supplementation programme is important and effective strategy	-	-	55 (12.3)	183 (40.8)	199 (44.4)	448	4.33 (0.688)	40.380	436	<.001*
3.5 I don't like to take my child for Vitamin A supplementation because of	-	62 (13.8)	70 (15.6)	169 (37.7)	137 (30.6)	448	3.87 (1.012)	17.988	437	<.001*

long queues in health facilities.										
3.6 I don't see a need for taking my child for Vitamin A supplementation, school health also administers.	110 (24.6)	253 (56.5)	48 (10.7)	28 (6.3)	-	448	1.99 (0.785)	-27.055	438	<.001*
3.7 I don't see the need for Vitamin A supplementation, vitamin A deficiency is not a serious problem	44 (9.8)	158 (35.3)	134 (29.9)	101 (22.5)	-	448	2.67 (0.942)	-7.363	436	<.001*
3.8 I take my child for Vitamin A supplementation because it's quick and easy to administer	64 (14.3)	287 (64.1)	49 (10.1)	34 (7.6)	3 (0.7)	448	2.14 (0.783)	-22.915	436	<.001*
3.9 I do not get worried, and it does not matter if my child misses a dose of Vitamin A	86 (19.2)	177 (39.5)	101 (22.5)	68 (15.2)	-	448	2.35 (0.971)	-13.926	431	<.001*

* Indicates significant at the 95% level

4.5.1 Importance of vitamin A

The majority of respondents (n = 417; 93.1%) agreed that VAS is important because it prevents eye problems, stunted growth and reduces risk of infections and the remainder remained neutral (n = 23; 5.1%) with the statement. This means that people are aware of the importance and the significant role of VAS for their children's wellbeing.

4.5.2 All children under five years old should be given VAS as per South African guidelines

The majority of respondents (n = 426; 95.1%) understand that children under five years old should be given vitamin A supplementation, as evidenced by a significant proportion who agreed with the statement, while the remainder (n = 14; 3.1%) were neutral.

4.5.3 Importance and effectiveness of vitamin A

The majority of respondents (n = 382; 85.2%) agreed that the VAS programme is an important and effective strategy in reducing childhood illnesses and strengthening children's immunity, and the remaining respondents (n = 55; 12.3%) were neutral.

4.5.4 Long queues in health facilities

The majority of the respondents (n = 306; 68.3%) did not like to take their children for vitamin A supplementation because of long queues in health facilities, while the minority disagreed (n = 62; 13.8%).

4.5.5 School health team on administration of vitamin A

The majority of respondents (n = 363; 81.1%) disagreed that they do not see a need for taking their children to the clinic for VAS because the school health team administers VAS for children. Regardless of the existence of the long queues in other health facilities, respondents still preferred the facility delivery strategy compared to school health delivery strategy.

4.5.6 Vitamin A deficiency is not a serious health problem

The majority of respondents (n = 202; 45.1%) did not see the need for VAS and did not consider deficiency thereof a serious health problem. This was a concern for the researcher, that the WHO sees this as a serious health problem and has proposed an effective strategy to assist people in need for supplementation, yet many respondents did not see the seriousness of medical complication associated with the deficiency.

4.5.7 VAS is quick and easy to administer

The majority of respondents (n = 351; 78.4%) disagreed with the statement that they take their children for VAS because it was quick and easy to administer. Only a few respondents (n = 37; 8.3%) agreed with the statement. Delays with delivery of care in most health facilities could hinder access to care.

4.5.8 Missing a dose of VAS

The majority of respondents (n = 263; 58.7%) disagreed that they get worried, and it does not matter if their child misses a dose of vitamin A supplementation. This indicated that most respondents were aware of the scheduled time for vitamin A supplementation, and they understand the importance of the programme.

4.5.9 Bivariate analysis of knowledge and demographic results

Bivariate analysis was conducted to determine if the total knowledge percentage and the attitudes differed across demographics between employed, unemployed and retired respondents. Bivariate results indicated a significant difference in the level of knowledge across employment status categories, $F(2, 437) = 3.620$, $p = .028$. Tukey's post hoc test showed that those who are retired have significantly more knowledge than those who are employed ($p = .021$) and no significant difference was reported between unemployed those who are employed.

4.6 PRACTICES OF RESPONDENTS REGARDING VITAMIN SUPPLEMENTATION

Respondents were asked questions with the aim of determining practices regarding vitamin A supplementation, for children below five years old. Chi-square goodness of fit was applied to analyse data for this section.

4.6.1 Vitamin A supplementation for children every six months

Respondents were asked if they take their children to the clinic every six months for vitamin A. In response to the questions respondents were to select "yes, unsure, or no". The majority of respondents (n = 213; 47.5%) selected "yes", agreeing that they took their children to the clinic for Vitamin A every six months. Almost the same number

of respondents selected “no” (n = 128; 28.6%), and (n = 96; 21.4%) selected unsure (Table 4.6).

Table 4.5: Vitamin A supplementation for children every six months

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	213	47.5	48.7	48.7
	no	128	28.6	29.3	78.0
	unsure	96	21.4	22.0	100.0
	Total	437	97.5	100.0	
Missing	System	11	2.5		
Total		448	100.0		

4.6.2 Vitamin A supplementation for children even when they are sick

Respondents were asked to respond by selecting “no never, yes sometimes, and yes always” to the statement. The results of yes sometimes and yes always were combined and reported as yes, and no never remained unchanged.

In answer to the question “Do you take your child for vitamin A supplementation even when she/he is sick”, the majority of respondents (n = 326; 72.8%) selected yes, sometimes, and (n = 50; 11.25%) respondents selected no, never. Chi-square goodness-of-fit test reported a significant 85.7% either yes sometimes or yes always χ^2 (2) = 341.161, p < .001 (Table 4.7).

4.6.3 Long clinic queues for VAS

The majority of respondents (n =364; 81.3%) reported that they always wait in long queues for their children to receive VAS, and the remaining respondents (n = 65; 14.5%) indicated that they waited “sometimes”. Chi-square goodness-of-fit test reported a significant 95.8% either yes sometimes or yes always χ^2 (1) = 208.349, p< .001 (Table 4.7). .

4.6.4 Leaving the clinic without getting VAS because the clinic is full

In answer to the question “Do you leave without your child getting vitamin A supplementation if the clinic is full”, the majority of respondents (n = 372; 83%) persevered for their children’s lives and they have never left the health facility even when the clinic was full without children getting VAS and selected “no never”, while the remaining respondents (n = 63; 14.1%) answered with “yes sometimes”. Chi-square goodness-of-fit test reported a significant 83.0% either yes sometimes or yes always χ^2 (1) = 219.497, p < .001 indicating that they have never left the health facility even when the clinic is full without children getting VAS. This indicates an obstacle in public health facilities if there are people in need for medical care but unable to access it due to overcrowding and long queues in health facilities.

4.6.5 Sending your child with someone for VAS if you are not available

The majority of respondents (n = 270; 60.3%), reported that they have never sent their children with someone else for vitamin A supplementation if they are not available, and selected “no never”. Only (n = 1; 0.2%) respondent reported “always” sending her child with someone else for VAS. Chi-square goodness-of-fit test reported a significant 60.3% no never χ^2 (1) = 252.342, p<.001. This raises a concern for the researcher: does caregiver wait for the time when they are available, or does their child miss out on the scheduled dose? (Figure 4.7).

4.7.6 Getting worried if you have missed a date for VAS

“Do you get worried if you have missed a date for vitamin A supplementation”.The majority of respondents (n = 223; 49.8%), reported that they were always worried if they missed a date for VAS for their children, (n = 65; 14.5%) of respondents indicated that they did not get worried if they had missed a date for VAS for their children and selected “no never”. Chi-square goodness-of-fit test reported a significant 82.3% either yes sometimes or yes always, get worried if they have missed a date for VAS for their children χ^2 (2) = 85.959, p < .001.

4.6.6 Getting scared that your child will get sick if they miss a dose of VAS

The majority of respondents (n = 208;46.4%), reported that they were scared sometimes that their children would get sick if they missed a dose of VAS. and the

minority were those who indicated “never” (n = 108; 24.1%). Chi-square goodness-of-fit test reported a significant 73.2% either yes sometimes or yes always get scared that their children would get sick if they missed a dose of VAS, χ^2 (2) = 41.028, p < .001 (Figure 4.7).

Table 4.6: Chi-square goodness-of-fit test results for practices regarding VAS

Item	Responses as Frequency (%)			X^2	df	p-value
	No, never	Yes, always	Yes, sometimes			
4.2 Do you take your child for vitamin A supplementation even when she/he is sick	50 (11.2)	58 (12.9)	326 (72.8)	341.161	2	< .001*
4.3 Do you wait in long queues for your child to receive vitamin A supplementation	-	364 (81.3)	65 (14.5)	208.349	1	< .001*
4.4 Do you leave without your child getting vitamin A supplementation if the clinic is full	372 (83.0)	-	63 (14.1)	219.497	1	< .001*
4.5. Do you send your child with someone for vitamin A supplementation	270 (60.3)	1 (0.2)	167 (37.3)	252.342	2	< .001*
4.6 Do you get worried if you have missed a date for vitamin A supplementation	65 (14.5)	223 (49.8)	148 (33.0)	85.959	2	< .001*
4.7 Do you get scared that your child will get sick if you missed a dose of vitamin A	104 (24.1)	120 (26.8)	208 (46.4)	41.028	2	<.001*

* Indicates significance at the 95% level

4.6.7 Relationship between practices and demographics

Pearson’s Chi-square test of independence was used to check whether a significant relationship exists between practices and demographics. Results were extracted from the cross-tabulations. A significant proportion indicated that there were sometimes

long queues in the following facilities: 1, 2, 3, 4, 11, 12 and 15; while there were always long queues at facility 8, χ^2 (15) = 58.632, p < .001.

A significant proportion of respondents who were between 21 to 30 years old indicated that sometimes they did leave the facility without their children getting vitamin A because the clinic was full, χ^2 (5) = 15.318, p < .009.

Those who were attending rural facilities significantly indicated that they were “always” worried if they had missed a date for VAS, χ^2 (2) = 6.888, p < .032.

Respondents with tertiary level education indicated that “sometimes” they waited in long queues for their children to receive VAS, χ^2 (2) = 7.439, p < .02.

4.7 Chapter summary

This chapter shows that majority of respondents were within childbearing age, respondents who were retired had more knowledge compared to respondents who are employed, long queues and overcrowding of the health facilities was reported, respondents were aware of the scheduled times for vitamin A, however they do not get worried if they have missed a date for VAS. Further discussion of the results occurs in Chapter 5.

CHAPTER 5: DISCUSSION OF RESULTS

5.1 Introduction

This chapter discusses the findings obtained from the analysed data in the previous chapter, in relation to the research objectives which were: to determine the knowledge of caregivers regarding VAS of children between 6 and 59 months old, to determine the attitudes of caregivers regarding VAS of children between 6 and 59 months old and to describe practices of caregivers of children from 6 to 59 months old regarding VAS. The aim of this chapter was to gain in-depth knowledge and understanding of the analysed data in relation to the literature.

5.2 Demographic data: age, marital status, employment, residential, race and academic level

The majority of respondents were between 21 to 30 years old, which is the most reproductive age group. Similarly, in India it was found that the majority of respondents were between 20 and 30 years old, and they had moderate knowledge about vitamin A supplementation Sindhu, Nirmala, and Subalakashmi (2020: 5) The current study reported that most respondents were single and employed; in South Africa women are becoming independent, and are no longer depending on their husbands or partners for financial stability and support, they are navigating their way to success (Kumalo 2022: 1). These women prioritise the health of their children, contrary to study in Libya which found that there was a positive relationship between marital status and practices of giving Vit A. Married caregivers were more compliant than divorced and widowed caregivers (Abdulmalek and Benkhaial 2018: 176). In the current study almost, the whole group of respondents were black (92%) and this is corroborated by Statista (2022: 1), which highlights that the majority of South African population in 2022 consisted of Black Africans who are highly urbanised as a result of urbanisation post the apartheid regime. During the apartheid era, only men were allowed to move to the cities for employment, hence the majority of respondents in the current study were from urban areas. Living in Urban areas was associated with low Vitamin A supplementation coverage, due to increase intake of fortified staple food (Mc Laren and Steenkamp 2022:3).

The majority of respondents had secondary education (67.2%), and this was viewed as low since government funding for higher education with (NSFAS) is available, yet youth is still unable to reach tertiary level. NSFAS reports that the overwhelming majority of beneficiaries are African students (95.1%), a high proportion of which are females (61%), with most applicants coming from KwaZulu-Natal (NSFAS 2019: 5).

5.3 KNOWLEDGE ABOUT VITAMIN A SUPPLEMENTATION IN CHILDREN BETWEEN 6 AND 59 MONTHS OLD

Performance of the behaviour is driven by personal attitude, behavioural intention, and subjective norms (Ajzen 1991: 1). A knowledgeable person socialises with people who have positive attitude and holds a high regard for the programme outcome. This person will be likely performing the behaviour compared to the person who lacks knowledge and is not motivated to participate in the programme.

5.3.1 Level of awareness about VAS

The current study, reported that the majority of respondents had heard about vitamin A but knew nothing or very little about it. This indicates lack of information about the VAS programme; it is futile to know that such a programme exists, yet know nothing about it. Lima *et al.* (2020) reported similar results in Brazil where respondents heard about VAS and had watched the administration to their children, but were not aware of its purpose.

5.3.2 Developing countries like South Africa regarding their VAS to children aged 6 to 59 months

Most respondents (82.6%) knew that developing countries like South Africa do VAS to children aged 6 to 59 months. Young governments are trying by all means to protect and promote the health of their children because they are the future of any country. Unlike the results of this study, it was reported that in Nigeria mothers were not aware that the government provided VAS for children below five years old (Anjorin 2020: 84).

5.3.3 Symptoms that may indicate side effects of vitamin A in children

No marked difference was reported between respondents who did know and who did not know the symptoms that may indicate side effects of vitamin A in children. Mild adverse effects can occur after administration of vitamin A supplements and these

include headache, diarrhoea, rash, nausea and vomiting. It is important for caregivers to be aware of these symptoms because they can treat and manage some of them at home and prevent hospitalisation of children. These symptoms are expected to occur within 48 hours after administration of Vitamin A supplementation oral drops (Barekzal, Sahar and Shinwari 2022: 1).

5.3.4 Source of information about vitamin A

Most respondents in the current study indicated that they heard about VAS from a healthcare worker. One of the duties of nurses, particularly in PHC facilities, is to give health talks to patients as a group or individually. Lima *et al.* (2020) reported that health professionals were a source of information for caregivers in the state of Alagoas, Brazil. However, Abdulmalek and Benkhaial (2018: 2) found different results in Libya where caregivers reported their most common source of information were friends and relatives.

In the United Kingdom, Moorheard *et al.* (2013: 2) reported an increased use of social media which changes the nature and speed of health interaction between public, patients, and health professionals. In this regard health-related messages were communicated using social media with the possibility of potentially improving health outcomes.

5.3.5 Food containing a high content of vitamin A

The majority of respondents selected correct food choices containing high content of vitamin A, namely, vegetables such as spinach (67%) and carrots (60%), which were the most selected by respondents. This could help prevent diseases that result from VAD when caregivers are deliberate about feeding children food that contains high vitamin A. Conversely, Sindhu, Nirmala, and Subalakashmi (2020: 5) found that in India only 32.6% of respondents knew about vitamin A rich foodstuffs.

5.3.6 Dietary sources alone sufficient to maintain levels of vitamin A

This study found that the majority of respondents indicated that diet alone is sufficient to maintain levels of vitamin A, which suggests a gap in knowledge about vitamin A that can serve as a barrier towards vitamin A coverage because respondents may never find it necessary to ensure that children receive VAS as per the national

guideline schedule for vitamin A. UNICEF (2007: 2) reported that the greatest global burden of VAD is concentrated in South Asia and sub-Saharan Africa, and delivery of high-dose supplements remains the principal strategy for controlling VAD. Food-based approaches, such as food fortification and consumption of foods high in vitamin A are increasingly becoming available, but have not yet reached the coverage levels equivalent to supplementation in most affected areas.

5.3.7 Consequences of lack of vitamin A

The current study found that the majority of respondents were aware of the consequences caused by VAD, these results being similar to those from a study conducted in Nigeria where the majority of respondents reported that a VAS programme is good because it prevents childhood infections, prevents night blindness, and promotes good vision (Anjorin 2020: 119). These findings are different to those of Lima *et al.* (2020) in Brazil, where 80.8% of respondents did not know of any health consequences caused by VAD.

5.3.8 Administration of VAS and dosing intervals for vitamin A supplementation

About 62.5% respondents were aware that every six months children should be given VAS from 6 to 59 months old. Mdlalose (2017: 23) reported that in South Africa the majority of respondents did not know the dosing interval of VAS. Based on the WHO (2011) recommendation, countries faced with the burden of VAD should supplement children with a high dose of vitamin A at least twice per year at six monthly intervals from six months until they are 59 months old, with each child receiving at least nine doses of VAS by 59 months of age (Lima *et al*. 2020).

5.3.9 Missed dose of vitamin A / catch up dose

The current study reported that 69.9% of respondents were aware that if their children miss a dose of vitamin A, they can get a catch-up dose. These results are in accordance with South African vitamin A policy, which states that before administration of vitamin A health care givers have a duty to check if the child has not already received a dose in the previous six months: if yes do not give a dose, if no administer the dose then record on the RtHB (NDoH 2012: 18). Therefore, in instances of missed dose, the guidelines allow accommodation for catching-up, however, caregivers are urged

to bring their children in the due time to ensure that the child is covered and protected against VAD.

5.3.10 Side effects of vitamin A overdose

The majority of respondents were aware that their children can suffer from side effects if they get a vitamin A overdose. Both caregivers and health care providers should be aware of vitamin A over dosage, which can happen if doses are given too close to each other or if a larger dose is given to a younger child. If vitamin A is given at the correct time and dose, chances of overdose are almost non-existent. A study conducted in Libya confirms that caregivers may be afraid of over dosage because that study it found that fear of vitamin A toxicity and child sickness were the main reasons for parents for not giving the child VAS in Libya (Abdulmalek and Benkhaial 2018: 2).

5.3.11 Regarding children who should be given VAS

The majority of respondents knew that all children from ages of 6 to 59 months should be given VAS. It was pleasing to find this from respondents because it means that they will bring their children for vitamin A at the correct intervals. According to the WHO (2011: 5), all children from age of 6 to 59 months should be given VAS including those that are HIV positive and breastfeeding.

5.3.12 Administration of VAS

Most respondents knew that vitamin A is administered orally. This knowledge is important for caregivers so that children do not miss doses because caregivers are scared of their children receiving an injection. Vitamin A administration is in the form of an oral liquid, oil-based preparation of retinyl palmitate or retinyl acetate, which usually comes in a form of a capsule. A dose of 100 000 IU (blue capsule) is given to children aged 6 to 11 months and a dose of 200 000 IU (red capsule) is given to children aged 12 to 59 months (WHO 2011: 5).

5.4 ATTITUDE OF RESPONDENTS REGARDING VITAMIN A

5.5 SUPPLEMENTATION OF CHILDREN BETWEEN 6 TO 59 MONTHS

Ajzen (1991: 3) defines personal attitude as the degree to which a person has a favourable or unfavourable opinion of a particular behaviour, together with outcome evaluation of performing that behaviour. Subjective norms, social norms and perceived behavioural control play a huge role in shaping a person's attitude.

5.5.1 Importance of vitamin A

Respondents in the current study agreed that VAS is important because it prevents eye problems and stunted growth and reduces the risk of infections. Contrary to these results, a South African study by Mdlalose (2017: 28) reported that the majority of respondents did not know why vitamin A is given to children. This may indicate that health workers do share information about vitamin A with caregivers, but are not sharing important information on why vitamin A is given.

5.5.2 All children under five years old should be given VAS as per South African guidelines

The majority of respondents agreed that all children under five years old should be given VAS as per South African guidelines. Annexure A of the South African policy on vitamin A stipulates that all children in South African should be given prophylaxis of VAS irrespective of their nutritional status (NDoH 2012: 18).

5.5.3 Importance and effectiveness of VAS

Respondents agreed that a VAS programme is important and as an effective strategy in reducing childhood illnesses and strengthening children's immunity. This is different to the findings of a Nigerian study by Wasilwa (2020: 2) that caregivers did not perceive vitamin A as important to their children. Instead, it was viewed and perceived as a cause of impotency and harmful to their children.

5.5.4 Long queues in health facilities

The majority of the respondents in the current study did not like to take their children for VAS because of long queues in health facilities. Similarly, Anjorin (2020: 89)

reported the challenge of overcrowding in the health facilities or delivery sites as being one of the barriers to accessing public health services for VAS in Nigeria.

It seems that most facilities in this study were not effectively implementing appointment or booking systems as per the Ideal Clinic Programme so the respondents experienced long queues when a lot of patients come to the health facility at the same time. The aim of an appointment or booking system is to ensure facilitation of a fast track for health care users to reduce waiting times without compromising the quality of service rendered. In addition, caregivers who only want to go to the well-baby clinic were recommended to be fast tracked to prevent delays, long waiting times and overcrowding of health facilities (Sokhela 2016: 148).

5.5.5 Regarding school health team on administration of vitamin A

Most respondents (81.1%) did not depend on a school health delivery strategy for VAS. Regardless of the existence of long queues in other health facilities, respondents still preferred the facility delivery strategy compared to school health delivery strategy. This is corroborated by a Nigerian study which reported that caregivers relied more on a health facility approach rather than a school health delivery approach, because some schools did not want health care workers to provide VAS to their children (Anjorin 2020: 93). Similar results were also reported in Brazil, because caregivers in that study perceived VAS as another form of immunisation, therefore they preferred to take their children to a health care facility for full services (Lima *et al.* 2020).

5.5.6 Vitamin A supplementation is quick and easy to administer

In the current study, respondents (78.4%) disagreed with the statement that they take their children for VAS because it was quick and easy to administer, because the child still required to be assessed and classified for nutrition and growth, anaemia, risk of tuberculosis, HIV status, status of immunisation, developmental milestones as well as dental care (NDoH 2019: 26). A multidisciplinary team approach with HIV/AIDS counsellors, nutritional advisers or enrolled nurses would improve the flow for children solely visiting health facility.

5.5.7 Missing a dose of VAS

It was evident in the current study that the majority of respondents were worried and concerned about the consequences of their children missing a dose of VAS. This means that respondents will try and bring their children on time and for catch up if they missed a dose of VAS. In India, Varghese *et al.* (2019: 2) reported that caregivers who had missed a scheduled VAS did not take any measures to catch up.

5.5.8 Bivariate analysis of knowledge and demographic results

Tukey's post hoc test reported that those who had retired had significantly more knowledge than those who were employed, and no significant difference was reported between those who were unemployed and those who were employed. This study found no significant relationship between residence and knowledge. Berde, Bester and Kruger (2019: 4), in their South Africa study, reported that children with older mothers were more likely to receive VAS than children of younger mothers, indicating that parenting and nutritional knowledge may increase with age.

5.6 PRACTICES OF RESPONDENTS REGARDING VAS OF CHILDREN BETWEEN 6 AND 59 MONTHS OLD

Every mother wants the best for her child as it is the caregiver's duty to ensure that their children are physically and mentally fit to face health struggles that they are exposed to. Furthermore, healthcare providers have a responsibility to ensure that all caregivers receive accurate information and are empowered with knowledge regarding disease prevention and management. It was therefore important for the researcher to find out what the practices of health care providers were regarding VAS.

5.6.1 Vitamin A supplementation for children every six months

Less than 50% of respondents (47.5%) answered that they did take their child every six months for Vitamin A. Thus, the majority (52.5%) of children were possibly missing out on a lifesaving opportunity for VAS. Similar results were reported in Nigeria by Wasilwa (2020: 41) who found that caregivers' were not informed that they were required to bring their children for VAS every six months. A South African study by Mdlalose (2017: 28) reported that caregivers had very little knowledge on how often

their children should receive VAS. It is likely that most of the children miss VAS opportunities.

5.6.2 Vitamin A supplementation for children even when they are sick

This study reported that respondents did send their children for VAS even when they were sick. It is unclear in this study whether children were in the health facility because they were sick or because they were due for VAS. This finding is different to that of a study conducted by Anjorin (2020: 99) in Nigeria, where ill health of children was highlighted and perceived as a barrier to VAS uptake, therefore children ended up missing the required dose of VAS.

5.6.3 Long clinic queues for VAS

The great majority of respondents (81.3%) reported that they always waited in long queues for their children to receive VAS. Research studies conducted in Brazil suggested that more information about other available forms of VAS, community delivery approaches and other than facilities being made available are necessary to relieve overcrowding and long queues for VAS (Marques *et al*. 2017: 8).

5.6.4 Leaving the clinic without getting VAS because the clinic is full

Most respondents reported that they persevered for the sake of their children's health and they had never left the health facility without their children receiving VAS, even when the clinic was full. Some respondents left sometimes without children getting VAS. This indicates an obstacle to public health care, if there are people in need of medical care but are unable to access this due to overcrowding and long queues in health facilities. Similar results were reported in Nigeria, where respondents reported that the crowd was great, and the environment not conducive, therefore many respondents decided "like let me just go, maybe next time I will come and get it" (Anjorin 2020: 93).

5.6.5 Sending your child with someone for VAS if you are not available

This study reported that the majority of the respondents had never sent their children with someone else for VAS if they were not available. Health care providers should provide information to caregivers that informed consent is given by the mother once

and such consent is not required on subsequent visits for VAS, therefore mothers can send their children with other people for VAS if they are not able to.

5.6.6 Getting worried if you have missed a date for VAS

The chi-square goodness-of-fit test reported a significant difference of yes sometimes or yes always get worried if they have missed a date for VAS for their children χ^2 (2) = 85.959, p < .001. This result suggests that respondents perceived VAS as a valuable strategy. This perception was corroborated by Marques *et al.* (2017 *et al.*: 15) in Brazil who found that respondents believed that VAS is important because of government involvement, therefore they need to ensure that their children receive the required dose.

5.7 Relationship between practices and demographics

The result for respondents attending rural facilities was significant regarding them being “always” worried if they had missed a date for VAS (χ^2 (2) = 6.888, p < .032). Traditionally, people in rural areas are respectful and comply with health information that they are given if they believe in it. Lima *et al.* (2020) reported that living in a rural location was associated with an increased likelihood of regular adherence to the supplementation programme in Brazil. Kundu, Rai and Shukla (2021: 3) found that children residing in urban areas have a higher risk of having VAS compared to children in rural areas in India.

There was a significant relationship between respondents who were between 21 to 30 years old and not leaving the facility without their children receiving VAS because the clinic was full. These respondents were of the young generation and have been exposed to modern technology, and are used to online services, which became more popular in South Africa during the Covid-19 lockdown. Therefore, they are impatient regarding and do not want waiting in long queues.

Furthermore, respondents with tertiary level education indicated that they “sometimes” waited in long queues for their children to receive VAS (χ^2 (2) = 7.439, p < .02). Long queues in this study have been highlighted and are always associated with negative responses. In countries such as United Kingdom and China, the use of e-booking systems and web-based appointments for medical services have reduced waiting times to seven minutes from ninety eight minutes, and in China patients that booked

via web-based appointment medical services did not wait in the queue. Patients book their appointments at the most convenient date and time, can make changes within the web interface, thus giving the patient a sense of involvement with their care. This is associated with positive changes such as reduced staff workload, balancing of staff patient-ratio, improving patient satisfaction, and improving efficiency (Zhao *et al*. 2017: 5).

5.8 Chapter summary

This chapter discussed results obtained from analysed data to address the research aim, which was to explore the knowledge, attitudes, and practices of caregivers regarding vitamin A supplementation for children under five years old. This study found that retired respondents had significantly more knowledge than employed respondents, and that the majority of the respondents were aware of the VAS programme but knew nothing about it; this indicates a knowledge gap with regards to supplementation of children under five years old with vitamin A. Long queues, overcrowding of health facilities as well as lack of awareness about lack of vitamin A consequences were noted to have a negative effect on respondents' attitude towards compliance and adherence to VAS. These findings are consistent with other research studies. The next chapter presents research limitations and recommendations.

CHAPTER 6: SUMMARY OF FINDINGS, LIMITATIONS, RECOMMENDATIONS AND FURTHER RESEARCH

6.1 Introduction

The previous chapter discussed the research findings; this chapter provides a summary of findings, limitations, recommendations as well as proposals for further research.

6.2 Summary of findings

This study identified that respondents were aware of VAS, but knew nothing about it; it is fruitless to know that such programme exist but to not understand the value and impact of it. This indicates that respondents lack knowledge with regard to VAS. When one is providing health information with the aim of changing a behavioural intention, the content of information is crucial. Information should include: the reason for the programme's existence, for whom the programme is intended, the consequences of poor adherence as well as the time frame for the programme. The source of information is mainly health care providers, which means that the information is only reaching people that are in contact with health care facilities and excludes the larger audience at home.

Respondents had a positive attitude towards VAS which was evidenced by the majority of respondents agreeing that VAS is an important and effective strategy in reducing childhood illnesses, and that it should be administered to children according to the South African guidelines. However, overcrowding, time spent in the facility and the possibility of school health delivery had a negative impact especially with respondents of child-bearing age. These factors may contribute to poor decision making and compliance and can interfere with an individual's cognitive and personal judgement on important health issues as stated in the TPB.

More than 50% of the children of respondents are possibly missing VAS due to lack of awareness about their next scheduled time for VAS even though caregivers can send their children with someone else if they are not available. This study found that respondents do get worried if their children have missed their scheduled dose, but

many were not aware that they can send their children for a catch up dose if a dose has been missed. Respondents from rural areas were associated with increased likelihood of ensuring that their children receive VAS compared to respondents from urban areas.

Information regarding vitamin A is required to motivate caregivers to follow the VAS programme; according to the results of this study respondents perceived VAS as important however the scarcity of information can be an obstacle towards compliance with VAS.

6.3 Limitations

The main limitation is that the study only focused on one district out of ten districts in KwaZulu-Natal, therefore the results cannot be generalised. A quantitative approach was used which restricted the respondents from expressing their views and proposals regarding the VAS programme. Furthermore, healthcare givers were excluded – it crucial to know what the knowledge perceptions and experiences of healthcare givers are regarding the delivery of VAS, as they are directly involved with the provision of care.

6.4 Recommendations

Recommendations are based on quantitative findings of the study with regards VAS of children under five years of age in Ugu district:

6.4.1 Recommendations for education

- Healthcare workers including nurses, community care givers and nutritional advisers to give comprehensive health education to caregivers regarding vitamin A and its administration. Education is required and should incorporate the importance, consequences, side effects and other available delivery platforms or strategies for VAS.
- Involvement of mass media including television, radio, posters, newspapers. Social media such as Facebook, TikTok and YouTube would be effective in delivering important information about VAS as this media reaches large audiences and spreads information quickly and is a significant force in the modern generation

6.4.2 Recommendations for practice

- Task shifting of VAS from professional nurses to IMCI trained enrolled nurses and community caregivers, to relieve the burden of heavy workload from professional nurses. Professional nurses can spend time on children who require extensive health interventions. This will reduce queues and waiting times at PHC facilities thus encouraging caregivers to bring their children for VAS.
- Health facilities should implement effective appointment systems to fast track children who come for VAS and trace caregivers that have missed their appointments and linking them with their community care givers, as per ideal clinic recommendations.
- Implementation of SMS text message reminders to caregivers for their upcoming appointments to reduce the number of caregivers missing out on cycle dates, especially for caregivers of children above 18 months old because they are less in contact with the health care facilities.

6.5 Recommendations for further research

- Further research is still required with regard to barriers and challenges affecting the low VAS coverage rate for children from 18 months to 59 months old.
- The experiences of healthcare providers regarding VAS need to be researched with the aim of evaluating their perceptions regarding the programme.
- The causes and effects of long queues in health facilities for caregivers in well-baby clinics for routine care.
- A qualitative study should be conducted do that participants can voice their opinions and views on VAS.

6.6 Conclusion

Supplementing children twice per year with VAS oral drops from 6 to 59 months save millions of lives around the world from the devastating effects of VAD. Equipping caregivers with information re-enforces the behaviour of not only the individual but also their significant others, which will encourage such behaviour to become normative behaviour for the community at large, as stated in the TPB.

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APPENDICIES

Appendix A1: Letter of information (English)

LETTER OF INFORMATION

Title of the Research Study: Exploring the knowledge, attitude and practices-of women regarding vitamin A supplementation in children below five years old.

Principal Investigator/s/researcher: Miss Sithabile NP Mazeka (B Tech: Nursing)

Co-Investigator/s/supervisor/s: Dr DG. Sokhela (D Tech: Nursing)

Brief Introduction and Purpose of the Study: vitamin A supplementation programme is one of the Government's strategy in place to address Vitamin deficiency in children from 6 months to 59 months of age, since its implementation as per Worlds Health Organization suggestion that countries with VAD must consider supplementing children below five years with high dose of vitamin A, most of developing countries are facing coverage issues. The study seeks to explore the knowledge, attitude and practices of caregivers regarding vitamin A in children below five years old.

Greeting: Hallow

Introduce yourself to the participant I am second year student at DUT doing research for my Master's degree in Primary Health.

Invitation to the potential participant: I would like to invite you to participate in the research.

What is Research Research is a systematic search or looking for new knowledge with regards to the specific topic, at the interest of the researcher. This involve reading relevant information

that has been researched by others to gain more understanding and information, collecting information from participants, analysing and disseminating data.

Outline of the Procedures: once you have read and understood this letter, you will be requested to sign an informed consent letter which is a letter of agreement that is permitting the researcher to gather data for research purpose. The questionnaire will be used to collect data from the participants, which will be filed in by the participants who agreed to participate and meet the inclusion criteria. The aim, purpose, risk and benefits of the study will be explained by the researcher to participants. A quiet consultation room will be used to fill in the questionnaire, researcher will be available clarity of unclear questionnaire, the questionnaire will only take 10 to 15 minutes to complete.er completed questionnaire will be collected by the researcher immediately after completion, for data analysis.

Risks or Discomforts to the Participant: the study and collection procedure pose no risk for you and your child, the child Road to Health Chart Booklet will be used to obtain some information with no questioning thereafter.

Explain to the participant the reasons he/she may be withdraw from the Study: participation is voluntarily, participants may withdraw from the study at any time. There will be no adverse reactions.

Benefits: the intended benefits of the study are to enhance quality of nursing care, ensure that children below five years of age receive free benefits of life saving opportunity with vitamin A.

Remuneration: your participation is voluntarily and for free, you will not be given any money or ant form of reward for participation

Costs of the Study: you are not expected to pay any money, all cost related to the study will be paid by me.

Confidentiality: Participants reserve a right to remain anonymous, codes will be used when filling in the questionnaire you don't have to write down your name, privacy and confidentiality of the participant's information will be maintained at all times.

Results: Results for the study will be disseminated using study codes, new developments and suggestions will be submitted to the relevant structures for adoption of new information

Research-related Injury: The researcher anticipates no risk, injury or compensation during the collection of data for this study, only Road to health child booklet will be utilised during data collection.

Storage of all electronic and hard copies including tape recordings : Research documents in a paper form will be kept in a lockable cabinet and electronic information will be kept secured with a password, only members who are part of this study will have access to it, authorised by the.)

Persons to contact in the Event of Any Problems or Queries: For any enquiries please contact me Miss SNP Mazeka 0837952352 or my Supervisor Dr DG Sokhela 031 372 2292 or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support Dr L Linganiso on 031 373 2577 or researchdirector@dut.ac.za

Appendix A2: Consent form (English)

Consent form

Full Title of the Study: Knowledge, attitude and practices-of women regarding vitamin A supplementation in children below five years old

Names of Researcher/s: Miss Sithabile NP Mazeka (B Tech: Nursing)

Statement of Agreement to Participate in the Research Study:

□I hereby confirm that I have been informed by the researcher, Miss Sithabile N P Mazeka 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 (Participant Letter of Information) regarding the study.

□ I am aware that the results of the study, including personal details regarding my 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 computerised 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 / Right Thumbprint**

I Miss S,N,P Mazeka herewith confirm that the above mentioned participant has been 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**
Full Name of Legal		

Appendix A3: Letter of information (isiZulu)

Incwadi Yokunika ulwazi

Isihloko socwaningo: ukuhlola ulwazi, imicabango kanye nemikhuba yabanakekeli bezingane mayelana, nenqubo yokunikizela kwamaconsi a Vitamin A ezinganeni ezingaphansi kweminyaka emihlanu, Ogwini, KwaZulu Natali.

Umcwaningi omkhulu: Nks SNP Mazeka (B Tech: Nursing)

Obheke umncwaningi: Dkt D.G Sokhela (D Tech: Nursing)

Isingeniso nenhloso yocwaningo kafushane; uhlelo lokunikezela ngamaconsi ka Vitamin A ezinganeni eziphakathi kweminyaka eyisthupha kuya kubantu abaneminyaka engamashumi amahlanu nesishagalolunye, lwethulwa uHulumeni wase Ningizimu Afrika, kanye namanye amazwe, emva komyalelo wethimba elengamele ezempilo kuwona wonke amazwe I World Health Organization (WHO). Loku kulandela emvakokutholakala uthi amzwe antulayo, nasa simama ngokomnotho etholakale ukuthi izingane zawo zikhungathwa yizifo ezihambisana nokwentuleka kwa Vitamin A egazini. Selokhu lwaqala loluhlelo, lubhekene nokungafinyeleli kahle ezinganeni ekumele engabe ziyaluthola futhi zisizakale ngalo. Inhloso yalolucwaningo ukuhlola ulwazi, imicabango kanye nemikhuba yabanakekeli bezingane mayelana nenqubo yokunikizela kwamaconsi a Vitamin A ezinganeni ezingaphansi kweminyaka emihlanu.

Sawubona

Ukuzazisa kubanakekeli: ngiwumfundi wase DUT, owenza izifundo ze Master kwi Nursing

Isimemo sokuba yingxenye yocwaningo: mnakekeli wengane engaphansi kweminyaka emihlanu ubudala, uyamenywa ukuba ube yingxenye yalolucwaningo.

Uhlaka oluzokwenziwa: uzofunda lencwadi uyizwisize kahle, ubuze nemibuzo kumcwaningi uma kukhona ongakuqondisisi kahle bese ushicilela isivumelwano sokuvuma ukuba yingxenye yocwaningo nokuthi uyavuma ukuthi kusetshenziswe I khadi lomgomo womntwana.

Izingozi nokungaphatheki kahle komunutu oyilunga locwaningo: Azikho izingozi kanye namathuba angabeka impiloyakho bucayi alindeleke ukuba enzeke uma uthatha iqhaza kulolucwaningo.

Ukuhoxisa ukuhlanganyela kulolu cwaningo: Ungakwazi ukunqaba futhiungahoxisa ukuhlanganyela kulolucwaningo noma yinini, kanti abukho ubungozi ongabhekana nabo ngalesosinqumo

Izinzuzo: Ayikho inzuzo ebhekene nawe kuphela ozoyithola ngokuba yingxenye yocwaningo, kepha imiphumela kanye nezincomo zocwaningo zisiza ekuthuthukisweni kohlelo lokwethulwa kwa Vitamin A ezinganeni zonke ezingaphansi kweminyaka emihlanu.

Iholo: Ayikho imali etholakalayo ngokuba yingxenye yocwaningo

Izindleko zocwaningo: Zonke izindleko zocwaningo zizokhokhelwa umcwaningi ngqo, akukho ukulindeleke ukuba kukhokhelwe uwena.

Imfihlo: Amagama ezingane kanye nawabanakekeli bazo ngeke asetshenziswe, kuzoba khona uhlelo ulozokwenza ukuba abeyimfihlo futhi angavezwa amagama uma kuphendulwa imibuzo.

Ukulimala okungenziwa wu cwaningo: akukho kulimala kanye nokuhlawula okulindelelekile, njengoba ngizobe ngisebenzisa ikhadi lomngomo womntana wakho kuphela.

Ukugcinwa kwemininingwano yocwaningo: Lonke ulwazi oluzoqoqwa kulolucwaningo luzogcinwa endaweni ephephile. Amaphepha abhaliwe azofakwa ebhokisini avalelwe ekhabetheni ukhiye ugcinwe umcwaningi kanti okuzogcinwa kwi khompyutha kuzovalelwa ngama khodi ayimfihlo. Umcwaningi uzoqinisekisa ukuthi umuntu onemvume kuphela ozokwazi ukufinyelela emininingwaneni yocwaningo kuphela.

Ongabathinta uma kunemibuzo noma inkinga mayelana nocwaningo: Ungathintana no Nksz S.N.P Mazeka kulenombolo yocingo 0837952352/0603366684 noma umqaphi wocwaningo u Dkt D.G Sokhela ku 031 372 2292 noma yikomiti eliphakeme elibhekene nokvikeleka ko cwaningo ku 031 373 2375 noma umsizi obhekelene nokwesekwa kwabafundi u Dkt L Linganiso ku 031 373 2577umthumele umqhafazo nge emeyli ku researchdirector dut.ac.za.

Appendix A4: Consent form (Isizulu)

Ushicilelelo lokuvuma ukuba yingxenye yocwaningo

Ukunika imvume yokuba ube yingxenye yocwaningo

Isihloko socwaningo: ukuhlola ulwazi, imicabango kanye nemikhuba yabanakekeli bezingane mayelana, nenqubo yokunikizela kwamaconsi a Vitamin A ezinganeni ezingaphansi kweminyaka emihlanu, Ogwini, KwaZulu Natali.

Umcwaningi omkhulu: Nksn SNP Mazeka (B Tech: Nursing)

Isitatimende sesivumelwano sokubamba iqhaza ocwaningweni:

- Ngiyaqiniseka ukuthi ngichazeliwe ngocwaningo u, Nksn Sithanile N.P Mazeka okuwuyena umcwaningi.
- Ngichazeliwe futhi ngayifunda ngayiqonda kahle nencwadi yokubambha iqhaza kulolucwaningo
- Ngiyazi ukuthi imiphumela yocwaningo, nemininingwano yobulili, usuku lokuzalwa, iminyaka, nemibiko emayelana nokugula kwami kuzobhalwa ngendleala eyimfihlo futhi ngeke kudalulwe uma sekukhishwa umbiko ngocwaningo.
- Ngokubhekela izidingo zocwaningo, ngiyavuma ukuthi lonke ulwazi oluqoqwe ngesikhathi kwenziwa ucwaningo, lungacutshungulwa ohlelwaeni lwekhompyutha ngumcwaningi.
- Ngiyazi ukuthi noma ngabe yisiphi isigaba socwaningo, ngaphandle kokudalua izinqumo, nokungacindezeleki ngingahoxisa imvume yami yokuhlanganyela kulolucwaningo.
- Nginikiziwe ithuba elanele lokubuza imibuzo (ngokuthanda kwami) ngizibona ngikulungele ukuba yingxenye yocwaningo.
- Ngiyaqonda ukuthi imiphumela emsha ezothalakala ngocwaningo ngingaba yingxenye yalo futh ngingayithola uma ngiyidinga.

....

Igama lomhlanganyeli eligcwele usuku isikhathi isigashayomhlanganeli/ isthupha sokudla

Mina Sithabile N. P Mazeka giyaqiniseka ukuth lomhlanganyeli uye waziswa ngokugcwele ngemvelo, ukuziphatha kanye nezingozi zesifundo esingenhla

....

Igama eliphelele lomcwaningi usuku isikhathi isigasha yomcwaningi

....

Igama eliphelele lofakazi usuku isikhathi isigasha yofakazi

Appendix 5: Questionnaire (English)

Questionnaire on knowledge, practices and attitude of mothers regarding, vitamin A supplementation for children below five years old.

Section 1: Demographic data.

Please tick on appropriate box provided

1.1 Facility code: PHC1☐ PHC2 ☐ PHC3☐

1.2 Caregivers Age in years: < 20 yrs ☐ 21 to 30☐ 31 to 40☐ 41>☐

1.3 Marital status: Single ☐ Married ☐ Divorced/Widow/ Unspecified☐

1.4. Residential: Urban☐ rural☐

1.5. Race: African ☐ Asian☐ Whites☐ Coloureds☐

1.6 Academic level: None☐ primary level☐ secondary level☐ tertiary level☐

1.7 Occupational status: Employed ☐ Unemployed ☐ Self employed☐

Section 2: Knowledge of Mothers with regards to Vitamin A supplementation, for children below five years old.

Please tick on appropriate box provided

2.1 Are you aware about Vitamin A supplementation for children below five years old?

Yes ☐

No ☐

2.2 Are you aware of the food that contains high content of Vitamin A?

Yes ☐

No ☐

2.3 Are you aware of the consequences of Vitamin A deficiency?

Yes ☐

No ☐

2.4 source of information about Vitamin A

Friend/ relative ☐

Health care worker ☐

TV/radio/social media/newspaper ☐

Other ☐

Section 3: Attitude of Caregivers with regards to Vitamin A supplementation.

Please tick on appropriate box provided

3.1 Is Vitamin A supplementation helpful?

Yes ☐

No ☐

3.2 It is not necessary to take your child for Vitamin A supplementation, if your child eat enough fruits and vegetables?

Yes ☐

No ☐

3.3 Reasons for using Vitamin A supplementation **(you can tick more than one box).**

To promote normal growth of the child ☐

For good eye health ☐

Strong bones ☐

Prevent illnesses ☐

Prevent hair loss ☐

Because they said so in the clinic ☐

I don't know ☐

Section 4: caregivers practices with regards to Vitamin A supplementation

Please tick on appropriate box provided

4.1 How often do you take your child for Vitamin A supplementation?

Every month ☐

Every 6 months ☐

0nce a year ☐

4.2 Have your child received all doses of Vitamin A according to the schedule

Yes ☐

No ☐

4.3 Health care facility provides enough information about Vitamin A supplementation

Yes ☐

No ☐

Unsure ☐

4.4 I have been turned away due to shortage of Vitamin A

Yes ☐

No ☐

Thank you for your participation……..

Appendix 6: Questionnaire (Isizulu)

Uhlu lwemibuzo lokuhlola ulwazi, nemicabango kanye nemikhuba yabanakekeli mayelana nenqubo yokunikezela kwamaconsi a Vitanimin A, ezingane ezineminyaka engaphansi kwemihlanu ubudala

Isigaba 1: uhlu lwemibuzo eqondene nomuntu ocwaningwayo.

Khetha impendulo efanele mese wenza uphawu lwesiphambano ebhokisini elifanele.

1.1 Ikhodi yesikhungo

PHC1☐ PHC2☐ PHC3☐

1.2 Iminyaka yomnakekeli

<20☐ 21-30☐ 31-40☐ 41<☐

1.3 Isimo somshado somnakekeli

Awushadile ☐ Ushadile ☐ Uhlukanisile/Umfelokazi ☐ Akucaciswanga ☐

1.4 Indawo yokuhlala

Edolobheni ☐ Emakhaya ☐

1.5 Uhlanga

Umnyama ☐ indiya ☐ umlungu ☐ ikhaladi ☐

1.6 Izinga lezemfundo lomnakekeli

Awuyanga esikoleni ☐

Ibanga lokuqal kuya kwelesikhombisa ☐

Ibanga kusuka ebangeni lesishiyagalombili kuya kwibanga leshumi nambili ☐

Izinga lezemfundo ephakeme ☐

1.7 Isimo somsebenzi

Uqashiwe ☐ Awusebenzi ☐ Uyazisebenza ☐

Isigaba 2: Ulwazi lwabanakekeli mayelana nenqubomgomo yama consi a Vitamin A ezinganeni ezineminyaka engaphansi kwemihlanu ubudala*Khetha impendulo efanele mese wenza uphawu lwesiphambano ebhokisini elifanele.*

2.1 Uyazi ngohlelo lwonqubo mgomo kahulumeni mayelana noku consiselwa ngamaconsi a Vitamin A ezinganeni ezineminyaka engaphansi kwemihlanu ubudala?

Yebo☐

Cha☐

2.2 Uyakwazi ukudla okuqukethe uVitamin A ?

Yebo☐

Cha☐

2.3 Uyayazi imiphumela engadalwa ukushoda kukaVitamin A enganeni?

Yebo☐

Cha☐

2.4 Uluthola kuphi ulwazi ngo Vitamin A?

kumngani/Isihlobo ☐

kumsebenzi wezokunakekelwa kwempilo ☐

TV/Umsakazo/Enkundleni zokuxhumana/Iphephandaba ☐

Okunye ☐

Isigaba 3: Isimo semicabango kubanakekeli maqondana nokwengezwa kukaVitamin A

Khetha impendulo efanele mese wenza uphawu lwesiphambano ebhokisini elifanele.

3.1 Ngabe kuyasiza ukwengezwa kukaVitamin A?

Yebo☐

Cha☐

3.2 Akudingeki ukwengezwa kukaVitamin A enganeni yakho uma idla izithelo nemifino eyanele?

Yebo☐

Cha☐

3.3 Izizathu zokwengezwa kukaVitamin A (ungakhetha ngaphezu kwebhokisi elilodwa)

Ukukhuthaza ukukhula okujwayelekile kwengane ☐

Ukuze ibe nempilo yamehlo enhle ☐

Amathambo aqinile ☐

Vimbela izifo ☐

Vimbela ukulahleka kwezinwele ☐

Ngoba basho njalo emtholampilo ☐

Angazi ☐

Isigaba 4: Imikhuba yabanakekeli mayelana nohlelo lokunikezelwa kukaVitamin A ezinganeni ezineminyaka engaphansi kwemihlanu

Khetha impendulo efanele mese wenza uphawu lwesiphambano ebhokisini elifanele.

4.1 Uyisa kangaki ngane yakho ukuthi ithole amaconsi a Vitamin A emtholampilo?

Nyanga zonke ☐

Njalo emumva kwezinyanga eziyisithupha ☐

Kanye ngonyaka ☐

4.2 Ngabe ingane yakho ithole wonke amaconsi a Vitamin A ngokohlelo nenqubo mgomo yezempilo?

Yebo ☐

Cha ☐

4.3 Indawo yokunakekelwa kwezempilo inikeza ulwazi olwane mayelana nohlelo lokunikezelwa kukaVitamin A?

Yebo ☐

Cha ☐

4.4 Ngike ngajikiswa emtholampilo ngenxa yokushoda kwamaconsi a Vitamin A?

Yebo ☐

Cha ☐

SIYABONGA….

Appendix 7: Checklist

Checklist for routine treatment for children from 6 months to 59 months old

Checklist number: _____ Questionnaire number: _____

Age of child: _____

Facility code: _____

VITAMIN A SUPPLEMENTATION						
100 000 IU	**Age**	**Date given**	**Signature**	**Age**	**Date given**	**Signature**
	6 mths					
200 000IU Every six months	12 mths			42 mths		
	18mths			48 mths		
	24 mths			54 mths		
	30 mths			60 mths		
	36 mths					

Appendix 8: KZN DOH Approval

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address: 330 Langalibalele Street, Pietermaritzburg
Postal Address: Private Bag X9051
Tel: 033 395 2805/ 3189/ 3123 Fax: 033 394 3782
Email:
www.kznhealth.gov.za

DIRECTORATE:
Health Research & Knowledge Management

NHRD Ref: KZ_202207_020

Dear Ms SNP Mazeka
(DUT)

Approval of research

1. The research proposal titled **'Knowledge, attitude and practices of caregivers regarding vitamin A supplementation for children below five years old in Ugu District'** was reviewed by the KwaZulu-Natal Department of Health (KZN-DoH).

   The proposal is hereby **approved** for research to be undertaken at primary health care clinics within Ugu Health District.

2. You are requested to take note of the following:
   a. *All research conducted in KwaZulu-Natal must comply with government regulations relating to Covid-19. These include but are not limited to: regulations concerning social distancing, the wearing of personal protective equipment, and limitations on meetings and social gatherings.*
   b. *Kindly liaise with the facility manager BEFORE your research begins in order to ensure that conditions in the facility are conducive to the conduct of your research. These include, but are not limited to, an assurance that the numbers of patients attending the facility are sufficient to support your sample size requirements, and that the space and physical infrastructure of the facility can accommodate the research team and any additional equipment required for the research.*
   c. *Please ensure that you provide your letter of ethics re-certification to this unit, when the current approval expires.*
   d. *Provide an interim progress report and final report (electronic and hard copies) when your research is complete to* ***HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200*** *and e-mail an electronic copy to hrkm@kznhealth.gov.za*
   e. *Please note that the Department of Health shall not be held liable for any injury that occurs as a result of this study.*

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

Dr E Lutge
Chairperson, Provincial Health Research Committee
Date: 29/07/2022

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 9: District approval

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

DIRECTORATE:
DISTRICT DIRECTOR

Physical Address: 41 Bisset Street, Port Shepstone, 42400
Postal Address: P/Bag X 735,Port Shepstone,4240
Tel: 093 6883000 Fax: 0396826296 Email Address:
Www.kznhealth.gov.za

Enquiries: Mrs L Dlamini
Date: 18 May 2022

To:
Miss S. Mazeka

PERMISSION TO CONDUCT RESEARCH ON "KNOWLEDGE, ATTITUDE AND PRACTICES OF CAREGIVERS REGARDING VITAMIN A SUPPLEMENTATION IN CHILDREN BELOW FIVE YEARS OLD IN UGU DISTRICT, KWAZULU- NATAL."

Dear Miss S. Mazeka

I have the pleasure in informing you that permission has been granted to you by Ugu District Office to conduct research on "Knowledge, attitude and practices of caregivers regarding Vitamin A supplementation in children below five years old in Ugu District, KwaZulu- Natal."

Please note the following:

a) Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health.

b) All research conducted in Ugu District must comply with government regulations relating to COVID-19.These include but are not limited to: regulations concerning the social distancing, the wearing of personal protective equipment and limitations on meetings and social gatherings.

c) Please ensure that this office is informed before you commence with your research.

d) The District Office /Facility will not provide any resources for this research.

e) You will be expected to provide feedback on your findings to the District Office.

Thank you

Mrs L Dlamini
District Director
Ugu District Office

GROWING KWAZULU-NATAL TOGETHER

Appendix 10: Ray Nkonyeni Sub-District Approval

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

DIRECTORATE:
Ray Nkonyeni Sub-District

498 Laxley House, Nelson Mandela Drive, Port Shepstone,4240
Private Bag x 735, Port Shepstone, 4240
el: 039 682 5343 Fax: 039 682 5343

Dear Ms. SNP Mazeka

Durban University of Technology
P O Box 1334
Durban
4000

RE: **Knowledge, attitude and practices of caregivers regarding Vitamin A supplementation in children below five years old in Ugu District, KwaZulu- Natal.**

Permission is granted to conduct research study in PHC (Ray Nkonyeni Sub-District) under my management.

You are requested to take note of the following:

1. Ensure that you adhere to all government policies, procedures, protocols and guidelines of KZN Department of Health with regards to this research.

2. You are expected to provide feedback on your findings (hard copies/electronic) to my office.

Kindly liaise with facility manager before your research begins, to ensure that environment is conducive and abide to COVID 19 protocols.

Miss. R.K. Mpisi

Assistant Nursing Manager (Ray Nkonyeni Sub-District)

12 September. 2022

GROWING KWAZULU-NATAL TOGETHER

Appendix 11: Gamalakhe (Ray Nkonyeni Sub-district) Approval

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Directorate

Physical Address: Off Ray Nkonyeni / Ray Sibiya Streets Gamalakhe 4240
Postal Address: Private Bag X 707 Gamalakhe 4240
Tel: 039 688 4113 Fax: 039 688 0248 www.kznhealth.gov.za

NURSING MANAGEMENT

Enquiries: Mrs N.O Ndwendwe

Date: 14/09/2022

To: Miss Sthabile Mazeka

Southport Clinic

PERMISSION TO CONDUCT RESEARCH ON KNOWLEDGE, ATTITUDES AND PRACTICES OF CAREGIVERS REGARDING VITAMIN A SUPPLEMENTATION IN CHILDREN BELOW FIVE YEARS OF AGE IN THE PHC FACILITIES UNDER GAMALAKHE SUB-DISTRICT

Dear Miss Mazeka

I have a pleasure to inform you that you are granted permission to conduct research as per above information.

The sub-district has 9 PHC clinics and you are requested to adhere to departmental policies, procedures, protocols and guidelines as stated in the Districts permission letter.

Please ensure that compliance to COVID19 regulations is maintained.

I am wishing you success in your research.

Kind regards

Mrs N.O Ndwendwe (PHC ANM) Date: 14/09/2022

Supported by

Mrs T.M.M Ntuli (DNM) Date: 15/09/2022

Appendix 12: Umzumbe sub-district Approval

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

DIRECTORATE:
Umzumbe Sub-District

1498 Laxley House, Nelson Mandela Drive, Port Shepstone,4240
Private Bag x 735, Port Shepstone, 4240
Tel: 039 682 5343 Fax: 039 682 5343

Dear Ms. SNP Mazeka

Durban University of Technology
P O Box 1334
Durban
4000

RE: **Knowledge, attitude and practices of caregivers regarding Vitamin A supplementation in children below five years old in Ugu District, KwaZulu- Natal.**

Permission is granted to conduct research study in PHC (uMzumbe South Sub-District) under my management.

You are requested to take note of the following:

1. Ensure that you adhere to all government policies, procedures, protocols and guidelines of KZN Department of Health with regards to this research.

2. You are expected to provide feedback on your findings (hard copies/electronic) to my office.

Kindly liaise with facility manager before your research begins, to ensure that environment is conducive and abide to COVID 19 protocols.

Yours Sincerely

Mrs. W.N. Goge

Assistant Nursing Manager (uMzumbe South Sub-District)

12 September. 2022

GROWING KWAZULU-NATAL TOGETHER

Appendix 13: St Andrews Hospital (Umuziwabantu sub-district) Approval

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Postal Address :14 Moodie street ,Harding, 4680
Physical Address: St Andrews hospital P/B x1010 4680
Tel: 039 433 1955 Fax: 039 433 2419 Email address: mandisa.vane@kznhealth.gov.za
www.kznhealth.gov.za

St Andrews hospital

Enquiries: Miss MM Vane
Tel: 039 433 1955
Date: 30/08/2022

To:

Miss SNP Mazeka

PERMISSION TO CONDUCT A RESEARCH ON "KNOWLEDGE, ATTITUDE AND PRACTICES AND PRACTICES OF CAREGIVERS REGARDING VITAMIN A SUPPLEMENTATION FOR CHILDREN BELOW FIVE YEARS OLD IN UGU DISTRICT, KwaZulu-Natal"

I have pleasure in informing you that the permission has been granted to you by St Andrews hospital to conduct the above research.

You are requested to adhere to the policies, procedures and protocols and guidelines of the Dept. of Health.

You are also reminded to comply with all the Covid 19 regulations during the period of your research as stipulated by the Dept. of Health

You are requested to inform this office before you start your research and also required to give feedback on your findings.

The hospital will not provide any resources towards your research.

Kind regards

MM VANE
St Andrews hospital Chief executive officer

Appendix 14: Murchison Hospital (Umuziwabantu sub-district) Approval

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

MURCHISON HOSPITAL
Main Harding//Kokstad Road
Private Bag X 701 Port Shepstone 4240
Tel: 039 6877311 Fax: 039 6877497
Email: Lungile. Nyawo@kznhealth.gov.za

DIRECTORATE:
AMN: L.G Nyawo

Enq: Mr L.G Nyawo
Ext 130
Date: 12.09. 2022

Murchison Hospital PHC
Employee: Mazeka S.N.P
Rank: Researcher
Student No: 20917902
University:DUT

Dear / Madam

Confirmation Letter that the above student have engaged with Murchison PHC Management regarding the intention to conduct a study in our clinics.

The title of the study is Knowledge, attitude and practices of caregivers regarding Vitamin A supplementation in children below five years old in Ugu District, KwaZulu-Natal.

This letter serves as a confirmation that she has been granted permission by both Province and District Director Ugu Health

We will assist her to observe all instructions as tabled down by Provincial Research Council and District Office Management.

ASSISTANT MANAGER NURSING-PHC
DATE: 12/9/2022

MURCHISON HOSPITAL
PRIMARY HEALTH CARE SERVICES
12 SEP 2022
PRIVATE BAG 701
PORT SHEPSTONE, 4240

GROWING KWAZULU-NATAL TOGETHER

Appendix 15 Mfundo Anorld Lushaba CHC (Umndoni sub-district) Approval

Mfundo Arnold Lushaba

Postal Address: Private Bag X07, Hibberdene 4220
Physical Address: Mnafu Area, Magistrate Court Road, Ward 19, Umzumbe
Tel: 039 972 6000 Fax: 039 972 6098 Email Address: Sandile. Ngcobo@kznhealth.gov.za
www.kznhealth.gov.za

Enquiries Mr. S.C. Ngcob

Date : 13 September 202

To:

Ms Mazeka

PERMSSION TO CONDUCT RESEARCH ON "KNOWLEDGE, ATTITUDES AND PRACTICES OF CAREGIVERS REGARDING VITAMIN A SUPPLEMENTATION IN CHILDREN BELOW THE AGE OF FIVE YEARS OLD IN UGU DISTRICT, KWAZULU-NATAL."

Dear Ms Mazeka

I have the pleasure of informing you that permission has been granted to you by MAL CHC to conduct research on "knowledge, attitudes and practices of caregivers regarding vitamin a supplementation in children below the age of five years old in ugu district, Kwazulu-Natal."

Please note the following:

a) Please ensure that you adhere to all policies, procedures, protocols and guidelines of the Department of Health.

b) All the research conducted in MAL CHC must comply with government regulations relating to COVID-19. These include but are not limited to: regulations concerning the social distancing, the wearing of personal protective equipment and limitations on meetings and social distancing.

c) Please ensure that this office is informed before you commence with your research.

d) The Facility will not provide any resources for this research.

e) You will be expected to provide feedback on your findings to MAL CHC

Thank you

_____

Mr. S.C. Ngcobo
Acting CEO
MAL CHC

Appendix 16: G.J Crookes PHC (Umdoni sub-district)

Umdoni Health Area Office

Physical Address: Wright Lane, Park Rynie, 4182
Postal Address: Private Bag X5501, Scottburgh,4180
Tel: 039 975 51100 Fax: 039 976 1690: sushiela.pillay@kznhealth.gov.za

Enquiries Mrs V Mhlamunye
Date: 15 Septemberber 2022

To: Miss Mazeka

Permission to conduct research on Knowledge, attitude and practices of caregivers regarding Vitamin A supplementation in children below five years old in Ugu District, KwaZulu- Natal.

Dear Miss Mazeka

I have the pleasure of informing you that permission has been granted to by Umdoni PHC (Sub-district) to conduct a research on Knowledge, attitude and practices of caregivers regarding Vitamin A supplementation in children below five years old in Ugu District, KwaZulu- Natal.

Please note the following:

a) Ensure that you adhere to all policies, procedures and guidelines of Department of Health
b) All research conducted under Umdoni PHCs Must comply with government regulations relating to COVID-19.
c) Please ensure that this office is informed before you commence with your research.
d) The facility will not provide any resources for this research.
e) You will be expected to provide feedback of your findings Umdoni PHC

We wish you all the best in your research and hopefully your study will benefit the District.

Thank you

Acting AMN PHC: Mrs Mhlamunye.

Appendix 17: Durban University of Technology Ethics clearance

Institutional Research Ethics Committee
Research and Postgraduate Support DDUT-IRECtorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

6 October 2022

Ms S N P Mazeka
P.O. Box 73
Shelly Beach
4265

Dear Ms Mazeka

Knowledge, attitude and practices of caregivers regarding Vitamin A supplementation for children below five years old in Ugu district, KwaZulu-Natal
Ethics Clearance Number: IREC 079/22

The Institutional Research Ethics Committee acknowledges receipt of your notification regarding the piloting of your data collection tool.

Kindly ensure that participants used for the pilot study are not part of the main study.

In addition, the DUT-IREC acknowledges receipt of your gatekeeper permission letters.

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 DUT-IREC according to the DUT-IREC SOP's.

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

Yours Sincerely

Prof J K Adam
Chairperson: DUT-IREC

Appendix 18: Sample size

	0		June	July	Aug	U/R		Head count for 3 months	Total across 3 months	Total across 1 month (June)			
kz Umzumbe Local Municipality	kz Assisi Clinic	PHC Headcount under 5 years	420	437	382	R		1239					
	kz Baphumile Clinic	PHC Headcount under 5 years	108	100	116	R		324					
	kz Gqayinyanga Clinic	PHC Headcount under 5 years	199	176	200	R		575					
	kz Khayelihle Clinic	PHC Headcount under 5 years	219	199	21	R		439					
	kz Mabheleni Clinic	PHC Headcount under 5 years	146	137	141	R		424					
	kz Mgayi Clinic	PHC Headcount under 5 years	231	274	172	R		677					
	kz Morrison's Post Clinic	PHC Headcount under 5 years	131	165	158	R		454					
	kz Ndelu Clinic	PHC Headcount under 5 years	199	162	191	R		552					
	kz Nhlalwane Clinic	PHC Headcount under 5 years	84	90	91	R		265					
	kz Ntimbankulu Clinic	PHC Headcount under 5 years	230	200	205	R		635					
	kz Phungashe Clinic	PHC Headcount under 5 years	352	361	383	R		1096					
	kz St Faith's Clinic	PHC Headcount under 5 years	256	239	246	R		741	7421	2575			max= 1239
kz Umuziwabantu Local Municipality	kz Elim Clinic	PHC Headcount under 5 years	686	712	641	R		2039					
	kz KwaJali Clinic	PHC Headcount under 5 years	475	477	519	R		1471					
	kz Mbonwa Clinic	PHC Headcount under 5 years	168	248	292	R		708					
	kz Mbotho Clinic	PHC Headcount under 5 years	144	190	200	R		534					
	kz Meadow Sweet Clinic	PHC Headcount under 5 years	163	182	201	R		546					
	kz Pisgah Clinic	PHC Headcount under 5 years	305	359	318	R		982					
	kz Santombe Clinic	PHC Headcount under 5 years	198	222	191	R		611					
	kz Weza Clinic	PHC Headcount under 5 years	91	110	141	R		342					
	kz Xhamini Clinic	PHC Headcount under 5 years	218	198	245	R		661	7894	2448			max= 2039
	kz Harding Clinic	PHC Headcount under 5 years	152	137	239	U		528					
	kz St Andrew's Gateway Clinic	PHC Headcount under 5 years	338	262	383	U		983	1511	490			max= 983
kz Umdoni Local Municipality	kz Dlangezwa Clinic	PHC Headcount under 5 years	154	141	153	R		448					
	kz Dududu Clinic	PHC Headcount under 5 years	414	418	430	R		1262					
	kz Mgangeni Clinic	PHC Headcount under 5 years	141	136	196	R		473					
	kz Philani Clinic	PHC Headcount under 5 years	215	210	162	R		587	2770	924			max= 1262
	kz GJ Crooke's Gateway Clinic	PHC Headcount under 5 years	327	330	374	U		1031					
	kz Pennington Clinic	PHC Headcount under 5 years	242	193	234	U		669					
	kz Scottburgh Clinic	PHC Headcount under 5 years	368	260	277	U		905					
	kz Umzinto Clinic	PHC Headcount under 5 years	1175	1146	1256	U		3577	6182	2112			max= 3577
kz Ray Nkonyeni Local Municipality	kz Braemer Clinic	PHC Headcount under 5 years	118	142	136	R		396					
	kz Gcilima Clinic	PHC Headcount under 5 years	478	438	421	R		1337					
	kz Izingolweni Clinic	PHC Headcount under 5 years	670	765	704	R		2139					
	kz KwaMbunde Clinic	PHC Headcount under 5 years	772	747	811	R		2330					
	kz Ludimala Clinic	PHC Headcount under 5 years	135	115	119	R		369					
	kz Madlala Clinic	PHC Headcount under 5 years	168	191	179	R		538					
	kz Mthimude Clinic	PHC Headcount under 5 years	257	249	259	R		765					
	kz Mvutshini Clinic (Hibiscus Coast)	PHC Headcount under 5 years	148	120	111	R		379					
	kz Ntabeni Clinic	PHC Headcount under 5 years	519	557	557	R		1633					
	kz Thembalesizwe Clinic	PHC Headcount under 5 years	421	665	340	R		1426					
	kz Thonjeni Clinic	PHC Headcount under 5 years	65	80	92	R		237	11549	3751			max= 2330
	kz Bhobhoyi Clinic	PHC Headcount under 5 years	364	314	400	U		1078					
	kz Bhomela Clinic	PHC Headcount under 5 years	351	353	351	U		1055					
	kz Marburg Clinic	PHC Headcount under 5 years	483	431	529	U		1443					
	kz Margate Clinic	PHC Headcount under 5 years	788	783	887	U		2458					
	kz Port Edward Clinic	PHC Headcount under 5 years	495	490	463	U		1448					
	kz Port Shepstone Clinic	PHC Headcount under 5 years	468	443	449	U		1360					
	kz Port Shepstone Gateway Clinic	PHC Headcount under 5 years	6	4	3	U		13					
	kz Shelly Beach Clinic	PHC Headcount under 5 years	145	142	140	U		427					
	kz Southport Clinic	PHC Headcount under 5 years	266	252	296	U		814					
	kz Umtentweni Clinic	PHC Headcount under 5 years	228	183	200	U		611	10707	3594			max= 2458
	Total		15894	15935	16205								

The clinics shaded red are those with the largest number of child patients.
On the basis of these numbers we will assume that the population of children at all these clinics is approximately 48000
This is assuming that they go to the clinic once every 3 months

Given this population, the sample size (total) needed for the caregivers is 381.
This assumes an alpha value of .05 and a margin of error of .05.
This sample needs to be broken down across the 4 municipalities and the type of clinic (R/U) as follows.

Assuming they go to the clinic once every 3 months

	Population		Total	Sample		Total
Municipality	Urban	Rural		Urban	Rural	
Umzumbe		7421	7421	22	36	59
Umuziwabantu	1511	7894	9405	28	46	75
Umdoni	6182	2770	8952	27	44	71
Ray Nkonyeni	10707	11549	22256	67	109	177
TOTAL	18400	29634	48034	145	236	381
Percentage	38	62		38	62	

On the basis of these numbers we will assume that the population of children at all these clinics is approximately 16000
This is assuming that they go to the clinic once a month

Given this population, the sample size (total) needed for the caregivers is 310.
This assumes an alpha value of .05 and a margin of error of .05.
This sample needs to be broken down across the 4 municipalities and the type of clinic (R/U) as follows.

Assuming they go to the clinic once a month

	Population		Total	Sample		Total
Municipality	Urban	Rural		Urban	Rural	
Umzumbe		2575	2575	19	31	50
Umuziwabantu	490	2448	2938	22	36	57
Umdoni	2112	924	3036	23	37	59
Ray Nkonyeni	3594	3751	7345	54	89	143
TOTAL	6196	9698	15894	118	192	310
Percentage	39	61		39	61	

Appendix 19: Statistician's sample size and data analysis letter

Gill Hendry B.Sc. (Hons), M.Sc. (Wits), PhD (UKZN)
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9 June 2023

Re: Assistance Statistical aspects of the study

Please be advised that I have assisted Sithabile Mazeka (Student number 20917902), who is currently studying for a Masters in Health Sciences at DUT, with the sampling, questionnaire alignment and statistical data analysis for her study.

Yours sincerely

Dr Gill Hendry
Private Consulting Statistician

Appendix 20: Editing certificate

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EDITING CERTIFICATE

Re: **Sithabile Noxolo Perseverance Mazeka**
Master's dissertation DUT: **KNOWLEDGE, ATTITUDE AND PRACTICES OF CAREGIVERS REGARDING VITAMIN A SUPPLEMENTATION IN CHILDREN BELOW FIVE YEARS OLD IN UGU DISTRICT**

I confirm that I have edited this dissertation and the references for clarity, language and layout. I returned the document to the author with track changes so correct implementation of the changes and clarifications requested in the text and references is the responsibility of the author. The intellectual content of the document is the responsibility of the author. I am a freelance editor specialising in proofreading and editing academic documents. My original tertiary degree which I obtained at the University of Cape Town was a B.A. with English as a major and I went on to complete an H.D.E. (P.G.) Sec. with English as my teaching subject. I was a part-time lecturer in the Department of Homoeopathy at the Durban University of Technology for 13 years and supervised many master's degree dissertations during that period.

Dr Richard Steele
27 June 2023
per email