Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa

By

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I, Timothy Ford, do declare that this dissertation is representative of my own work, both in conception and execution.

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DEDICATION

Even a 1 000 mile journey starts with a single step.

I dedicate this work
in loving memory to my beautiful mother, Janine, who inspired this work through her bravery in illness and ever constant love, patience and understanding;
to my father, Graham, who laid the foundations for my studies in health through his discipline, perseverance and love
and
to my brother, Robin, who always supported me through the trials and tribulations of my studies.

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ABSTRACT

Background: Considering the quadruple burden of disease and chronic shortages of health care professionals in South Africa, the stance of the chiropractic profession on public health (PH) matters has not been established. Therefore, this study aimed to determine the attitudes and perceptions of chiropractors practicing in South Africa on PH, health promotion (HP) and disease prevention (DP). The objectives were to determine demographic profile, lifestyle practices and attitudes and perceptions of practicing chiropractors in South Africa regarding PH agencies, HP and DP.

Methods: An IRB approved quantitative survey (electronic and postal) was used to collect data from a total sample of practicing chiropractors in South Africa (meeting inclusion criteria). Follow up email and telephone calls were made to encourage response from participants. After a 17 - week period, returned questionnaires were collected and data analysed.

Results: A response rate of 45% was obtained. Of the participants, 51.7% were female, 60.3% practiced in upper – middle income communities and 66.4% perceived themselves as neuro - musculoskeletal specialists. Over 90% of practitioners regularly counselled patients on postural habits, injury prevention and ergonomic risk reduction. Where as 35.1% agreed to counselling patients on STI / HIV prevention, tobacco cessation and related risks (41.4%), alcohol abuse (53.4%) and cancer prevention (56.9%). Regarding evidence – based practice (EBP) and PH agencies, 39.1% could not identify the statistical significance of the *p* value and 46% were unable to provide examples to journals they used to inform best practice. Similarly, 59% of the participants could not identify PH agencies to refer to for information on smoking cessation / risks or PH agencies to refer patients on HIV (57%), notifiable diseases (59%) and terminal illnesses (45%).

Conclusion: The results suggest that chiropractors from this study were proficient on topics of DP, but were reletively less proficient in regards to PH, HP and EBP. It was recommended that further research be done regarding EBP within the profession and that greater emphasis be placed on topics of HP and PH in chiropractic training programmes.

Key words: Surveys, health promotion, preventative health services, chiropractic, public

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ABBREVIATIONS

AHPCSA	Allied Health Professions Council of South Africa
APHA	American Public Health Association
CASA	Chiropractic Association of South Africa
CDL	Chronic diseases of daily lifestyle
CNCDs	Chronic Non - Communicable Diseases
DALYs	Disability - adjusted life years
EBP	Evidence - Based Practice
HFA	Health For All
HIV	Human Immunodeficiency Virus
MC	Maintenance care
PHC	Primary Health Care
SADoH	South African Department of Health
STI	Sexually Transmitted Infection
WFC	World Federation of Chiropractic
WHO	World Health Organization

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DEFINITIONS

Attitude

Defined as “a settled opinion or way of thinking” (Allen, 1990:70).

Clinical health promotion

Health promotion that is applied in clinical settings (office, hospital, community setting) (Herbert, 1995).

Clinical prevention

Encompasses the provision of the following health services by health care practitioners in clinical practice: disease and risk factor screenings, health promotion and prevention counselling and immunization (Hawk *et al.,* 2004).

Communicable diseases

Diseases that may be acquired by transmission from one person to another (Friel, 1985).

Content validity

Defined as “the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose” (Haynes *et al.,* 1995: 238).

Chronic non - communicable diseases

Diseases (e.g. cancers, cardiovascular diseases and obstructive lung diseases) that are predominantly caused by preventable and modifiable risk factors (i.e. tobacco use, poor diets, hypercholesterolaemia, physical inactivity, alcohol abuse, high blood pressure etc.) (Puoane, 2008).

Disease prevention

According to the World Health Organisation (WHO), disease prevention incorporates measures taken to prevent the occurrence of disease (primary prevention), arrest existing disease (secondary prevention) and reduce complications of established disease (tertiary prevention) (World Health Organization Health Promotion Glossary, 1998).

Health Care Services

According to Kremer (2002:6), this refers to “an array of services that are performed by health care professionals or under their direction, for the purpose of promoting, maintaining, or restoring health. The term refers to all settings of care (such as hospitals, nursing homes, physicians' offices, intermediate care facilities, schools and / or homes).”

Health Education

According to Whitehead (2006:166), health education is “an activity that facilitates the professional assessment of an individual's health status against causal risk factors associated with lifestyle - related behaviour. Following this assessment, if health risk (preventative approach) or actual ill health or disability (medical approach) is determined, the health professional strives to educate and subsequently motivate the person (in a group context or otherwise) to engage in a behavioural-change process as a means for preventing, stabilising, or improving a negative health status.”

Health Promotion

Defined at the Ottawa Charter in 1986 as the “process of enabling people to increase control over, and improve their health”. In this context, health is defined as a “state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, where an individual or group must be able to identify and to realize aspirations, satisfy needs, and change or cope with the environment. Health is therefore seen as a resource for everyday life and not the objective of living. As a result, health is a positive concept, which emphasizes social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy lifestyles to well-being” (Milestones in health promotion, 2009:1).

Maintenance Care

According to Ernst (2009:99), maintenance care provided by chiropractors is “any management plan that seeks to prevent disease, prolong life, promote health and enhance the quality of life” .

Primary Health Care

Defined by the Institute of Medicine as “the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practising in the

context of family and community" (Duenas, 2002:155).

Public Health

Defined by the World Health Organisation (WHO) as "the science and art of promoting health, preventing disease, and prolonging life through the organized efforts of society" (World Health Organization Health Promotion Glossary, 1998:3).

Public Health Agency

According to Baird (2011:8), public health agencies are "how public health services are organized and delivered, an organizational resource." Further to this, Baird (2011) describes the three major types of public health agencies as quasi - governmental (hybrid category), governmental (public) and non - governmental (private).

CHAPTER ONE
INTRODUCTION

1.1 Introduction to the problem

In 1977, the Health For All (HFA) principles were proposed by the World Health Assembly (Basic Principles of Healthy Cities: Health for All, 2009). Extracts from these principles include the fact that health was no longer defined as merely the absence of disease but was also seen in a more holistic and positive sense, where well - being was emphasised.

In addition, the value of fairness in health distribution within and between countries was accented, which included but was not limited to, the named determinants of health (viz. economic, social, lifestyle and environmental factors). From the HFA principles, the Primary Health Care (PHC) approach emerged as the most practical, stressing timely, holistic, health promotion and preventative care, as opposed to costly curative medicine (Gilbert, 2004).

Further to this, the Alma - Ata Declaration, the WHO's first international conference on PHC reaffirmed that health was a fundamental human right and that the key to attaining HFA was through PHC (Basic Principles of Healthy Cities: Health for All, 2009). Building on the progress made at the Alma - Ata Declaration, the first international conference on health promotion, the Ottawa Charter for health promotion was held in 1986. The Ottawa Charter set out the actions needed to achieve HFA (Milestones in Health Promotion, 2009) and since 1986, has become the pre - eminent guide in the development of health promotion and public health practice (Nutbean, 2008).

In the South African context and in line with the WHO, communicable disease, non - communicable disease and violence, injuries and accidents (unnatural causes) were identified as the three distinct causes of illness / injury and death in South Africa (WHO country cooperation strategy 2008 - 2013 South Africa, 2009). This agrees with the 2004 burden of non - communicable diseases measured by the Disability - adjusted life years (DALYs) of the total burden of disease in South Africa, which was estimated by the WHO at 28%. These diseases were composed principally of cardiovascular diseases, respiratory diseases, diabetes mellitus and cancers which accounted for 12% of the overall burden of

disease (Mayosi *et al,,* 2009).

Notwithstanding the above data (WHO country cooperation strategy 2008 - 2013 South Africa, 2009 and Mayosi *et al.,* 2009), South Africa has given little recognition to the magnitude of the burden of Chronic diseases of daily lifestyle (CDL) and has placed little priority to prevent unhealthy lifestyles, early diagnosis and cost - effective management of CDL in relation to other groups of diseases (Tollman, 2008; Chopra, 2009; Samb, 2010).

The observations by Tollman (2008), Chopra (2009) and Samb (2010) are surprising as the national policy for health promotion in South Africa is based on the Ottawa Charter for Health, which promotes five key action areas, namely (Coulson, 2000):

- establish healthy public policy,
- create supportive environments for health,
- develop personal skills,
- strengthen community action for health, and
- re - orient health services.

Furthermore, the South African Department of Health (SADoH) concurs with the WHO's HFA objectives and principles by emphasising that comprehensive PHC is a means to meet the basic healthcare needs of the South African public. Further to this, the South African Government's Reconstruction and Development Programme stresses that healthcare, the environment and nutrition represent the most direct approaches to combating the nation's ill health (South Africa: The Department of Health's White Paper for the Transformation of the Health System in South Africa, 1997).

Perhaps one of the dilemmas facing the South African government, in light of the above incongruence's, is as Wills (2010) points out, that programmes and activities regarding health promotion in South African are expected to be planned and managed by healthcare professionals whose concepts of health do not stem from the current principles and theory of health promotion and where personal interests and professional barriers disrupt further development. In the Chiropractic context, Jamison (1995) found that Public and Health Portfolio committees have the tendency to perceive chiropractors as limited to neuro - musculoskeletal disorders. This assertion is supported by a number of studies exploring the relationships between chiropractors, the public and other healthcare professionals within the South African context; where it was found that the knowledge and perceptions of

chiropractors were poor and were ultimately perceived as limited to spinal care specialists (Louw, 2005; Kew, 2006; Talmage, 2007; Heslop, 2008; Maharaj, 2009). This lack of knowledge, therefore has limited chiropractors ability to participate appropriately in broader health promotion activities as seen by the public, policy makers, healthcare providers and other participants.

This contrasts with Pooley (1999), who indicates that chiropractors have the credentials to provide leadership in healthcare. This becomes especially true as health is increasingly been seen in a positive sense and a resource for everyday life as opposed to costly curative and reactive medical healthcare (Pooley, 1999 and Gilbert, 2004). Further to this, Egan (2006) highlights that chiropractors and public health practitioners share the same concept of health by understanding that health is not just the absence of disease and that individuals and communities be provided the means to reach their full health potential. In unison with public health practitioners, chiropractors share the same vision of health promotion and disease prevention by emphasising the use of greater numbers of resources to enhance health and prevent disease as opposed to costly curative medicine (Egan, 2006).

Thus, it is the responsibility of the chiropractic profession to better communicate what chiropractic can offer the public (Johnson, 2008), policy makers and the healthcare system (Hawk, 2005). Therefore, it is hoped that this research will provide better insight as to what chiropractors in South Africa do in private practice in respect to health promotion and disease prevention in public health, so as to better educate the public, policy makers and healthcare providers in South Africa.

1.2 Aim and objectives of the study

The ***aim*** of this study was to determine the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

The ***First objective*** of this study was to determine the demographic profile and lifestyle practises of chiropractors in South Africa.

The ***Second Objective*** was to determine the attitudes and perceptions of chiropractors on

the practice of health promotion and disease prevention.

The ***Third Objective*** was to determine the extent of utilisation of diagnostic screening tests by chiropractors for health promotion and disease prevention.

The ***Fourth Objective*** was to determine the knowledge and understanding of chiropractors of the role of selected public health agencies in health promotion and disease prevention in South Africa.

1.3 Rationale for this study

- As complementary and alternative medicine practitioners, it is important that chiropractors include health promotion and disease prevention as part of the clinical encounter as recommended by the WHO (Hawk *et al.,* 2012(a)). This is particularly important in that the role of chiropractic in providing orthodox preventive health services has increased due to growth in the utilization of alternative healthcare (Globe, 2005; Haigh, 1999). This increasing role of chiropractors in providing orthodox preventive health services warrants further investigation (Globe, 2005). However, no studies have demonstrated that chiropractors in South Africa incorporate health promotion and disease prevention in practice.

- Chronic shortages of healthcare professionals in the South African continue to hinder the healthcare objectives of the nation (Cullinan, 2006; Clarke, 2008; Beaglehole, 2008; Coovadia, 2009 and Mayosi, 2009). As chiropractors scope of practice strongly correlates with that of orthodox medicine (Cooper, 2001) and that they function as PHC practitioners in South Africa (Myburgh *et al.,* 2007), Cooper (2001) suggests that chiropractors could help to alleviate human resource shortages found in healthcare. This view is shared by Beaglehole (2008) and Smith (2002) who emphasised that non - physicians (i.e. chiropractors and other trained health professional other than medical practitioners) have a leading role to play in health promotion and the management of chronic disease where shortages in PHC doctors are rife.

1.4 Limitations of this study

For the purpose of this study, participants completing the research questionnaire (Appendix B) were assumed and requested by the researcher to have answered all questions honestly and openly so as to reflect their attitudes and perceptions accurately on health promotion and disease prevention in practice.

1.5 Outline of Chapters

The aim of this study was to determine the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa. The preceding Chapter highlighted the necessity for this study and presented the aims and objectives and limitations of this study. Chapter Two of this study will discuss the related literature and Chapter Three the research methodology. Chapter Four presents the results and discussion of the results. Chapter Five concludes the study and offers recommendations

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The aim of this chapter was to present the relevant literature on the practice of public health by chiropractors in South Africa. This review of literature links the current practises of health promotion and disease prevention as pertains to the sphere of public health; as well as research that addresses health promotion and disease prevention within the chiropractic profession and the literature defining public healthcare in South Africa.

The epidemiological transition theory first proposed by Omran (2001) explains that over time with increased urbanisation and the adoption of western standards of living there is a shift in health and disease patterns (e.g. shift from a period where infectious diseases predominate to that where chronic non - communicable diseases (CNCDs) predominate). This altered state of health and disease requires that health systems change and adapt to meet new challenges as lifestyle factors become the dominant cause of morbidity and mortality globally (Omran, 2001). CNCDs are now the leading causes of morbidity and mortality globally and are accountable for 60% of deaths worldwide with 80% occurring in low and middle - income countries (Unwin, 2006 and Alwan, 2009).

In light of the above - mentioned, public health has changed its focus and priorities from communicable diseases and costly curative medicine to that of health promotion and disease prevention (Daar, 2007). In response to the changing healthcare environment where health promotion and disease prevention are being emphasised (Brown, 2009), the international literature suggests a strong push by the chiropractic profession in establishing itself as key players in public health based on its strong foundations in health and wellness (Gatterman, 2006 (a)(b); Mootz *et al.,* 2006 and Hawk *et al.,* 2012 (a)); increased public health coursework in chiropractic training programmes (Blum, 2008) and various studies indicating that chiropractors provide health promotion and disease prevention services as part of the clinical encounter with patients (Vear, 1992; Rupert *et al.,* 2000; Kent, 2002; Gatterman, 2006 (a); Blum, 2008; Ivie, 2011 and Hawk *et al.,* 2012(a)).

In order to leave the realm of a marginalised profession and become part of the public health movement (Hill, 2003), Hawk (2005) suggests that chiropractors perform the following three actions:

- Educate themselves on national health promotion and disease prevention initiatives, priorities and resources.
- Provide patients with evidence-based health behaviour counselling.
- Engage in community orientated activities and with public health agencies.

Chiropractors who are situated at the primary contact level in the healthcare system (Myburgh *et al.,* 2007) are in a favourable position to actively embrace important public healthcare initiatives (Byfield, 2010). Participation in health promotion and public health endeavours provide chiropractors the opportunity to work in conjunction with other health agencies and professionals and provide patients with information and strategies to combat long-standing problems such as determinants of health and the consequences these determinants have on health overall (Byfield, 2010).

2.2 Disease prevention and health promotion

According to Tengland (2010), disease prevention emanates from the medical model, taking a reductionistic approach, with strategies focused predominantly on specific diseases (e.g. diagnostic screening, vaccination / immunisation and counselling).

This is consistent with the WHO, who differentiates disease prevention from health promotion as being implemented by the healthcare sector in dealing with at risk individuals/ populations and associated behavioural risk factors (World Health Organization Health Promotion Glossary, 1998). In this context, disease prevention is seen differently to health promotion in that disease prevention is provided at the individual level (e.g. doctor - patient), providing clinical preventive services e.g. health risk factors, disease screening tests, counselling in disease prevention and health promotion and immunization (Hawk *et al.,* 2004; Johnson, 2008 and Fielding, 2010).

In this context, disease prevention can be broken down into 3 levels, namely (Baird, 2011):

- Primary prevention: measures that are taken to prevent the initial onset of disease,
- Secondary prevention: measures taken to prevent the progression of disease or injury through early diagnosis and prompt intervention,
- Tertiary prevention: measures taken to prevent permanent complications and / or disability from disease or injury.

Health promotion on the other hand, is both social and political, whereby in conjunction to empowering people to take control of their health, it also acts to change and lessen the impact of the social, environmental and economic factors that influence individual and public health (World Health Organization Health Promotion Glossary, 1998). According to Hill (2005), health promotion includes disease prevention and the promotion of health positively through education and healthy public policy.

Historically, health promotion and prevention services provided by chiropractors have been referred to as maintenance care (Rupert, 2000). Similarly, wellness care provided by chiropractors is often interpreted as maintenance care (Hawk *et al.,* 2012(b)). However, maintenance care as interpreted by conventional medical circles (e.g. health insurance companies) differs from that proposed by chiropractors (Hawk *et al.,* 2012(b)). Following the chiropractic professions consensus on terminology for stages of care (Painter, 2010) and confusion with mainstream healthcare, the term maintenance care shall be replaced with wellness care (Hawk *et al.,* 2012(b)). Furthermore, as wellness care provided by chiropractors is synonymous with health promotion and disease prevention (Hawk, 2004) and in keeping with the South African health system (Coulson, 2002 and Onya, 2007), public healthcare (Smith, 2001) and the WHO (World Health Organization Health Promotion Glossary, 1998; South African declaration on the prevention and control of non - communicable diseases, 2011 and World Health Organization country cooperation strategy 2008 - 2013 South Africa, 2009) the terms health promotion and disease prevention are used in this study.

2.3 Perception

Perception is the process whereby an individual interprets stimuli received by the senses into meaningful experiences from past knowledge and understanding of the world around them (Myers, 1996). Thus, perception is a social process by which people understand themselves and their surroundings (Maund, 1999). Goldman (1981), describes perception as that which is functionally influenced by the acquaintance with, or expectation of the subject derived from past experiences, motivation and the co - ordination of visual perception into purposive activity involving different sense modalities. In certain instances, the perception of an individual's circumstance dictates their behaviour towards that circumstance even though an individual's perception may be distinctly different from the reality of that circumstance (Hayes, 1994; Maund, 1999 and Atkinson *et al.,* 2000).

Furthermore, individuals select certain aspects of the environment while ignoring others due to attention focused on certain stimuli (i.e. visual, auditory, olfactory). In this way, the individual is able to focus and gain maximum information on a particular object by reducing interference from other irrelevant sensory stimuli (Bergh and Theron, 1999). Against this backdrop of the environment and how it is perceived, as determined by our senses (Myers, 1996) over time (Goldman, 1981), is the influence of stages in human development that bring new ideas, thinking, values and meaning about the world, resulting in altered perceptions (Lundy, 2010).

Perception is essential as public health requires outreach to the public, policy makers, healthcare providers and other participants. It is the responsibility of the chiropractic profession to better communicate on what chiropractic can offer the public (Johnson, 2008).

The factors influencing perception of health promotion and disease prevention are contextualised in the Neiss Classification suggested by Bergh and Theron (1999) in Table 2.1

Table 2.1 : Factors influencing perception of health promotion and disease prevention adapted from the Neiss Classification by Bergh and Theron (1999).	
Factors related to the object that is being perceived: (i.e. factors influencing health promotion and disease prevention). . Health risk factors / determinants of health . Health counselling / education . Diagnostic screenings . Immunisations . Evidence - based practice	Factors in the environment: (in the context of this research, these are factors that could influence or modify the object (i.e. Health promotion and disease prevention) . Health system . Policy . Public health
The individual factors: (i.e. factors that influence chiropractors views of health promotion and disease prevention. . Attitudes and values . Experience and familiarity . Knowledge and learning	

2.3.1 Health risk factors / Determinants of health

The WHO defines risk factors for health as “Social, economic or biological status, behaviours or environments which are associated with or cause increased susceptibility to a specific disease, ill health, or injury” (World Health Organization Health Promotion Glossary, 1998). According to Johnson (2009), the many risk factors that effect health and disease are explained by the determinants of health model. The determinants of health described by Johnson (2009) that require consideration before implementing effective intervention towards disease prevention (Kapustin, 2010) include (Johnson, 2009):

- Personal characteristics (e.g. age, gender and genetics),
- Socio-economic status (e.g. poverty),
- Access to healthcare resources,
- Home and work environment,
- Education,
- Maternal and child health,
- Social and family structures,
- Culture and ethnicity and
- Religious / spiritual influences.

Similarly, the World Health Report (2002) identified unsafe sex, malnutrition, tobacco and alcohol consumption, iron deficiency, high cholesterol, obesity, indoor smoke from solid fuels and unsafe water, sanitation and hygiene as the top global risk factors. Collectively, the above mentioned risk factors have been responsible for greater than one - third of all deaths globally (World Health Report, 2002).

In the South African context, Puoane (2008) identifies the following major risk factors and their related deaths (ranked from highest to lowest with related mortality rates in brackets):

- Unsafe sex / STI (26.3%).
- Hypertension (9.0%).
- Cigarette smoking (8.5%).
- Alcohol (7.1%).
- Overweight / high Body mass index (BMI) (7.0%).
- Violence (6.7%).
- hypercholesterolaemia (4.6%).
- Diabetes (4.3%).
- Physical inactivity (3.3%).
- Low dietary fruit and vegetable consumption (3.2%).

2.3.2 Disease screenings

Screenings are routine procedures carried out by healthcare professionals to assess the disease risk in patients e.g. smoking history (Baird, 2011) or to discover whether a person has an asymptomatic disease in the attempt for early treatment and the prevention of future complications (Tengland, 2010). Chiropractors, as primary healthcare professionals (Chapman - Smith, 1996 and Myburgh et al., 2007), are legally obliged within most jurisdictions to reach a diagnosis (Chapman - Smith, 1996; Allied Health Professions Council of South Africa (AHPCSA), 2012 and Christensen, 2005). Further to this, diagnostic screenings should be based on current scientific literature (Dagenais and Haldeman, 2012), be shown to be effectively used for disease prevention and health promotion and either be performed or referred appropriately by practising chiropractors (Hawk *et al.,* 2012(b)).

In an article 'Chiropractic and the new taxonomy of primary care activities', Gaumer *et al.,* (2001) comments that there is resistance by many chiropractors to preventative services that work and that chiropractors should increase there diagnostic screening services (in house biopsies and pap smears) to further their credibility and effectiveness to the public.

According to Hawk *et al.,* (2012(b)) and Christensen (2005), chiropractors should be familiar with the following selected U.S. Preventive Services Task Force (USPSTF) recommendations for screening:

- Abdominal aortic aneurysm in men 67 - 75 with smoking history,
- Alcohol screening,
- Anaemia,
- Blood sugar screening (type 2 diabetes),
- Cancer screening (breast and cervical),
- Cigarette smoking,
- Depression,
- High Blood pressure screening,
- Hearing and visual loss,
- Obesity and
- STI screening.

In a retrospective study by Boisvert (2006), data was analysed over a 51 month period on laboratory tests accumulated from a chiropractic training clinic in Quebec, where the following eight most prevalent abnormalities were identified (in descending order) (percentages : cases):

- Hyperlipidaemia (high blood cholesterol) (63.77%) (431),
- Thyroid dysfunction (6.22%) (42),
- Anemia (4.74%) (32),
- Systemic arthritis (2.59%) (18),
- Diabetes (Hyperglycemia) (2.52%) (17),
- Renal disease (2.22%) (15),
- Infections (2.05%) (14),
- Abnormal liver tests (1.94%) (13).

2.3.3 Counselling / Education

Despite the various different yet overlapping definitions between the terms counselling and education there is agreement that both patient education and patient counselling require some form of active engagement that assists patients to take an active role in their health care (Herbert, 1995). According to Whitehead (2006), health education can be considered as a strategy within broader health promotion. Following assessment, and on detection of risk factors and / or disease, the health professional aims to motivate (by education) the patient to change their behaviour (Whitehead, 2006). Typically, counselling aims to change bad habits and modify the patient's behaviour against unhealthy lifestyles practises (Baird, 2011).

In her study on health information and promotion in chiropractic clinics, Jamison (2002) found that in addition to counselling patients directly during the clinic encounter, chiropractors utilised group education classes, information brochures and personalized health contracts to educate patients and motivate healthy behaviour change. In addition to keeping current, with local and international public health priorities, chiropractors should council patients (directly or by referral) with identified risk factors, following screening on the following (Hawk *et al.,* 2012(b)):

- diet and weight management,
- immunisation / vaccination,
- physical activity and
- tobacco cessation and related risks.

In a study by Kahn (2002), three categories of interventions to improve physical behaviour activities in communities were developed. They included information - based determinants (providing information), behavioural and social determinants (behavioural management skills and social environments that enhance and facilitate behavioural change) and environmental and policy determinants (resources and facilities).

2.3.4 Immunisation / Vaccinations

Immunization as a major preventive procedure in public health has chiropractors debating from full acceptance to extreme rejection (Khorsan, 2009). Although not within the scope of practice of the profession (Hawk *et al.,* 2012(b)), it is the responsibility of chiropractors as professional healthcare providers to provide accurate and unbiased information on vaccinations based on current scientific evidence (Khorsan, 2009). In Hawk *et al's.,* (2004) study on the investigation of chiropractors' perceptions on clinical disease prevention, 62% of chiropractors agreed that both negative and positive aspects of immunisations should be given to patients.

2.3.5 Evidence - based practice

The use of evidence - based practice (EBP) by the chiropractic profession is two tiered due to segmentation within the profession viz. the vitalistic straights verses the positivist mixers (Villanueva – Russell, 2005 and Shield, 2005). There have been some attempts through case and clinical studies to determine the effectiveness of chiropractic wellness care with some showing the possibility of spinal manipulation being used successfully as a preventive strategy (Descarreaux, 2004; Schuster, 2004; Wenban, 2005; Hawk, 2009 and Passmore, 2012). Taking the above into account, there is however insufficient evidence to support the use of spinal manipulation on asymptomatic patients for the prevention of future disease (Hawk *et al.,* 2012(b)).

Furthermore, Rose (2000) and Fernandez (2004) propose that evidence - based principles in chiropractic training institutions have not been implemented. Similarly, Meeker (2007), asserts that the chiropractic culture does not provide sufficient encouragement towards scientific approaches and EBP in chiropractic training institutions. This can be evidenced by a recent study by Banzai *et al.,* (2011) who investigated the attitudes of chiropractic students internationally which indicated that further education in research concepts was warranted and that students generally felt they required further training in EBP. These results are of concern, as the use of best evidence in guiding clinical practice lends itself to the development of quality health services and is a major component of clinical and economic policy internationally (Gerrish, 2006). Furthermore, in health promotion, the

correct use of evidence strongly depends on the cultural and social structures within communities and not just on the production and utilization of evidence (Juneau *et al.,* 2011).

In the South African context, chiropractic students are required to complete a masters dissertation as part of their degree, thus learning research and EBP concepts (Chiropractic and Somatology Handbook, 2013).

The three basic principles of EBP that should be followed by all health professionals including chiropractors in any patient management include, research based on the most current and accepted scientific health literature, clinical experience and patient preferences (Hawk *et al.,* 2012(b)). Under any given clinical scenario, a clinician must be competent in finding, interpreting and providing care based on the most current and acceptable scientific evidence (Johnston, 2003).

Juneau *et al.,* (2011) reviewed 26 case studies, based on the learned experiences on the utilisation and adaptation of evidence in health promotion practice and identified eight key characteristics that determine the use of evidence in health promotion practice. These include:

- Communication from the beginning with all stakeholders.
- Communication that corresponds to institutional (political or private) readiness.
- Cognizance and acceptance of gaps between evidence and practice, advocacy and available resources.
- Evidence that is ethnically and locally relevant.
- Empowerment of communities to take care of themselves through active participation and decision making.
- Partnerships with academia.

Despite the fact that EBP is widely accepted, research shows a similarity in the barriers that influence the uptake of EBP between chiropractors and other healthcare professionals. Common barriers include the misinterpretation of research terminology, busy time schedules, limited access to research studies and the implementation of research with limited effectiveness when applied to clinical practice (Hall, 2011).

2.4 Factors in the environment

2.4.1 The health system and public health

The concept of public health is both social and political (World Health Organization Health Promotion Glossary, 1998). Through health promotion, disease prevention and other alternative interventions, public health aims to prolong life and improve health and quality of life (World Health Organization Health Promotion Glossary, 1998). Both public health and healthcare aim to improve health and confront the same health challenges (i.e. injury and disease). Although, public health has been marginalised by healthcare, it forms an important part within the greater construct of the healthcare system (Bloland *et al.,* 2012). Before continuing any further, the relationship between healthcare and healthcare systems from that of public health is warranted.

According to the WHO, health systems consists of individuals, institutions and resources organised within the confines of constituted policies to improve the health of individuals and communities, with the primary intent of promoting, restoring and conserving health (World Health Organization Health Promotion Glossary, 1998). This includes all efforts that address the determinants of health in addition to activities of disease treatment and disease prevention (Bloland, 2012). For healthcare systems to meet the needs of all people, both healthcare (at the individual level providing disease prevention, diagnostic screening, disease prevention, rehabilitative, therapeutic and palliative services) and public healthcare (at the population level, providing health promotion and disease prevention services) services are needed (Breton, 2010). Although healthcare and public health have separate identities, conceptually they are two parts of a single integrated healthcare system (Hardcastle, 2011).

The WHO's document on health system strengthening draws on the values and principles of the Alma - Ata Declaration and the primary health care (PHC) Approach to health, namely: Equity, universal access, multi-sectoral action, public participation, health promotion and better use of technologies. However, one of the problems that arose from this approach was that the PHC Approach was aimed at the public sector with little consideration for private providers that serve as first point of contact for upper, middle and lower income groups (World Health Organization, 2007). Integration between public health

and healthcare is being advocated as health services now have both curative and preventive roles to perform (St - Pierre, 2006).

Furthermore, through coordinated care amongst health disciplines, healthcare outcomes are improved (Shortell, 2004). Similarly, Hardcastle's (2011) article describing the importance of integration of healthcare with public health as the impact of health promotion and disease prevention on health status far exceeds that of healthcare services. In short, health system strengthening is involves everyone, where both public and private providers are the responsibility of an appropriately functioning health system (World Health Organisation, 2007).

Careful attention to the state of knowledge of chiropractors in the field of public health is necessary as inadequacies in such knowledge may negatively influence contribution and functioning in public healthcare systems (Hawk *et al.,* 2004). In order to provide adequate prevention, health promotion screening and counselling procedures, both complementary and alternative healthcare providers must become conversant in the full range of health care approaches, have a wide range of knowledge and have mutual respect amongst each other (Hawk *et al.,* 2004). According to Stacey *et al.,* (2002) “the challenge and opportunity facing chiropractors is to consider how they as individual practitioners and a professional group can engage more fully in public health promotion”.

In the South African context, the National Health Insurance (NHI) policy has been on governments agenda since 1994 and under MEC Mkhize will be implemented within the next five years. The NHI has been created to correct the imbalances to healthcare access, attain better health outcomes and to provide healthcare for all South Africans. Chiropractic has been incorporated into the National Department of Health comprehensive package of services that will be covered by the proposed NHI (Masuku, 2009).

The Department of Healths, White Paper for the Transformation of the Health System in South Africa (1997), stresses the importance of private health practitioner integration into the public health sector of South Africa. Due to historical marginalization and focus on the individual (patient centred practice), chiropractors have been considered separate from the public health community. However, with increased involvement in public health activities,

focus on disease prevention and health promotion for the community (population health), chiropractors may be more accepted by the public and public health community (Johnson, 2009). In light of the above, the population health approach to chronic or musculoskeletal disorders by the chiropractic profession is in its infancy (Johnson, 2009).

2.4.2 Public health agencies

According to Baird (2011), public health services are organised and delivered by governmental, non - governmental (private) and quasi - governmental agencies. Through public health agencies, policies are developed that protect the health of communities (Hawk, 2005). Government and non - government agencies are classified according to the demographic areas or constituencies they operate (i.e. International, National, State or local) (Baird, 2011). In South Africa, health promotion activities are provided by governmental organisations, non - governmental organisations (NGOs) and the private sector (Coulsen, 2002).

According to Baird (2011), a good example of the engagement of the chiropractic profession with public health agencies can be seen by chiropractic participation in the American Public Health Association (APHA). In 1995, the Chiropractic Health Care Section (CHC) in the APHA was instituted (Baird, 2011). The mission of the CHC was to promote multi - sectoral collaboration, defend the inclusion of chiropractic care in public health, contribute to the APHA in advancing public health policy and to advance chiropractic participation in public health, APHA and the CHC section (Baird, 2011). The following is a list of public health agencies in South Africa with which chiropractors should be familiar:

- Child welfare
- Cancer Association of South Africa
- Heart and Stroke Foundation of South Africa
- National Council Against Smoking
- Oxfam International
- Public Health Association of South Africa
- South African Department of Health
- World Health Organisation

2.4.3 Public health surveillance / epidemiology

Public health surveillance is a major function of public health, that provides epidemiological data that can be used to develop good health policies, so that human and financial resources within the health system can be optimally utilized (Bloland, 2012). Passive surveillance is used when healthcare practitioners notify public health authorities of a notifiable disease through diagnosis in clinical practice. The onus is on the healthcare professional who is the first point of contact to a patient who presents with a notifiable disease to notify the District Health Office (Weber, 2007).

2.4.4 Policy

The national policy for health promotion in South Africa is based on the Ottawa Charter for health promotion (Coulson, 2000 and Onya 2007). Public policies, according to Halpin *et al.,* (2010), work at the level of society whereby government interventions influence the work and living environment as well as individual behaviours. Therefore, health promotion policies (e.g. through legislation, taxation, organisational changes) aim to improve health through multi - sectoral action and co - operation (health sector and non - health sector) to provide clean and healthy environments, good health services and safe and healthy consumer goods and services (Milestones in Health Promotion, 2009).

Such policies however, do not seem to be implemented in South Africa where according to Chopra (2009), trade and economic policies by government seem to have widened economic inequalities and may have further separated society and negatively affected the nutritional health of the people of South Africa. Consistent with Chopra (2009), Dr Aaron Motsoaledi in his 2011 budget speech emphasised the desperate need to clampdown on trade and industry by introducing legislations targeting the advertising of cigarettes and alcohol in addition to the production and advertisement of unhealthy foods (Bateman, 2011).

In light of the shortfalls in public policies highlighted above, some of the policy actions according to Puoane *et al.,* (2008) that have been implemented in South Africa for the prevention of non - communicable diseases include:

- alcohol control,
- food - based dietary guidelines,
- sin tax and the
- tobacco control amendment act, 2008.

In 2004, the government in collaboration with the South African Department of Health (SADoH) mission statement for the National health system read: “To improve health status through the prevention and promotion of healthy lifestyles and to consistently improve the healthcare delivery system by focusing on access, equity, efficiency, quality and sustainability” (Strategic priorities for the National Health System 2004-2009).

2.5 The individual factors

2.5.1 Knowledge and learning

As doctors of chiropractic, chiropractors are required to meet high educational and competency standards to treat and prevent disease in patients in addition to meeting public health and welfare responsibilities (Christensen, 2010).

Internationally, the training and regulation of chiropractors varies between countries, however, the WHO has developed guidelines on chiropractic safe practise and education in response to the growth, demand and growing popularity of the profession (World Health Organization Guidelines on Basic Training and Safety in Chiropractic, 2005).

Chiropractic training in South Africa is based on chiropractic standards set out by the European Council on Chiropractic Education and other international bodies and institutions and encompasses 5 years of training with students graduating with a masters degree in chiropractic (CASA, 2010 – 2011 and Chiropractic and Somatology Handbook, 2013). Following graduation, chiropractors enter the healthcare system as primary healthcare practitioners within the private healthcare sector of South Africa (Myburgh *et al.,* 2007).

As primary healthcare physicians, the European Council on Chiropractic Education states that chiropractors are obligated to provide clinical assessments and diagnosis, health

promotion and patient management in accordance with the best interests of a patient's healthcare needs. Where indicated, the chiropractor consults, co-manages or refers to other healthcare practitioners (Cooper, 2001; Wickes, 2002; Meeker, 2002 and Baird, 2005).

However, despite such intensive training (Christensen, 2010), chiropractic education, in order to be accepted by its medical peers has placed too much emphasis on medical sciences, pathology and symptomatic management of diseases with little focus on health promotion and disease prevention viz. epidemiology, social sciences, health education and counselling (Hawk *et al.,* 2004). Furthermore, the public health curriculum task force revealed that public health education provided in chiropractic colleges was inadequate in terms of being too focused on public health topics that had little relevance to clinical chiropractic practice (e.g. microbiology, pasteurisation, sewage treatment) instead of the more relevant health promotion and disease prevention services (e.g. lifestyle counselling, disease screening) (Globe *et al.,* 2005). In light of the above and with the increased emphasis on health promotion and disease prevention in the healthcare arena, all chiropractic colleges were advised by the Council on Chiropractic Education as of 2007 to include health promotion as part of their academic calendar (Ivie, 2011).

Contrary to the Observations by Hawk (2004) and Globe *et al.,* (2005), disease prevention and health promotion viz. epidemiology, social sciences, health education and counselling have been a component of the curriculum in chiropractic training institutions in South Africa (Chiropractic Handbook, 2002).

2.5.2 Experience and familiarity

In Chiropractic Standards of Practice and Quality Care, Vear (1992) explains that counselling patients on risk factors is an important aspect in the scope of chiropractic practice by stating that “Counselling on diet, lifestyle, exercise, alcohol, tobacco, drugs and ergonomics forms the basis for this interaction with patients”.

According to Meeker (2002), the majority of people visit chiropractors for musculoskeletal complaints. However, studies have also found that a small proportion of the population visit

chiropractors for prevention, general health concerns and wellness (Meeker, 2002). Hawk *et al.,* (2012(a)) investigated the potential role of complementary and alternative healthcare providers on chronic disease prevention and health promotion and found that although the majority of patients sought chiropractic and osteopathic care for musculoskeletal complaints, 17.9% of the time they were for non – specific complaints. Furthermore, 44.6% of participants sought out chiropractic and osteopathic care for prevention and general well being (Hawk *et al.,* 2012(a)). Similarly, Kent (2002) found that there is growing evidence of chiropractors who provide wellness care that is cost - effective, offers better quality of life and changes in lifestyle behaviours. In a study by Blum (2008), exploring the extent that patients seek wellness care from chiropractors known to include evaluations and interventions to maintain wellness and prevent disease in their practices, greater than 40% were for health improvement and / or disease prevention (Blum, 2008).

These assertions are consistent with a study by Rupert *et al.,* (2000), who revealed that long term chiropractic care resulted in an improved perception of overall health status, improved state of mind and improved health habits (e.g. decreased tobacco and non - prescription drug use) in patients aged 65 years and older. Various dynamics in the doctor-patient relationship itself i.e. placebo effect, verification of patient complaints, increased likelihood of patient counselling and education are thought to be responsible for such benefits (Rupert *et al.,* 2000). Furthermore, Rupert (2000), in a study investigating the practice patterns and attitudes towards health promotion and disease prevention of United States (US) chiropractors, found that 79% of chiropractic patients were recommended maintenance care with an almost 50% compliance rate.

Jamison (2002) found, in her study on health information and promotion in chiropractic clinics that 97% of participants were willing to provide maintenance care (MC) to patients, with 85% believing adjustments / manipulation be included in MC as well as exercise (93%), dietary advice (81%), supplementation (48%) and tobacco, social drugs and alcohol adverse effect counselling and recommendations. In addition, 33% provided group education classes, 89% information brochures and 17% were prepared to provide patients with personalized health contracts.

Similarly, the 2005 Job Analysis of Chiropractic (Christensen *et al.,* 2005) obtained the following reflections from practising chiropractors in the US regarding health promotion and wellness:

- More than 90% chiropractors reported they routinely provide care that promotes healthy behaviour.
- Over 98% of chiropractors frequently advised 65% of their patients on general fitness and exercise promotion.
- 97% of chiropractors surveyed provided advice on posture and ergonomics to 70% of their patients.
- Over 90% of chiropractors surveyed counselled patients on nutrition with 52% of their patients receiving dietary recommendations.
- 97% of chiropractors counselled on changing health risk factors and unhealthy behaviours in 55% of their patients.
- 96% of chiropractors taught 60% of their patients self - care interventions.
- Recommendations to reduce stress were provided by 97% of participants to 50% of their patients.
- 91% of chiropractors advised 40% of all patients on disease prevention and early diagnostic screenings.

Descarreaux (2004) investigated the potential benefits of preventive chiropractic spinal manipulation in the reduction of overall pain disability levels associated with non - specific chronic lower back pain. Results indicated reduced lower back pain and disability scores in the experimental group receiving maintenance spinal manipulation every three weeks in a nine month follow up period compared to the control group receiving only the one month period consisting of 12 treatments. Furthermore, functional capacities were better maintained and painful episodes were less intense and occurred less frequent in the experimental group receiving both the intensive 12 treatment in one month with the 9 month MC period compared to the control receiving only the 1 month, 12 treatment plan (Descarreaux, 2004).

In a study by Hawk *et al.,* (2004), 90% of practising chiropractors agreed to providing information on injury prevention but with comparatively fewer agreeing to acquiring information on behaviour related to injury prevention.

A survey by Ivie (2011) on Alabama chiropractors in the US, found that although many chiropractors recommended screenings and procedures in health promotion, they were not performed routinely even though the majority of practitioners agreed that public health measures form part of private practice.

Taking into account the SADoHs commitment to HFA and embrace of the primary health care model in achieving HFA, Stainsby (2011) proposes that as primary healthcare physicians, chiropractors have an important role to play in preventative healthcare issues by providing appropriate and timely lifestyle management strategies.

2.5.3 Attitudes and values

Hawk *et al.,* (2004), investigated the attitudes of students, public health faculty and practitioners on clinical preventive services and found over-all positive attitudes, in particular those related to physical activity and diet. Similarly, Ivie (2011) found that 98% of Alabama chiropractors agreed that chiropractors be advocates of prevention, with 90% willing to continue with further education in prevention if given the opportunity and 80% supporting an increase in prevention courses in chiropractic colleges.

According to Meeker (2002), the chiropractic profession is divided on issues of professional identity. Both internally and externally the debate as to whether complementary or alternative, primary care practitioner, limited medical practitioner or medical specialist continues in light of an ever changing healthcare industry.

According to Jacobsen (2005), differences between younger and older medical practitioner's attitudes and practices on disease prevention could be due to the increased emphasis on health and healthy lifestyles in medical training in addition to completing more up to date training. From a different perspective, Myburgh *et al.,* (2007) indicates that practitioners who have been in practice for a long time develop views and beliefs related to practice that are separate from those learned in training institutions.

According to Cameron (2004), preventative efforts are most successful when provided by healthcare professionals who practise healthy behaviours themselves. Furthermore,

primary care practitioners show an increased likelihood to supervise and change unhealthy behaviours in comparison to specialists and physicians who lead unhealthy lifestyles (Cameron, 2004).

Hawk *et al.,* (2004) found that chiropractors with a master's degree or PhD were more likely to counsel patients on topics of disease prevention and wellness. According to Leboeuf -Yde (2008), the institutions of chiropractic education, whether university based or traditional chiropractic colleges affects the beliefs of chiropractors regarding health promotion and disease prevention.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

The aim of this chapter is to explain the methodology, the process of data collection and the process of statistical analysis utilized in this study.

3.2 The Research Design

The design of this research study was a quantitative, cross sectional descriptive survey. The questionnaire was developed from the literature and within the context of the South African environment as prescribed by the researcher, an expert group (Hawk *et al.,* 2004) and piloting of the questionnaire (Iarossi, 2006 and Thabane, 2010). In addition, particular reference was made to the previously used questionnaire by Ivie (2011) for which permission was obtained to utilise the questionnaire (Appendix A2).

The final questionnaire (Appendix C3) was then distributed by email and post to chiropractors practising in South Africa.

This study was approved as a questionnaire based study on the 27 June 2012 by the Durban University of Technology Institutional Research and Ethics Committee (REC 35/12) (Appendix E), indicating that this study complied with the requirements of the Declarations of Helsinki, Nuremburg and Belmont, 1975 (Johnson, 2005).

3.3 Advertising

Participants of the online questionnaire received a pre - contact email (Appendix B2) that informed them of the purpose and significance of the study and provided them with a link to access the online questionnaire. In addition, and for security reasons a pre - contact postal information letter (Appendix B1) containing a unique access code to access the online questionnaire was sent to all participants of the online questionnaire. The pre - contact postal information letter was structured identically to the pre - contact email with

the exception of the unique access code to gain access to the online questionnaire.

Participants of the paper / printed questionnaire received the postal information letter (Appendix B3) inviting them to participate in this study. The postal information letter was structured identically to the pre - contact email with the exception of information pertaining to accessing the online questionnaire and information pertaining to informed consent.

3.4 Sample

3.4.1 Methodology

A total sample of practising and resident chiropractors was used in this study (Conducting survey research, 1999).

Participants receiving the online questionnaire were determined from their email addresses being present and active on the Allied Health Professions Council of South Africa (AHPCSA) list of registered chiropractors (Terry, 2012). Participants of the online questionnaire were then sent the pre - contact postal information letter, providing them with instructions on how to access the online questionnaire and information pertaining to informed consent, followed by the pre - contact email containing the link to the online questionnaire.

Those participants found not to have an active email address on the list of registered chiropractors with the AHPCSA were provided with a paper / printed version of the questionnaire, accompanied with the postal information letter and return address envelope.

3.4.2 Size

The total number of chiropractors registered with the AHPCSA on the 6th February 2012 was 616 (Terry, 2012). Following the exclusion of those chiropractors participating in the approval of the research, the expert group and pilot study and those who did not meet the inclusion criteria for the main study, a sample size of 449 chiropractors were considered eligible to participate in this study.

A minimum response rate of 40% was considered adequate for this study (180 participants). Failure to meet the minimum response rate after the eight week data collection time period resulted in a two week extension. All non - participants with the exception of those that checked the 'opt out' check - box on the pre - contact email were informed by the researcher of the two week extension telephonically.

3.4.3 Allocation

Participants were not allocated into groups as this study involved the entire population group and not the comparison between groups, although subgroup analysis was performed at the data analysis stage of the research process.

3.4.4 Characteristics

All participants receiving the online questionnaire and who met the inclusion criteria for the main study were invited by an email and postal letter (pre – contact postal information letter) to participate in this study. Upon willingness to complete the questionnaire the participants were directed to the questionnaire website link which was provided on the pre - contact email. Participants of the online questionnaire were recruited by email addresses being present and active on the AHPCSA register (Terry, 2012).

All participants who met the inclusion criteria for the main study and who received the paper / printed questionnaire were invited by postal letter to participate in this study.

3.4.4.1 Sample Characteristics: Main study

Participants were required to meet the following inclusion / exclusion criteria to participate in this study:

3.4.4.2 Inclusion criteria:

a) Only Chiropractors practising (full - time or part - time) in South Africa were considered for this study, as this was the population to be investigated.
b) Only chiropractors registered with the AHPCSA were considered for this study.

3.4.4.3 Exclusion criteria:

a) Participants in the pilot study and focus group were excluded from the main study. This was because their previous experience / involvement may influence their future answers (van Teijlingen, 2001). Furthermore, various personnel involved in the approval of this research were not qualified chiropractors and were therefore exempt from participation in the main study.

b) Non - residents of the Republic of South Africa were excluded from this study as chiropractors practising overseas are not subject to issues akin to chiropractors practising in the South African environment (Myburgh *et al.,* 2007).

c) Non - chiropractors were excluded from this study.

d) Non – practicing chiropractors were excluded from this study.

3.4.4.4 Sample characteristics: Expert group

Members of the expert group were required to meet the following inclusion / exclusion criteria:

3.4.4.5 Inclusion criteria:

a) A lecturer from the Community Health Studies Department at the Durban University of Technology.

b) A lecturer from the University of KwaZulu - Natal Department of Public Health Medicine (School of Family and Public Health).

c) A practising chiropractor on the board of the Chiropractic Association of South Africa.

d) Two Chiropractors practising in Durban.

e) A homoeopath practising in Durban.

f) A nursing practitioner.

g) The research supervisor.

h) The researcher.

3.4.4.6 Exclusion criteria:

a) All participants in the expert group who are not South African residents were excluded from the expert group.
b) All participants in the expert group that had less than five years experience within their respective fields of work were excluded from the expert group.

3.4.4.7 Sample characteristics: Pilot study

The inclusion / exclusion criteria pertaining to the main study were met in order to participate in the pilot study.

3.5 Research procedure

Permission to conduct this research study on chiropractors' perceptions and attitudes was obtained from the Chiropractic Association of South Africa (Appendix A1).

Participants of the online questionnaire were recruited by their email addresses being active and present on the AHPCSA register. Following this all participants of the online questionnaire were sent the pre - contact postal information letter (Appendix B1) and the pre - contact email (Appendix B2). The pre - contact postal information letter contained a unique access code to ensure that only participants who met the inclusion criteria accessed the online questionnaire.

The pre - contact email provided participants with information pertaining to the research study, a link to access the online questionnaire and information explaining the criteria for participation. In addition the pre - contact email contained an “opt out” option for those participants who did not wish to participate in the study.

Informed consent from participants of the online questionnaire was acknowledged by accessing the link to gain access to the questionnaire on the pre - contact email, ticking the 'acknowledgement of informed consent check box' on the first page of the online questionnaire and by hand signature on the pre - contact postal information letter.

Confirmation that participants received the pre - contact email with the link to the online

questionnaire in their email inbox was established by a telephonic call made by the researcher three days after the pre - contact email was sent out.

Participants who did not have an active email address on the AHPCSA list of registered chiropractors were sent a paper / printed version of the online questionnaire together with the postal information letter (Appendix B3). Participants' postal addresses were obtained from the AHPCSA (Terry, 2012). Following this, each participant was sent the postal information letter and paper / printed questionnaire in an envelope individually addressed by hand with returned postage provided. The postal information letter provided the participant with a letter of information about the purpose and significance of the study and an informed consent form which they were requested to complete and sign.

The pre - contact postal information letter, postal information letter and paper / printed questionnaires were posted one week in advance to the pre - contact email and online questionnaire.

An eight week time period was given to participants to complete / submit the online questionnaire and paper / printed questionnaire. Non - participants of the online questionnaire were sent an email reminder at four weeks and a 'nudge' call telephonically at six weeks by the researcher. Non - participants of the paper / postal questionnaire received a 'nudge' call telephonically at four and six weeks respectively. The questionnaire was closed for participation after the eight week time period.

All obtained data was saved in an email collector set up by the internet website and accessed by a code made available to the researcher only. In this way privacy of information from participants stored on the Website was maintained (viz. confidentiality and anonymity of responses was maintained).

The internet website saved the email addresses of participants in order to prevent multiple responses from participants who had responded and received the email reminder at four weeks. Anonymity of participants was maintained by the email addresses not being linked to the submitted questionnaires. This was achieved by selecting “not to save the email addresses to the responses” in the email invitation collector 'Survey Monkey'. In this way the email address status of 'responded' or 'not responded' appeared in the edit recipient list of the collector with the participants' email addresses not being visible on their

submitted questionnaires.

3.6 Measurement tool

3.6.1 Questionnaire:

The questionnaire (Appendix C3) was designed from the literature and within the context of the South African environment as prescribed by the researcher, an expert group (Hawk *et al.,* 2004) and piloting (Iarossi, 2006; Thabane, 2010). In addition, particular reference was made to the previously used questionnaire by Ivie (2011). Permission to utilize the questionnaire by Ivie (2011), in reference to the designing of the questionnaire for this study was obtained (Appendix A2).

3.6.2 Expert group

An expert group enables a group of individuals to meet and exchange opinions, information and feedback akin to a particular topic (Huston, 2008) and thus providing greater understanding and further insight on the topic of interest (Massey, 2010). Furthermore, the expert group determines face and content validity of the questionnaire (Kelley, 2003).

3.6.2.1 Sample size

According to Huston (2008), an expert group of at least five and no more than ten functions best. Therefore, an expert group consisting of a sample of nine participants that met the inclusion criteria for this study was used.

3.6.2.2 Allocation

There was no allocation of participants in the expert group as only one expert group consisting of participants that met the expert group inclusion criteria participated in the expert group.

3.6.2.3 Method

Purposive sampling was used to select participants for the expert group. Purposive sampling is often used in expert group research as those sampled have experience in the research being studied and therefore can provide the necessary insight on the topic of interest (Ruff, 2005). Participants meeting the expert group inclusion criteria were invited to participate in the expert group by telephone.

At the meeting of the members of the expert group, each member of the expert group was required to sign and complete the following documentation:

- The Pre-contact Information Letter (Appendix D1)
- A Letter of Informed Consent (Appendix D2)
- A Confidentiality Statement (Appendix D3)
- A Code of Conduct (Appendix D4)

Following reading and signing the relevant documentation, each participant of the expert group was handed the Pre - Expert Group Questionnaire (Appendix C1) and asked to read through it briefly. The researcher then read out aloud each question from the Pre - Expert Group Questionnaire sequentially, allowing participants enough time for discussion and recommendations for each question (Huston, 2008).

The meeting was digitally recorded, with permission to do so granted by the participants (Silverman, 2001). A DVD of the recorded meeting was made and is available on request from the Department of Chiropractic as evidence of those who participated in the expert group and the content discussed during the expert group meeting.

All recommendations and suggested changes from the expert group as a whole were taken into account to develop the Post - Expert Group Questionnaire / Pre - Pilot Questionnaire (Appendix C2).

3.6.2.4 Expert Group changes to the questionnaire

Question table with numbers 1 – 16 : Demographic and lifestyle practises

- Objective One, 'Epidemiological profile of chiropractors practising in South Africa', was replaced with, 'Demographic profile of chiropractors practising in South Africa'.
- To the instruction, 'Please indicate with an X in the spaces provided where applicable to you' was added in brackets after the word provided, 'or as otherwise stated'.
- For the question (1) on 'age', the categories of age as answer options were removed.
- In the question (2) regarding 'gender', the word sex was replaced with gender.
- In the question (3) regarding language, the option of 'other' was added to the answer options.
- In the question (4) regarding race, the answer option of 'Indian / Asian' was separated.
- The question (6), 'Highest academic degree?' was replaced with 'Highest academic degree (in addition to chiropractic degree)?' And the answer options of 'BS/ BA, MS/ MA, Ph.D. and MPH' were replaced with 'Bachelors, Honours, Masters, PhD, None, and Specify field'.
- In the question (7) regarding 'years in active practice?', the categorisation of the answer options were removed.
- In the question (8) regarding 'practice hours/ week?', the categorisation of the answer options were removed.
- The question (10), 'Economic status of community where practice is located?' was changed to 'Economic status of community where practice is located (i.e. not the patient base)?'. The answer choices were changed from 'upper class, middle class, middle-lower and lower class' to 'high-income, upper-Middle income, lower-middle income and low income'.
- The question, 'Economic status of your patient base?' was added to question 10 as 10b with the answer choices of high-income, upper-Middle income, lower-middle income and low income'.
- The question (11), 'Professional identity?' was changed to 'Perceived role as a health care professional?' with the answer choice of 'Gatekeeper' removed,

'Primary care' changed to 'Primary care practitioner' and 'Other (please specify)' added.

Question table with numbers 12 – 31: What are the attitudes, perceptions and frequency that chiropractors counsel patients on health promotion and disease prevention.

- The heading to the table, 'Please mark with an X in the spaces provided as to how strongly you agree / disagree chiropractors counsel patients on the following health risk factors and chronic diseases for all patients of the appropriate age / sex/ gender, was changed to 'Please mark with an X (in the spaces provided) as to how strongly you agree / disagree that chiropractors should counsel on the following health risk factors and chronic diseases for all patients of the appropriate age / gender / risks'.
- The heading to the table, 'Please mark with an X in the spaces provided as to the frequency you counsel patients on the following health risk factors and chronic diseases for all patients of the appropriate age/ sex/ gender' was changed to, 'Please mark with an X (in the spaces provided) as to the frequency you counsel patients on the following health risk factors and chronic diseases for all patients of the appropriate age/ gender/ risks'.
- The table incorporating questions 12 – 48 was separated, with 'column A' and 'column B' being removed and the answer option of 'not at all' was added to the answer options of 'regularly, rarely and refer'. In addition the questions in the table were re-arranged to be in alphabetical order.
- The questions, 'Postural habits?', 'Technology addiction?' and 'Contraception?' were added.
- The question (16), 'Musculoskeletal risk reduction?' was changed to 'Ergonomic risk reduction'.
- The question (21), 'Skin cancer prevention?' was removed.
- The question (22), 'Safe sex practices STD / HIV?' was changed to 'Safe sex practices STI / HIV?'.
- The question (23), 'Stress (Occupational / environmental)?' was changed to 'Personal stress?'
- The question (25), 'Subscription/ over the counter medications?' was changed to

'Prescription/ over the counter medications?'.

- The question (26), 'Depression/ anxiety?' was changed to 'Mental ill health?'.
- The question (27), 'Domestic abuse?' was changed to 'Child abuse?'.

Question table with numbers 32 – 48: Please mark with an X in the blocks provided as to the frequency you recommend the follow screening tests for all patients of the appropriate age / sex / risks:

- The heading to the table (Column A), 'Please mark with an X in the blocks provided as to how strongly you agree / disagree chiropractors recommend the following screening tests for all patients of the appropriate age / sex / risks was changed to 'Please mark with an X in the spaces provided as to how strongly you agree / disagree that chiropractors should recommend the following screening tests for all patients of the appropriate age / gender / risks'.
- The heading to the table (Column B), 'Please mark with an X in the blocks provided as to the frequency you recommend the following screening tests for all patients of the appropriate age / sex / risks' was changed to 'Please mark with an X in the spaces provided as to the frequency you recommend the following screening tests for all patients of the appropriate age / gender / risks'.
- 'Column A' and 'Column B' were removed and the table separated.
- The answer choice of 'never' was added to the table regarding the frequency that chiropractors recommend screening tests for all patients of the appropriate age / gender / risks.
- The question (34), 'FBC / screening panel?' was changed to 'FBC (general)?'.
- The question (36), 'Prostate exam / PSA (men 50+)?' was separated.
- The question (37), 'Breast exam (woman)?' had the word 'woman' removed.
- The question (38), 'Colorectal cancer screening (men 50+)?' had the word 'men' removed.
- The question (42), 'Blood lead test?' was removed.
- The question (46), 'Subluxation screening?' was replaced with 'Spinal screening?'.
- The question (47), 'Scoliosis screening?' was removed as it was covered by the question, 'Spinal screening?'.
- The questions, 'Blood cultures?', 'Stool culture?', 'Bone scan?', 'CT?', 'Mammogram?', 'MRI?', 'Ultra-sound?', 'X-ray?', 'Snellens eye test?', 'Dental

assessment?' and 'Other: (specify)?' were added to both the tables.

The question table with numbers 49 – 54: To determine the attitudes and perceptions of chiropractors regarding evidence based principles in the practice of health promotion and disease prevention:

- The title to the table, 'Please mark with an X in the spaces provided as to how much you agree / disagree with the following evidence-based principles in the practice of health promotion and disease prevention' was removed and the questions added to the table regarding the elements of health promotion.
- The Questions (49 -54), 'Keep current on the latest scientific literature?', Interpret conclusions of scientific articles?', 'Use research to inform practise?' and 'There is a strong evidence base for health promotion?' were removed.

The question table with numbers 55 – 60: Do you provide the following information (Magazines, posters, pamphlets etc.) in your practise on the following disease prevention topics:

- The title of the table, 'Do you provide the following information (magazines, posters, pamphlets etc.) in your practice on the following disease prevention topics' was changed to 'Do you provide the following information (audio and / or visual) in your practice on the following disease prevention/ management topics'.
- The question (55), 'Stress control?' was changed to 'Stress management?'.
- The question (57), 'Degenerative joint disease prevention?' was changed to 'Degenerative joint disease prevention / management?'.
- The question (58), 'Cardiovascular disease prevention?' was changed to 'Cardiovascular disease prevention / management?'.
- The question (59), 'Spinal hygiene?' was changed to 'Spinal care?'.
- The question (60), 'STD/ HIV prevention?' was changed to 'STI/ HIV prevention/ management?'.
- The questions, 'Diabetes prevention / management?' and 'Other (specify)?' were added.

Question table with numbers 61 – 78: Please indicate in the spaces provided as to how strongly you agree / disagree with the following aspects of health promotion.

- The title to the table, 'Please indicate in the spaces provided as to how strongly you agree / disagree with the following aspects of health promotion' was changed to 'Please indicate (in the spaces provided) as to how strongly you agree / disagree with the following elements of health promotion (interpersonal, policy, law and evidence-based practice)'.
- The question (63), 'Emphasis is placed on health promotion and disease prevention in chiropractic training institutions?' was changed to 'Emphasis should be placed on health promotion and disease prevention in chiropractic training institutions?'.
- The question (64), 'Chiropractors are prevented by insurance companies from being reimbursed for providing prevention services?' was changed to 'Chiropractors are prevented by medical aid companies from being reimbursed for providing prevention services?'.
- The question (66), 'It is not important that chiropractors advocate prevention?' was changed to 'It is important that chiropractors advocate prevention?'.
- The question (69), 'South African law makes prevention a difficult service to provide?' was removed.
- The question (71), 'South African law prevents ordering of diagnostic screening tests?' was changed to 'Scope of practice prevents ordering of diagnostic screening tests?'.
- The question (72), 'Governments proposed National Health Insurance plan is a positive step for health care in South Africa?' was changed to 'Governments proposed National Health Insurance plan is a positive step for health promotion in South Africa?'.
- The question (76), 'Health professionals should advocate for protection of the environment in their practises (e.g. posters, magazines, pamphlets)?' was changed to 'Health professionals should advocate for the protection of the environment during clinical interaction with patients (e.g. energy saving, recycling)?'.
- The question (77), 'Reducing physical inactivity requires multi-disciplinary action (Health, environment, transport, sport, culture and the economy)?' was changed to 'Increasing physical activity at the community level requires multi-disciplinary action (Health, environment, transport, sport, culture and the economy)?'.
- The question (78), 'Spinal manipulation can be effectively used to prevent disease?'

was removed.

Question table with numbers 85 – 91: As a chiropractor practising in South Africa do you:

- The question (85), 'Participate in community projects aimed at improving health and preventing disease (i.e. Walk for Life, Stand up straight South Africa)?' was changed to 'Participate in community projects aimed at improving health and preventing disease (e.g. Run- Walk for Life, Straighten up South Africa)?'.
- The question (86), 'Provide information on healthy lifestyle choices to patients only?' was changed to 'Provide information on healthy lifestyle choices beyond clinical practice (e.g. Schools, seminars)?'.
- The question (87), 'Feel that immunization is an important aspect of disease prevention?' was changed to 'Feel that immunization / vaccination is an important aspect of disease prevention?'.
- The question (89), 'Counsel patients on immunization based on the most current scientific evidence?' was removed.

Question table with numbers 92 – 103: The following section is to determine your knowledge and understanding of the role of selected public health agencies in health promotion and disease prevention in South Africa:

- The brief description of what a public health agency is was added to the title (Public health agencies are organisational resources through which public health services are organised and delivered. They are classified as governmental, non-governmental and quasi-governmental and operate internationally).
- The questions 92 – 103 were too general and ambiguous and were removed and replaced with:
    (a) As a chiropractor practising in South Africa which 2 public health agencies would you refer to for information about cigarette cessation / risks / management?.
    (b) Which public health agency would you report to for suspected child abuse?.
    (c) Please name any two local HIV/ AIDS related public health agencies?.
    (d) Which local public health agency co-ordinates awareness and educational campaigns on mental health and mental disorders in South Africa?.

(e) Which public health agency would you contact first for a patient who presents to you with a suspected notifiable disease?.

(f) Which public health agency provides an immunisation resource web site for chiropractors?.

(g) Name any public health agency you are a member of?.

(h) Name one public health agency that you would consider as a source of information and support for a patient recently agency resource would you recommend for a rape victim?.

- True and False questions were added, namely:

(a) The South African department of Health has a directorate for health promotion.

(b) Oxfam International is a human rights non-governmental organisation.

(c) The Alma- Ata Declaration was the first international conference on health promotion.

(d) The majority of deaths from non-communicable diseases occurs in lower and middle- income countries.

(e) The World Health Organisation has not published guidelines on the training and safety of chiropractic.

(f) Pick n Pay has a health promotion community programme.

Over - all comments / instructions:

An extra table with questions regarding the lifestyle practices of chiropractors was added after the demographic questions. The table with questions and answer choices regarding the lifestyle practices of chiropractors in South Africa were as follows:

The following table is to determine your personal lifestyle practices.			
Please mark with a X in the boxes provided where most applicable to you (may mark more than one box)			
Exercise	> 30 min moderate-intensity, 5 / week	> 20 min vigorous activity, 3 days / week	Balance / strength / proprioception
Nutrition	4 - 5 servings of fruit and vegetable/ day		Supplement daily
Cigarette smoking	Do not smoke	Do smoke	Never smoked

Car safety (seat belt)	Never	Sometimes	Always
Environment	Recycle	Use aircon in summer	Use heater in winter

3.6.3 Pilot Study

Pilot testing for online surveys are essential (Morris et al., 2004). A pilot study involves taking a small sample representative of the total population being investigated to pre - test the instrument to be utilised in the main study (Simon, 2011). From this, pilot testing is used to assess questionnaire adequateness, gage time taken to complete the questionnaire and ascertain the proficiency of the investigators (Iarossi, 2006).

3.6.3.1 Sample size

As this pilot study did not propose inferential testing or hypothesis testing, the sample size was based on recruitment practicality and the needs of examining feasibility issues in the main study (Leon et al., 2010). Therefore, a sample size of five persons was considered adequate for participation in the pilot study.

3.6.3.2 Allocation

Participants were not allocated into groups as the participants in the pilot study were representative of the target population being studied in the main study

3.6.3.3 Method

Purposive sampling was the method of sampling used to select persons taking part in the pilot study. All participants had to meet the inclusion criteria for the main study to take part in the pilot study.

Participants were invited by telephone to take part in the pilot study. Those who agreed to pilot the study were then sent the pre - contact email (Appendix B2) containing the link to the online questionnaire and the pre - contact postal information letter (Appendix B1) with the unique code to access the online questionnaire (Appendix C2). Participants were given two weeks to complete and submit the questionnaire together with any recommendations.

3.6.3.4 Pilot study changes to the questionnaire

- The question, 'Allergic sensitivity?' was added to the question tables with numbers 39 – 66 and 89 – 116.
- The question (121), 'Chiropractors are prevented by medical aid companies from being reimbursed for providing prevention services?' needed rewording and was changed to 'Chiropractors are prevented from providing disease preventative counselling to patients due to disease prevention counselling services not being reimbursed by medical aid companies?'.
- In the question (125), 'Does the scope of chiropractic practice enable health promotion?' the word 'enable' was replaced by the word 'include'.
- The question (132), 'In health promotion the best use of evidence should account for the cultural and social systems of a community?' was changed to 'In health promotion the best use of evidence should take into consideration the cultural and social systems of a community?'.
- The question (134), 'It is important to share evidence based guidelines with colleagues?' was changed to 'It is important to discuss evidence-based guidelines with colleagues?'.
- For the title of the table regarding the knowledge of chiropractors of public health agencies in South Africa with the numbers 166 – 175 the classification from the description of public health agencies was removed and 'If unsure please indicate so with a X in the spaces provided' was added.
- For the titles of the tables investigating the attitudes, perceptions and frequency of patient counselling and screenings that chiropractors in South Africa perform in private practice, the words ' appropriate age / gender / risks' were changed from small CAPS to full CAPS.

3.6.4 Final Questionnaire Discussion

The post - pilot study Questionnaire (Appendix C3) comprised of 11 tables totalling 185 questions:

- Table 1: questions (1 - 11) investigating the participants demographic details personal data lifestyle practises.

- Table 2: questions (17 - 38) specifically revolving around the provision of counselling for risk factors and chronic diseases by participants in private practice.
- Table 3: questions (39 - 68) regarding the view of participants on providing diagnostic screening tests for all patients of the appropriate age/ gender/ risks.
- Table 4: questions (69 – 90) specifically revolving around the frequency that participants counsel patients on risk factors and chronic diseases.
- Table 5: questions (91 – 120) regarding the frequency that participants utilize diagnostic screenings in private practice.
- Table 6: questions (121 – 153) specifically revolving around the view of participants on elements of health promotion (interpersonal, policy, law and evidence-based practice).
- Table 7: questions (154 – 163) regarding information (audio and / or visual) that participants provide in private practice on disease prevention / management topics.
- Table 8: questions (164 – 169) revolving around the views of participants on general aspects of health promotion and disease prevention.
- Table 9 and 10: questions (170 – 185) specifically revolving around the familiarity and knowledge of participants on public health and public health agencies.

3.7 Statistical Analysis

The attitudes of chiropractors towards health promotion and disease prevention was assessed overall (career prevalence). The provision of counselling patients on health promotion topics and reported use of screening tests was also reported. The demographics of the participants in this study were described overall. Characteristics of health promotion and disease prevention, such as counselling on modifiable risk factors, chronic diseases of daily lifestyle and immunization, disease screening tests, public health organisations and evidence - based practice were descriptively analysed and reported in terms of bar charts, pie charts and percentages.

The latest version of SPSS (SPSS Inc. Chicago, Illinois, USA, 2012) was used for data analysis. Relationships of perception and reported use scores were calculated by using Pearson's correlation analysis for categorical variables and t-tests for quantitative variables. A p value < 0.05 was considered to be statistically significant. There were no statistically significant findings following correlations of categorical variables (Esterhuizen,

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The following chapter documents the statistical findings and results obtained from the data. Although conventionally the results and discussion occupy separate chapters, for ease of presentation and analysis both the results and discussion will be presented in one chapter.

4.2 Data sources

Both primary and secondary sources of data were used in this chapter.

4.2.1 The primary data

Participant responses to the research Questionnaire (Appendix C3) constituted the primary source of data.

4.2.2 The secondary data

The literature outlined in Chapter Two constituted the majority of the secondary sources of data as obtained from books, journal articles, research dissertations, internet sources and personal communications with the statistician (Esterhuizen, 2013), AHPCSA (Terry, 2012) and research supervisor (Korporaal, 2013).

4.2.3 Abbreviations pertinent to the chapter

n	Refers to sample size
N	Number
p	Refers to the *p*- value, which indicates the data statistical significance The smaller the *p*- value, the more significant the results
“Sig”	Significance
“SD”	Standard Deviation
%	Percentage
<	Indicates that a figure is “less than” the figure reported
>	Indicates that a figure is “greater than” the figure reported

= Signifies “equals to”

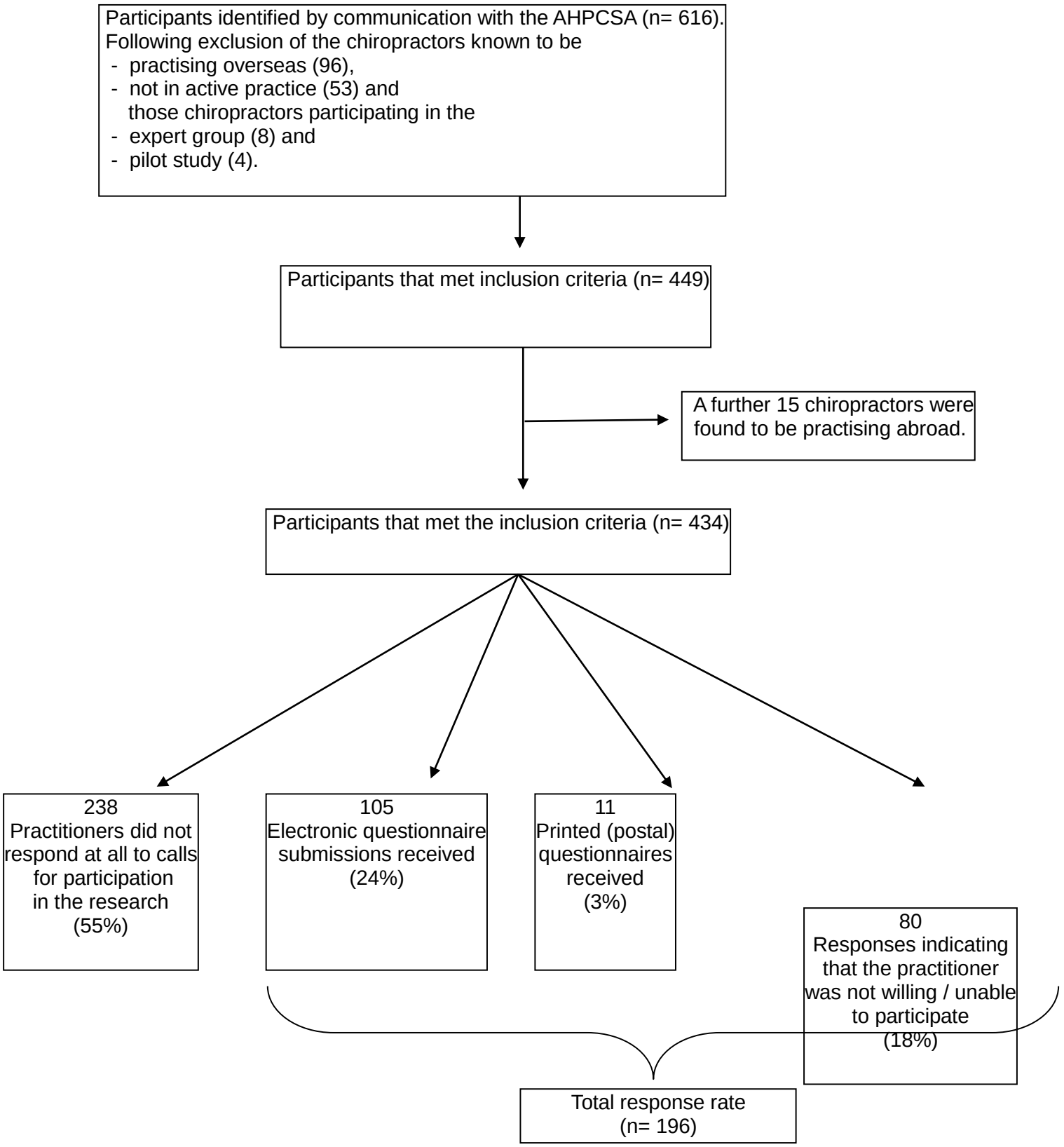

Figure 4.1 Consort diagram for response to the questionnaire in this study (adapted from Moher *et al.,* 2001).

Communication with the AHPCSA (Terry, 2012) revealed that a total of 616 registered chiropractors were registered to practising in South Africa and therefore identified for inclusion into the study. After screening the list of registered practitioners (as per their postal addresses) (Copp *et al.,* 2007), it was found that 96 were located outside of South African (e.g. Australia, Botswana, Hong Kong, Malaysia, Mozambique, Namibia, Netherlands, Singapore, Sweden, Switzerland, United Kingdom, United States of America and Zimbabwe). An additional 53 were not in practice for at least three months (e.g. working as a medical representative, lecturing full time, retired, had passed away and / or were on maternity leave) prior to the study.

The above process resulted in 449 possible participants for the study (meeting inclusion criteria as outlined in Chapter Three). After distribution of the questionnaire, invitation via email and making initial contact with practitioners, it was determined that an additional 15 were practising abroad. This left a total sample size of 434.

For this sample, 54 printed questionnaires were dispatched (to those without email) and 380 electronic questionnaires were emailed. This was followed by several intermittent email and phone call reminders for questionnaire completion (as suggested by Lapane *et al.,* (2007) and Dyer, (1997).

After a 17 week (18 September 2012 – 28 January 2013) data collection period, 105 electronic (28%) and 11 printed (20%) questionnaires were returned completed. In addition, 80 (18%) indicated that they were not able / willing to participate in the study and were considered as null responses.

The above data was collected by electronic and paper / postal questionnaires over a four month period (18 September 2012 – 28 January 2013). The mixed mode of surveying used in this study verified the observations by Fan (2009) and Millar (2011); where the addition of paper / postal surveys to electronic surveys led to better response rates. The mixed method of survey distribution also allowed the researcher to reduce sample bias by including those practitioners (n = 54) who were unable to participate using the electronic survey method (Kelley, 2003).

In the final analysis then, the non – response rate was approximately 55%; whilst the response rate was 45%, with affirmative and completed questionnaires 35% of the time and null responses 10% of the time.

Contrary to the literature (Klassen, 2001), the response rate was higher for the electronic questionnaire in comparison to the printed / postal questionnaires. This could be substantiated by participants of the electronic questionnaire receiving reminder emails and telephonic calls, as well as, being notified before the questionnaire was sent that the study was going to take place (Perkins, 2011).

Although the response rate (n = 196) is comparatively similar (Reubens, 1996; Rupert, 2000; Hunter, 2004; Louw, 2005; Van As, 2005; Kew, 2006; Lindstrom, 2007; Caldwell, 2007; Copp, 2007; Lindorff – Larsen *et al.,* 2007; Tharaldsen, Olsen and Rundmo, 2007; Ross – Adjie *et al.,* 2007; Riley *et al.,* 2007; Chelenyane, 2006 and Ivie, 2011) or better (Hawk *et al.,* 2004) to studies in general and specifically to health promotion and disease prevention investigations on practising chiropractors further afield, the results obtained in this study may not reflect the attitudes and perceptions of the total number of chiropractor practicing in South Africa.

Therefore, based on the literature, the outcomes of this study may be generalized to similar populations (Caldwell *et al.,* 2007; Symon *et al.,* 2005; Watson *et al.,* 2006 and Lapane *et al.,* 2007). However, the non - response rate of 55% may render the data misleading and with a certain degree of bias, representative of only those participants who responded (Kelley, 2003; Caldwell *et al.,* 2007). Therefore, the results of this study are interpreted with caution.

4.4 Review of the objectives for this study

The Chapter One outlined the objectives of the study in the context of the research aims and objectives as well as the rationale of the study. Here the review of the objectives serves as a reminder of the required outcomes that this study set out to attain:

Objective One: To determine the demographic profile and lifestyle practises of chiropractors in South Africa.

Objective Two: To determine the attitudes and perceptions of chiropractors on the practice of health promotion and disease prevention.

Objective Three: To determine the extent of utilisation of diagnostic screening tests by chiropractors for health promotion and disease prevention.

Objective Four: To determine the knowledge and understanding of chiropractors of the role of selected public health agencies in health promotion and disease prevention in South Africa.

The next sections cover the results achieved in this study.

4.5 Results

4.5.1 Objective One

This was to determine the demographic profile of chiropractors in South Africa, as they responded to this study.

4.5.1.1 Practitioner profile

4.5.1.1.1 Gender, Ethnicity and Language

Of the participants, just under half were male (48%), most (84%) were English speaking and 89% were White.

Table 4.1 Gender, Ethnicity and Language

		Count	Column N %
Gender	Male	56	48.3%
	Female	60	51.7%
Language (first language only)	Afrikaans	18	15.5%
	English	97	83.6%
	Other	1	0.9%
Ethnic group	Indian	13	11.2%
	White	103	88.8%

4.5.1.1.2 Age

The mean age of participants was 34.7 years with a minimum age of 24 years and a maximum age of 78 years.

Table 4.2 Age

	Mean	Standard Deviation	Minimum	Maximum
Age (years)	34.7	9.1	24	78

4.5.1.1.3 Place of Education

Table 4.3 Institute of graduation

		Count	Column N %
Institute of chiropractic graduation (please state name of institution)	Not stated	1	0.9%
	Canadian Memorial Chiropractic College	1	0.9%
	Durban Institute of Technology	6	5.2%
	Durban University of Technology	53	45.7%
	Lincoln Chiropractic College	1	0.9%
	Natal Technikon	8	6.9%
	Palmer College of Chiropractic	4	3.4%
	Technikon Witwatersrand	7	6.0%
	University of Johannesburg	32	27.6%
	Western States Chiropractic College (USA)	1	0.9%
	Wits Tech	2	1.7%
	Total	116	100.0%

4.5.1.1.4 Level of Education

Just under half of the sample had another degree in addition to chiropractic. Most chiropractors had Master's degrees.

Table 4.4 Level of Education

		Count	Column N %
Highest academic degree (in addition to chiropractic degree)	None	63	54.3%
	Bachelors	5	4.3%
	Honours	1	0.9%
	Masters	46	39.7%
	PhD	1	0.9%
	Other	0	0.0%
	Total	116	100.0%

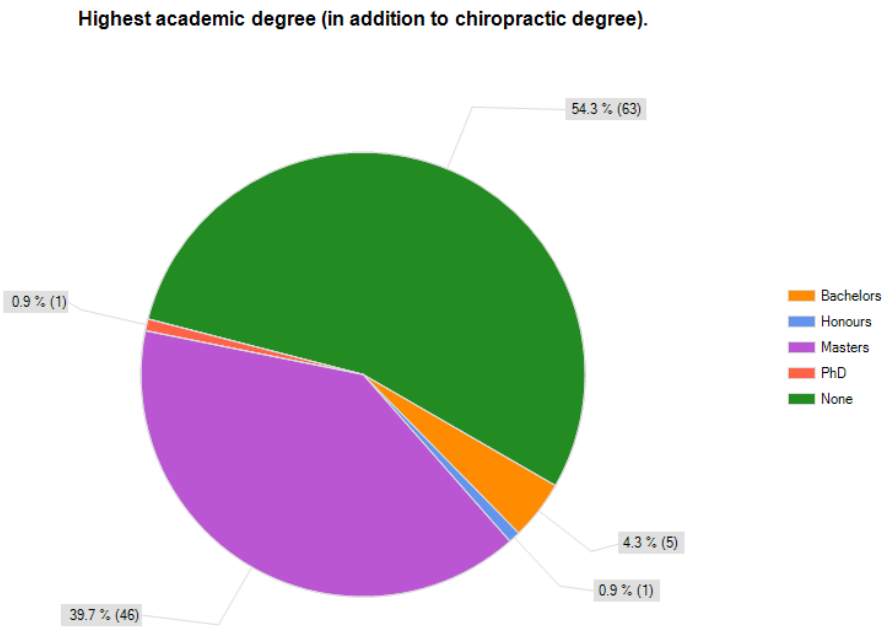

Figure 4.2
Percentages of participants who had another degree other than their chiropractic degree

4.5.1.1.5 Personal Lifestyle

Of the participants, 57.8% exercised vigorously, 3 days / week, 74.1% consumed 4 – 5 servings of fruit and vegetable / day and 7.8% were smokers.

Table 4.5 Personal Lifestyle factors

		Count	Column N %
Exercise	> 30 min moderate-intensity, 5 / week	48	41.4
	> 20 min vigorous activity, 3 days / week	59	50.9
	Balance / strength / proprioception	67	57.8
Nutrition	4 - 5 servings of fruit and vegetable / day	86	74.1
	Read food labels	72	62.1
	Supplement daily	66	56.9
Cigarette smoking	Do not smoke	57	49.1
	Do smoke	9	7.8
	Never smoked	50	43.1
Car safety (seat belt)	Never	3	2.6
	Sometimes	18	15.5
	Always	95	81.9
Environment	Recycle	76	65.5
	Use air - conditioning in summer	72	62.1
	Use heater in winter	77	66.4

Discussion:

Contrary to the studies of Jamison (2002), Rupert (2000) and Hawk *et al.,* (2004), there were more female participants in this study, which is in contrast to the **gender** ratio between male and female chiropractors registered with the AHPCSA in 2008; where 62% and 38% were registered (Keyter, 2010). This study is however similar to other previous questionnaire studies carried out in South Africa, including but not limited to De Gouveia, (2009); Bunge, (2007); Mathews, (2006) and Fletcher, (2005), where there was a female predominance in the chiropractic profession in South Africa. This may explain the reason for the increase of responses from female practitioners, but it is also possible that with the increased numbers of female students in the chiropractic programmes (Korporaal, 2013) that there has been a greater approximation of the gender ratios in South Africa. This is supported by international studies that suggest a change in the male predominance of the profession. This was illustrated in the Australian and New Zealand Classification of Occupations (ANZCO, 2006) census which reported, 75% of the chiropractors were male in 1996, whereas in 2006, 65% were male. In addition, it needs to be considered that an increase in the number of female participants to this study may be due to female practitioners being more prone to providing wellness care to their patients compared to their male counterparts (Härtela and Volgera, 2004, National Centre for Complementary and Alternative Medicine, 2004; MacLennan and Wilson, 1996 and Tatalias, 2006).

However, this contrasts to the WFC consultation census where it was shown that 79% of the participants were male (Northstar Research Partners, 2004). By contrast, a study by Hawk *et al.,* (2004) showed that female, younger and relatively new chiropractic graduates were most likely to agree that chiropractors provide counselling to patients and were more likely to actually provide counselling to patients in the clinical setting. Continuing in this same stance, a study by Ivie (2011) revealed that female practitioners felt more confident in counselling patients on weight management than their male counterparts.

In respect of **ethnicity**, the 2010 Practice Analysis of Chiropractic by the National Board of Chiropractic Examiners (Christensen, 2010) noted a decrease in the number of chiropractors reporting Caucasian ethnicity from 95.5% in 1991 to 84.9% in 2009. From the results in Table 4.1 it may seem that this is not the case in the

South African context, with almost 100% of participants being either of Caucasian and Indian extraction in this study. This is in contrast to the commitment of the South African government to transforming the working environment (including health care workers) to be more representative of the populace of South Africa and in turn reducing unemployment, a social risk factor to the health of the greater populace (Strydom, 2006). Furthermore, given that the concept of health is often culturally determined (Jacobsen, 2005) and that 79% of South Africa's population is of African descent (Statistics South Africa, 2011) it would seem based on these results (Table 4.1) and as laid out by Myburgh *et al.,* (2007), that chiropractors in South Africa are separate from the greater populace of the country in terms of their ethnic composition. Therefore, the ethnicity of the participants is not representative of the demographics of the country and reasons for this should be further explored. In comparing the results to the literature it can be suggested that the sample group was representative of the chiropractors that practice in South Africa in terms of ethnicity but not gender.

In light of the above, it must be noted that the participants in this study may not be fully representative of the total population of practicing chiropractors in South Africa and thus the data collected only represented the sample of participants in this study (Kelley, 2003).

In terms of the age of the participants in this study, the mean **age** was 34.7 years with a minimum age of 24 years and a maximum age of 78 years. This outcome compares favourably with the average age of 36 years achieved by Keyter (2010) and is in keeping with other South African studies, where the majority of chiropractors tended to be between the ages of 25 and 38 (Bunge, 2007; Mathews, 2006 and De Gouveia, 2009). A possible reason for the majority of the participants in most of these South African studies being younger may be due to the Chiropractic Profession being a relatively young and new profession in South Africa (Act 63 of 1982 (as amended) and CASA, 2012).

The participants from this study were therefore younger than the average age of participants in the WFC Identity Consultation, which was 40 years of age (Northstar Research Partners, 2004). In addition it was noted in the WFC Identity Consultation report that 73% of participants were older than 35 years of age (Northstar Research

Partners, 2004). This is a noticeable contrast to the predominantly younger group of practitioners in South Africa whose average age was 34.7 years of age.

This may impact on their health promotion and disease prevention practices as according to Jacobsen (2005), differences between younger and older medical practitioners' attitudes and practice of disease prevention could be due to the increased emphasis on health and healthy lifestyles in medical training in addition to completing more up to date training. From a different perspective, Myburgh *et al.,* (2007) indicates that practitioners who have been in practice for a longer duration than their newly qualified counterparts had time to develop views related to practice and beliefs that are separate from those learned in training institutions. Thus, these results may show conflict with regards to the presenting outcomes, in terms of the practice of health promotion and disease prevention based on age.

The majority of participants in Table 4.3 **graduated** within South Africa, 57.8% from the Durban University of Technology / Durban Institute of Technology / Natal Technikon and 27.6% from the University of Johannesburg / Witwatersrand Technikon, 5.2% from the United States, 1 (0.9%) from Canada and 1 non-responded, making up the 100% of the response sample.

According to Leboeuf-Yde (2008), the institutions of chiropractic graduation, whether university based or traditional chiropractic colleges affects the beliefs of chiropractors regarding health promotion and disease prevention.

This may be as a result of the push by chiropractic training institutions to include and expose students to health promotion and disease prevention (Evans, 2003; Baird, 2011 and Ivie, 2011). However, it was only recently that chiropractic colleges in the United States were advised to improve their course content on health promotion and disease prevention (Ivie, 2011) and therefore the impact has been negligible on the profession and may only show an impact in time to come. In comparison, chiropractic training (being part of the subsidised national higher education) institutions in South Africa are and have been required to have health promotion and disease prevention as part of the chiropractic curriculum (Chiropractic Handbook, 2002; Chiropractic Handbook, 2013). The literature suggests that chiropractors trained in South Africa should be more knowledgeable on topics of health promotion and disease prevention

than perhaps their international counterparts (To be discussed more fully in Objective Two and Objective Three of this study).

Table 4.4 and Figure 4.1 demonstrate that the majority of participants (54.3%) did not have an **additional degree** over and above that of their chiropractic qualifications. Five participants indicated that they had a Bachelors degree, one had an Honours degree, one acquired a PhD and 46 (39.7%) acquired Master's degrees. Literature would seem to suggest that those persons with higher degrees are more likely to utilize complementary and alternative health practices and supplement practices with increased numbers of activities that support health promotion and disease prevention (MacLennan and Wilson 1996; Astin, 1998; National Centre for Complementary and Alternative Medicine, 2004 and Menniti - Ippolito *et al.,* 2002).

According to the 2010 Practice Analysis of Chiropractic by the National Board of Chiropractic Examiners, chiropractors holding a Bachelor's, Master's or PhD increased from 53.7% in 1991 to 74.8% in 2009 (Christensen, 2010). Hawk *et al's.,* (2004) survey of US chiropractors on clinical preventive services observed that chiropractors with the minimum of a Bachelors degree or higher were more likely to agree and report to provide counselling to patients on obesity, substance abuse, sexual behaviour, mental health, injury / violence prevention, environmental health and immunization. Furthermore, 5% of participants reported having Masters of Science / Master of Arts / Master of Public Health, with < 1 attaining a PhD (Hawk *et al.,* 2004), which implied that participants in this study held higher qualifications than the participants in Hawk *et al's.,* (2004) study.

As the majority of participants in this study qualified in South Africa with a Masters degree, the literature would seem to suggest that the majority of chiropractors in South Africa would provide patients with counselling on obesity, substance abuse, sexual behaviour, mental health, injury / violence prevention, environmental health and immunization.

In terms of the quality, level and composition of the additional degrees completed by chiropractors, participants were asked to specify what their additional qualification was. However, they failed to do so, which may indicate that the question was either misleading and / or the participants did not understand the question. Future studies of

this nature may therefore need to consider revising this aspect of the questionnaire, should they wish to utilize the questionnaire from this study.

According to Cameron (2004), preventative efforts are most successful when provided by health care practitioners who **practise healthy behaviours** themselves. The findings stated in Table 4.5 show that the participants' lead healthy lifestyles with 57% indicating they took part in balance / strength / proprioception exercises, 74.1% consumed 4 - 5 servings of fruit and vegetables / day and 43% indicated that they never smoked. Furthermore, health care practitioners who had changed unhealthy behaviours and who saw themselves as being healthy were more likely to provide patients with disease prevention counselling and screenings (Cameron, 2004). In this regard, 49.1% of the participants indicated that they did not smoke (as opposed to indicating that they have never smoked), implying that they were previous smokers who were able to change their behaviour and quit smoking.

Of interest is that participants in this study showed markedly better lifestyle habits compared to a study by Parker *et al.,* (2010), who investigated the knowledge and practise of public sector primary care practitioners and final year students in 30 primary care practices and four combined medical / nursing universities in Cape Town, where 11% of the participants were smokers, 54% exercised regularly and 62% reported that they eat healthily.

In summary the study respondents were predominantly younger, female participants, with limited practice experience, but with additional qualifications and who lived a healthy lifestyle. It would therefore be (based on the literature) that this sample should show increased use of health promotion and disease prevention practises in the context of their healthcare provision (the latter which are discussed in objective Two, Three and Four).

4.5.1.2 Practice profile

4.5.1.2.1 Practice profile - practitioner

As a representation of the group, the average number of years in practise was 8 years and an average of 37.5 hours were worked in a week.

Table 4.6 Practitioner profile in practice

	Mean	Standard Deviation	Minimum	Maximum
Years in active practice	8.1	8.6	0.7	50.0
Practice hours / week	37.5	13.4	5.0	65.0

The above results, indicated in Table 4.6 highlight that the profession in South Africa is young (this would concur with the younger age of the participants as noted in Section 4.5.11). According to Keyter (2010), the majority of her participants had graduated within the past ten years and thus by default were not in practice for more than ten years. This confirmed previous studies where practitioners have spent less than ten years in practice (De Gouveia, 2009; Bunge, 2007; Mathews, 2006 and Fletcher, 2005). By contrast, the WFC Identity Consultation report indicated that the average number of years since graduation was 13 years (Northstar Research Partners, 2004), which by 2010 had increased to 15 years in the United States of America, according to the 2010 Practice Analysis of Chiropractic by the National Board of Chiropractic Examiners (Christensen, 2010).

Additionally, the numbers of hours in practice per week seems to compare favourably with the results of the 2010 Practice Analysis of Chiropractic by the National Board of Chiropractic Examiners, where the results indicated that 10.2% of the practitioners decreased their working hours to less than 50hours / week (Christensen, 2010).

4.5.1.2.2 Practice profile – patients

Regarding the economic status of participants practice location, 60% of the participants practice locations were in middle - upper income locations and 25% in lower - middle income locations (Table 4.7). Only one respondent indicated that their practice was located in a low - income area. Comparatively, there were similarities between practice location and patient base, with participants in middle - upper income locations reporting a 77% patient base who were in a middle - upper income

bracket and participants from lower - middle income practice locations reporting that 14% of their patients were in the lower - middle income bracket. The majority of participants (66%) perceived themselves as neuro - musculoskeletal specialists.

Table 4.7 Patient Profile in practice

		Count	Column N %
Economic status of community where practice is located (i.e. not the patient base)	High- income	16	13.8%
	Upper-Middle income	70	60.3%
	Lower-middle income	29	25.0%
	Low- income	1	0.9%
Economic status of your patient base	High- income	8	6.9%
	Upper-middle income	90	77.6%
	Lower-middle income	17	14.7%
	Low- income	1	0.9%
Perceived role as a health care professional	Primary care practitioner	17	14.7%
	Neuro - musculoskeletal specialist	77	66.4%
	Spinal specialist	22	19.0%

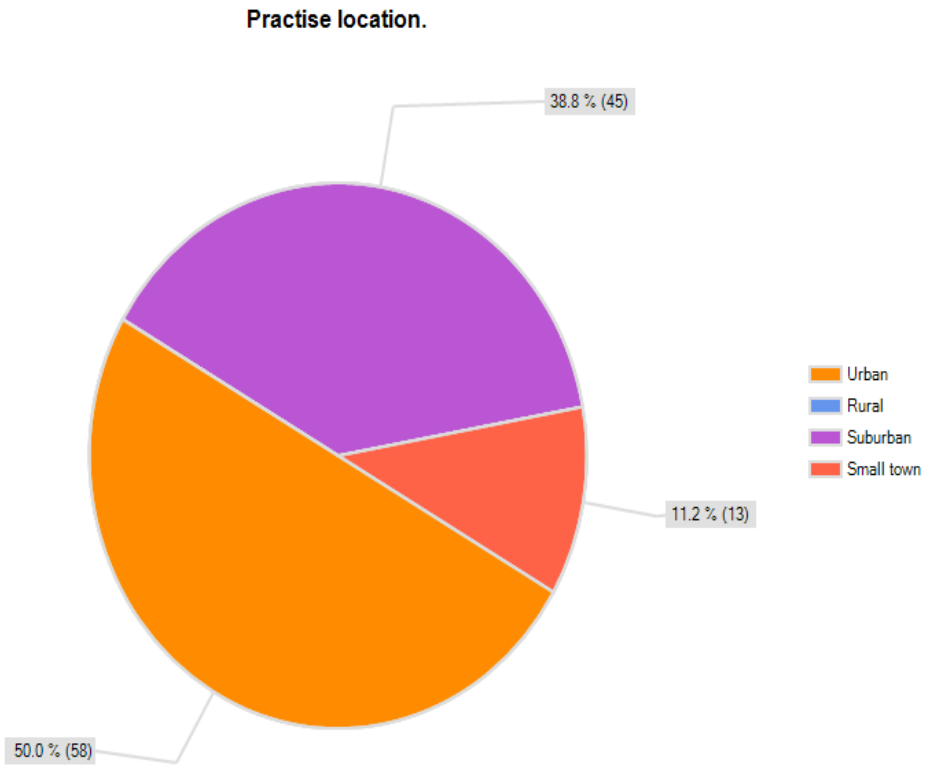

Figure 4.3 Percentages regarding participants practice location

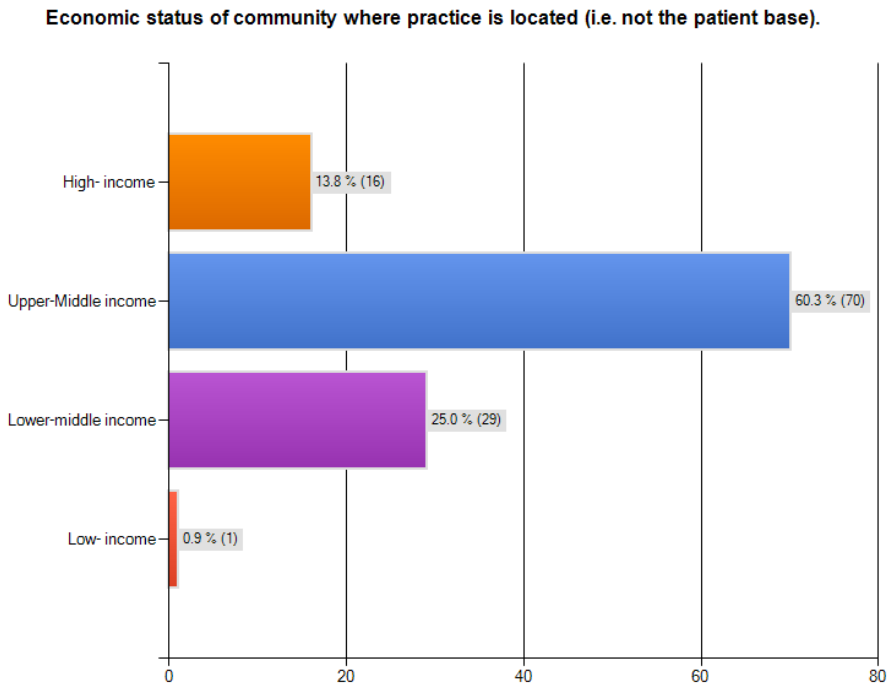

Figure 4.4
Percentages regarding the economic status where participants practice is located

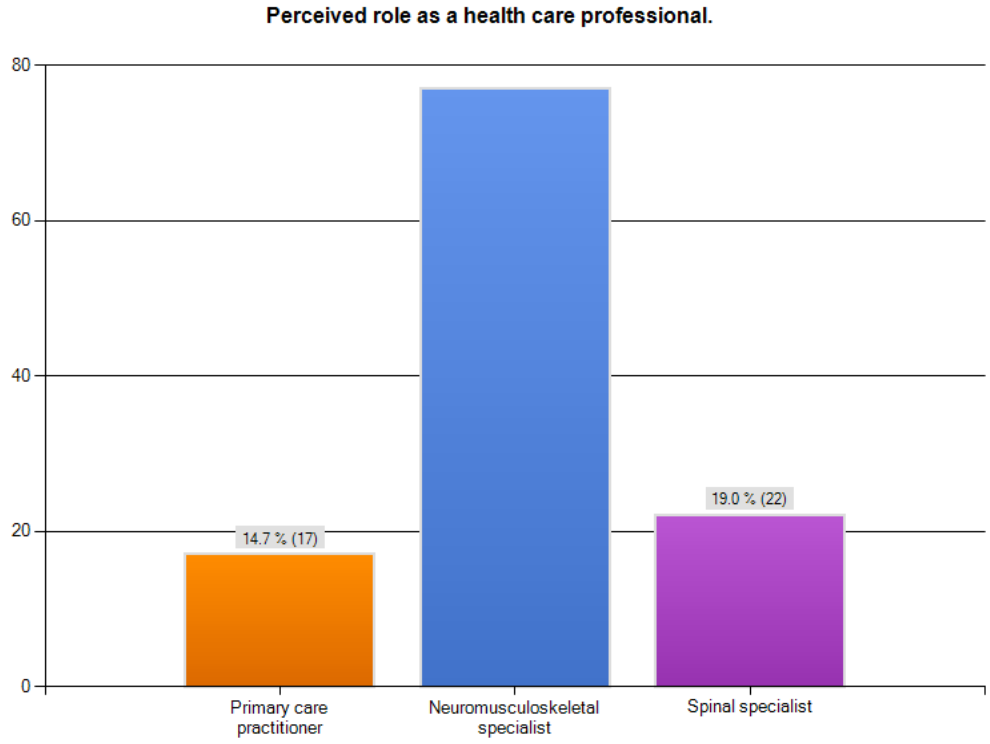

Figure 4.5
Percentages of participants regarding their perceived role as a health care professional

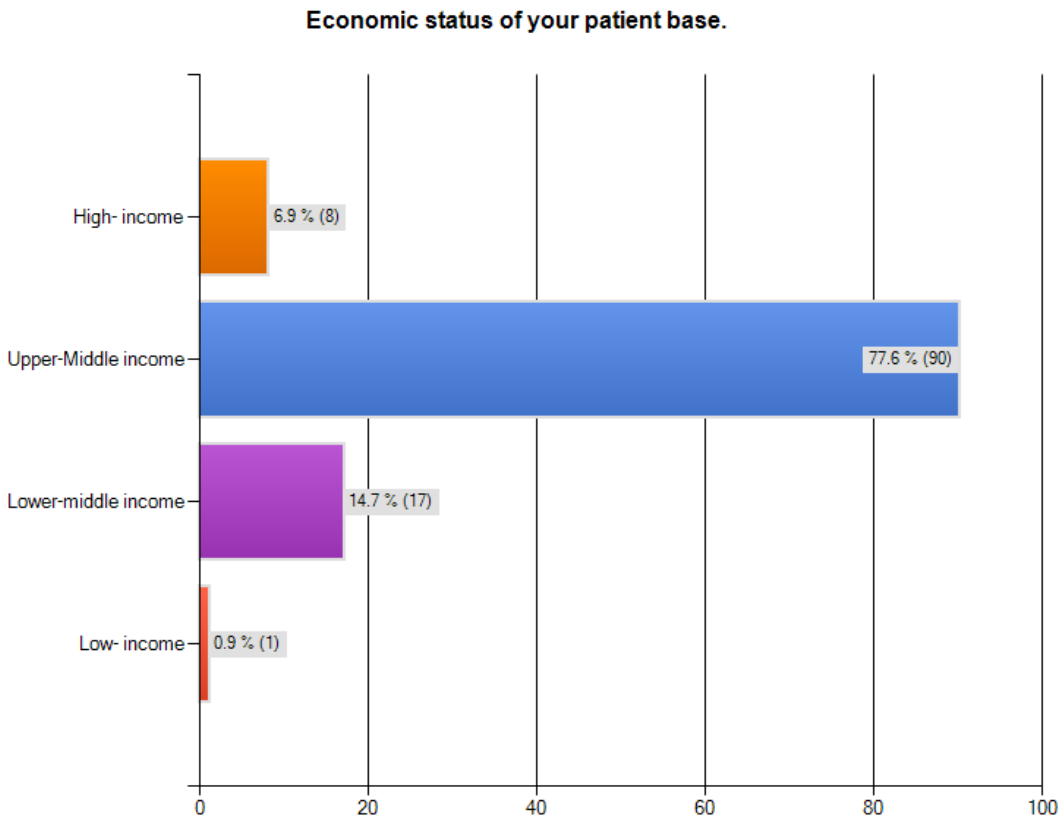

Figure 4.6
Percentages of economic status of respondent's patient base

Discussion:

With regards to practice location (Figure 4.3), the data presented here seems to be at odds with the literature where the distribution of chiropractors in the United States is reciprocal to that of medical doctors with few chiropractors practicing in large urban areas with populations greater than 1.0 million, with most being in towns of less than 50 000 (Cooper, 2001).

Furthermore, the observation that only one respondent practised in a rural setting, mimics South Africa's dilemma of shortages of health professionals in rural settings (Cullinan, 2006; Coovadia, 2009 and Mayosi, 2009). This pattern of responses with regards to practice location was also found in studies by Keyter (2010), De Gouveia, (2009); Bunge, (2007); Mathews, (2006); Fletcher, (2005); Van As (2005), and is also reported in the CASA Handbook (CASA, 2008).

It is well known amongst chiropractors that the profession is divided on issues of professional identity (Meeker, 2002; Carter, 2005 and Mootz, 2007). Figure 4.5 shows that the vast majority of chiropractors that participated in this study perceived themselves as neuro - musculoskeletal specialists (66.4%) with 14.7% perceiving themselves as primary care practitioners and the remainder as spinal specialist (19%). This is surprising, as the chiropractic practitioners in South Africa are first and foremost required to be diagnosticians (portal of entry practitioners), that are also specialised in a particular field (neuro – musculoskeletal care) (Act 63 of 1982 (as amended)). This contrasting data validates the findings by Keyter (2010), where she found that 37.5% of the participants either strongly agreed or disagreed with the statement that chiropractic had a clear identity in South Africa.

Furthermore, the data collected in this study goes against Ivie's (2011) study on chiropractors practicing in Alabama, where 43% of participants perceived themselves as primary care practitioners, 26% as neuro - musculoskeletal practitioners and 29% as portal of entry practitioners. Similar results were reported by Duenas (2003) in a survey on Connecticut – licensed doctors of chiropractic, that showed that the majority of participants perceived themselves as qualified to practice primary care with only 12% of participants considering themselves as neuro - musculoskeletal practitioners only.

4.5.1.3 Discussion of Objective One

Therefore in this study, there were a high proportion of White or Indian young female participants practicing mostly from an urban practice within a middle to high income setting, as neuro - musculoskeletal specialists. Based on the literature it was anticipated that participants would be more supportive of clinical preventive topics (i.e. disease screenings and counselling), as opposed to core public health topics (i.e. public health agencies, public health policy and community health).

4.5.2 Objective Two and Three

The Second Objective was to determine the attitudes and perceptions of chiropractors on the practice of health promotion and disease prevention.

The Third Objective was to determine extent of utilisation of diagnostic screening tests by chiropractors for health promotion and disease prevention.

4.5.2.1 Attitudes to and frequency of counselling patients on health promotion and disease prevention

Findings in Table 4.8 provided data on the **attitudes of participants towards counselling patients** on selected disease risk factors. Additionally, 53% agreed to counselling patients on alcohol abuse, cardiovascular disease (45%), prescription / over the counter medications (60%) and tobacco cessation and risks (41%). Whereas, 87% strongly agreed that they council patients on exercise for disease prevention, dietary habits (62%), injury prevention (87%), ergonomic risk reduction (87%), postural habits (86%), personal stress (65%) and obesity / weight control (60%).

Table 4.8 Counselling activities

Disease risk factors		Count	Column N %	Disease risk factors		Count	Column N %
Alcohol abuse	Strongly agree	25	21.6%	Cancer prevention	Strongly agree	35	30.2%
	Agree	62	53.4%		Agree	66	56.9%
	Disagree	23	19.8%		Disagree	13	11.2%
	Strongly disagree	6	5.2%		Strongly disagree	2	1.7%
Cardiovascular disease	Strongly agree	51	44.0%	Child abuse	Strongly agree	27	23.3%
	Agree	53	45.7%		Agree	36	31.0%
	Disagree	11	9.5%		Disagree	45	38.8%
	Strongly disagree	1	0.9%		Strongly disagree	8	6.9%
Chronic respiratory disease	Strongly agree	26	22.4%	Contraception	Strongly agree	8	7.0%
	Agree	62	53.4%		Agree	45	39.5%
	Disagree	27	23.3%		Disagree	51	44.7%
	Strongly disagree	1	0.9%		Strongly disagree	10	8.8%
Diabetes Mellitus	Strongly agree	42	36.2%	Dietary habits	Strongly agree	73	62.9%
	Agree	59	50.9%		Agree	39	33.6%
	Disagree	12	10.3%		Disagree	4	3.4%
	Strongly disagree	3	2.6%		Strongly disagree	0	0.0%
Dietary	Strongly agree	53	45.7%	Ergonomic	Strongly agree	101	87.1%

supplements	Agree	58	50.0%	risk reduction	Agree	14	12.1%
	Disagree	5	4.3%		Disagree	0	0.0%
	Strongly disagree	0	0.0%		Strongly disagree	1	0.9%

Table 4.8 Counselling activities continued …

		Count	Column N %			Count	Column N %
Exercise for disease prevention / fitness	Strongly agree	101	87.1%	Injury prevention	Strongly agree	101	87.1%
	Agree	15	12.9%		Agree	14	12.1%
	Disagree	0	0.0%		Disagree	1	0.9%
	Strongly disagree	0	0.0%		Strongly disagree	0	0.0%
Mental ill health	Strongly agree	15	12.9%	Obesity / weight control	Strongly agree	69	59.5%
	Agree	51	44.0%		Agree	40	34.5%
	Disagree	39	33.6%		Disagree	5	4.3%
	Strongly disagree	11	9.5%		Strongly disagree	2	1.7%
Osteoporosis prevention	Strongly agree	87	75.0%	Personal stress	Strongly agree	76	65.5%
	Agree	28	24.1%		Agree	35	30.2%
	Disagree	0	0.0%		Disagree	3	2.6%
	Strongly disagree	1	0.9%		Strongly disagree	2	1.7%
Postural habits	Strongly agree	100	86.2%	Prescription / over the counter medications	Strongly agree	24	20.7%
	Agree	16	13.8%		Agree	70	60.3%
	Disagree	0	0.0%		Disagree	20	17.2%
	Strongly disagree	0	0.0%		Strongly disagree	2	1.7%
Safe sex practices STI / HIV	Strongly agree	11	9.6%	Social drugs	Strongly agree	15	12.9%
	Agree	40	35.1%		Agree	55	47.4%
	Disagree	51	44.7%		Disagree	36	31.0%
	Strongly disagree	12	10.5%		Strongly disagree	10	8.6%
Technology addiction	Strongly agree	21	18.1%	Tobacco cessation and risks	Strongly agree	46	39.7%
	Agree	52	44.8%		Agree	48	41.4%
	Disagree	38	32.8%		Disagree	19	16.4%
	Strongly disagree	5	4.3%		Strongly disagree	3	2.6%

Table 4.9 indicates that participants **regularly provide counselling** for the following risks and chronic diseases: cardiovascular disease (56.9%) diabetes mellitus (50.9%), osteoporosis prevention (79.3%), postural habits (97.4%), cancer (39.7%), dietary habits (86.2%), ergonomic risk reduction (96.6%), injury prevention (96.6%), exercise for disease prevention / fitness (98.3%), personal stress (83.6%), prescription / over the counter medications (48.3%) and tobacco cessation and risks (44.8%). Also, 5.2% of participants indicated that they refer patients for osteoporosis prevention.

Table 4.9 Frequency of Counselling activities

Disease risk factors	Frequency	Count	Column N %	Disease risk factors	Frequency	Count	Column N %
Alcohol abuse	Regularly	12	10.3%	Cancer prevention	Regularly	46	39.7%
	Rarely	46	39.7%		Rarely	42	36.2%
	Refer	37	31.9%		Refer	20	17.2%
	Not at all	21	18.1%		Not at all	8	6.9%
Cardiovascular disease	Regularly	66	56.9%	Child abuse	Regularly	4	3.4%
	Rarely	27	23.3%		Rarely	21	18.1%
	Refer	22	19.0%		Refer	49	42.2%
	Not at all	1	0.9%		Not at all	42	36.2%
Chronic respiratory disease	Regularly	27	23.3%	Contraception	Regularly	9	7.8%
	Rarely	37	31.9%		Rarely	46	39.7%
	Refer	41	35.3%		Refer	32	27.6%
	Not at all	11	9.5%		Not at all	29	25.0%
Diabetes Mellitus	Regularly	59	50.9%	Dietary habits	Regularly	100	86.2%
	Rarely	33	28.4%		Rarely	7	6.0%
	Refer	22	19.0%		Refer	9	7.8%
	Not at all	2	1.7%		Not at all	0	0.0%
Dietary supplements	Regularly	83	71.6%	Ergonomic risk reduction	Regularly	112	96.6%
	Rarely	25	21.6%		Rarely	3	2.6%
	Refer	7	6.0%		Refer	0	0.0%
	Not at all	1	0.9%		Not at all	1	0.9%
Exercise for disease prevention / fitness	Regularly	114	98.3%	Injury prevention	Regularly	112	96.6%
	Rarely	2	1.7%		Rarely	2	1.7%
	Refer	0	0.0%		Refer	1	0.9%
	Not at all	0	0.0%		Not at all	1	0.9%
Mental ill health	Regularly	12	10.3%	Obesity / weight control	Regularly	86	74.1%
	Rarely	34	29.3%		Rarely	18	15.5%
	Refer	58	50.0%		Refer	11	9.5%
	Not at all	12	10.3%		Not at all	1	0.9%
Osteoporosis prevention	Regularly	92	79.3%	Personal stress	Regularly	97	83.6%
	Rarely	17	14.7%		Rarely	15	12.9%
	Refer	6	5.2%		Refer	3	2.6%
	Not at all	1	0.9%		Not at all	1	0.9%
Postural habits	Regularly	113	97.4%	Prescription / over the counter medications	Regularly	56	48.3%
	Rarely	2	1.7%		Rarely	43	37.1%
	Refer	1	0.9%		Refer	14	12.1%
	Not at all	0	0.0%		Not at all	3	2.6%
Safe sex practices STI / HIV	Regularly	7	6.0%	Social drugs	Regularly	11	9.5%
	Rarely	35	30.2%		Rarely	45	38.8%
	Refer	35	30.2%		Refer	27	23.3%
	Not at all	39	33.6%		Not at all	33	28.4%
Technology addiction	Regularly	21	18.1%	Tobacco cessation and risks	Regularly	52	44.8%
	Rarely	45	38.8%		Rarely	44	37.9%
	Refer	12	10.3%		Refer	10	8.6%

	Not at all	38	32.8%		Not at all	10	8.6%

Discussion:

The data collected in Table 4.8 and Table 4.9 reflects a similar picture to studies compiled overseas (Hawk and Dusio, 1995; Rupert *et al.,* 2000; Jamison, 2002; Hawk *et al.,* 2004; Christensen *et al.,* 2005; Jamison, 2007; Christensen, 2010 and Ivie, 2011). In a study by Ivie (2011), participants similarly strongly agreed in counselling patients on diet (67%) and weight control (67%). However, 68% strongly agreed to counselling patients on cigarette smoking cessation (68%) as opposed to only 41% of participants in this study who only agreed that chiropractors counsel patients on cigarette smoking cessation.

Data on postural habits and ergonomic risk reduction are on par with the findings of the 2005 Job Analysis of Chiropractic (Christensen *et al.,* 2005) where it was found that 97% of chiropractors surveyed provided advice on posture and ergonomics to 70% of their patients, 90% counselled patients on nutrition and 97% of participants provided recommendations to reduce stress.

Furthermore, Hawks *et al.,*'s (2004) survey of chiropractors on clinical prevention found that 90% of practising chiropractors agreed to providing information on injury prevention. However, fewer participants in this study counselled patients on cigarette smoking cessation (41%) in comparison to the participants surveyed by Hawk *et al.,* (2004) where 69% of participants agreed that chiropractors should counsel on risks of cigarette smoking and the benefits of cessation.

Practitioner responses in Table 4.9 were very similar to the degree they agreed to counsel patients as compared to the studies by Hawk and Dusio (1995), Jamison, (2002), Hawk *et al.,* (2004) and Ivie, (2011). This goes against the observation by Rupert *et al.,* (2000) who reported that although chiropractors report that they counsel patients on disease prevention and health promotion, it is less frequent. Of interest is that 5.2% of the participants reported that they would refer patients for osteoporosis prevention. This finding is small but significant, as osteoporosis screening should be a priority for all chiropractors in light of the fact that chiropractors expertise lie in the musculoskeletal system and because of the high prevalence of osteoporosis and its sequelae in society (Jamison, 2002). This may suggest that a

certain proportion of chiropractors in South Africa may be lacking on certain aspects of chiropractic core competencies, principles and practices. Further research is needed to investigate the prevalence and implications of chiropractors practicing in South Africa on chiropractic core competencies, principles and practices.

The results from Table 4.8 and Table 4.9 further show that counselling by chiropractors in South Africa is in line with the profession internationally when compared to the studies by Rupert *et al.,* (2000), Hawk *et al.,* (2004), Jamison (2002) and Ivie (2011). However, it is important to note that these findings may only represent the participants that participated in this study and not that of the total chiropractors practicing in South Africa.

A comment from the participants was required in this section (see Question 129 on Appendix C3) reading the fact that the Act 63 of 1982 (as amended) requires that "Chiropractic practitioners essentially rely upon non - invasive treatment methods and will refer patients to medical practitioners should medication or surgery be indicated. This approach is further reinforced by chiropractors in their promotion of healthy lifestyles such as the avoidance of smoking and excess stress, proper diet and exercise." According to Hawk *et al.,* (2004), Ivie (2011) and Jamison, (2002), chiropractors generally had positive attitudes towards counselling patients on diet and neuro - musculoskeletal related risk factors and conditions, however, they were found to be lacking on topics such as cigarette smoking, weight control, mental health, safe sex practices and substance abuse. Both the studies by Hawk *et al.,* (2004) and Ivie (2011) suggested that further investigations be done to establish how chiropractors may improve on providing routine counselling and screenings in practice.

4.5.2.2 Attitudes towards and frequency of recommending screening practises

Participants strongly agreed that they recommended blood pressure (62.9%), blood sugar testing (58.6%), X – ray (73.3%), mammography (30.2%), ultra - sound (56.9%), colorectal cancer screenings (25%) and dietary assessments (51.7%) for all patients at risk for diseases of systems that these interventions test. Of the participants, 1.7% indicated that they disagree with recommending X - ray, HIV tests (29%), physical activity assessment (6.9%) and osteoporosis screening (2.6%).

Furthermore, participants agreed that they recommend the following screenings to at risk patients: prostate examinations for men < 50 (42.2%), serum cholesterol (42.2%) and colorectal cancer screenings (44.8%).

Table 4.10 Screening practises

		Count	Column N %			Count	Column N %
Allergic sensitivity	Strongly agree	18	15.5%	Blood culture	Strongly agree	15	13.0%
	Agree	54	46.6%		Agree	65	56.5%
	Disagree	37	31.9%		Disagree	32	27.8%
	Strongly disagree	7	6.0%		Strongly disagree	3	2.6%
Blood pressure testing	Strongly agree	73	62.9%	Blood sugar testing	Strongly agree	68	58.6%
	Agree	42	36.2%		Agree	41	35.3%
	Disagree	1	0.9%		Disagree	7	6.0%
	Strongly disagree	0	0.0%		Strongly disagree	0	0.0%
BMI calculation	Strongly agree	50	43.1%	Bone Scan	Strongly agree	67	57.8%
	Agree	49	42.2%		Agree	42	36.2%
	Disagree	17	14.7%		Disagree	7	6.0%
	Strongly disagree	0	0.0%		Strongly disagree	0	0.0%
Breast exam	Strongly agree	41	35.3%	Colorectal cancer screening	Strongly agree	29	25.0%
	Agree	49	42.2%		Agree	52	44.8%
	Disagree	22	19.0%		Disagree	30	25.9%
	Strongly disagree	4	3.4%		Strongly disagree	5	4.3%
CT scan	Strongly agree	46	39.7%	Dental screening	Strongly agree	20	17.2%
	Agree	49	42.2%		Agree	57	49.1%
	Disagree	20	17.2%		Disagree	32	27.6%
	Strongly disagree	1	0.9%		Strongly disagree	7	6.0%
Dietary assessment	Strongly agree	60	51.7%	Full Blood Count (FBC)	Strongly agree	44	37.9%
	Agree	49	42.2%		Agree	57	49.1%
	Disagree	7	6.0%		Disagree	12	10.3%
	Strongly disagree	0	0.0%		Strongly disagree	3	2.6%
HIV test	Strongly agree	28	24.1%	Mammogram	Strongly agree	35	30.2%
	Agree	46	39.7%		Agree	42	36.2%
	Disagree	34	29.3%		Disagree	32	27.6%
	Strongly disagree	8	6.9%		Strongly disagree	7	6.0%

Table 4.10 Screening practises continued ….

		Count	Column N %			Count	Column N %
MRI	Strongly agree	55	47.4%	Osteoporosis screening	Strongly agree	68	58.6%
	Agree	46	39.7%		Agree	45	38.8%
	Disagree	12	10.3%		Disagree	3	2.6%
	Strongly disagree	3	2.6%		Strongly disagree	0	0.0%
Pap test (women)	Strongly agree	29	25.0%	Physical activity assessment	Strongly agree	64	55.2%
	Agree	49	42.2%		Agree	43	37.1%
	Disagree	32	27.6%		Disagree	8	6.9%
	Strongly disagree	6	5.2%		Strongly disagree	1	0.9%

Prostate exam (men 50+)	Strongly agree	35	30.2%	Prostate specific antigen (PSA) (men 50+)	Strongly agree	38	32.8%
	Agree	49	42.2%		Agree	52	44.8%
	Disagree	26	22.4%		Disagree	23	19.8%
	Strongly disagree	6	5.2%		Strongly disagree	3	2.6%
Serum cholesterol test	Strongly agree	46	39.7%	Snellen chart	Strongly agree	21	18.1%
	Agree	49	42.2%		Agree	56	**48.3%**
	Disagree	19	16.4%		Disagree	35	**30.2%**
	Strongly disagree	2	1.7%		Strongly disagree	4	**3.4%**
Spinal assessment	Strongly agree	90	77.6%	Stool culture	Strongly agree	19	**16.4%**
	Agree	25	21.6%		Agree	44	**37.9%**
	Disagree	1	0.9%		Disagree	45	**38.8%**
	Strongly disagree	0	0.0%		Strongly disagree	8	**6.9%**
Testicular exam (men)	Strongly agree	20	17.2%	Ultra-sound	Strongly agree	66	**56.9%**
	Agree	50	43.1%		Agree	39	**33.6%**
	Disagree	39	33.6%		Disagree	10	**8.6%**
	Strongly disagree	7	6.0%		Strongly disagree	1	**0.9%**
X-ray	Strongly agree	85	73.3%				
	Agree	28	24.1%				
	Disagree	2	1.7%				
	Strongly disagree	1	0.9%				

Table 4.11 Frequency of screening practises

		Count	Column N %			Count	Column N %
Allergic sensitivity	Regularly	13	11.2%	Blood culture	Regularly	9	7.8%
	Rarely	32	27.6%		Rarely	38	32.8%
	Refer	44	37.9%		Refer	47	40.5%
	Never	27	23.3%		Never	22	19.0%
Blood pressure testing	Regularly	96	82.8%	Blood sugar testing	Regularly	60	51.7%
	Rarely	15	12.9%		Rarely	29	25.0%
	Refer	5	4.3%		Refer	25	21.6%
	Never	0	0.0%		Never	2	1.7%
BMI calculation	Regularly	41	35.3%	Bone scan	Regularly	43	37.1%
	Rarely	41	35.3%		Rarely	39	33.6%
	Refer	18	15.5%		Refer	31	26.7%
	Never	16	13.8%		Never	3	2.6%
Breast exam	Regularly	23	19.8%	Colorectal cancer screening	Regularly	9	7.8%
	Rarely	30	25.9%		Rarely	22	19.0%
	Refer	55	47.4%		Refer	65	56.0%
	Never	8	6.9%		Never	20	17.2%
CT scan	Regularly	20	17.2%	Dental screening	Regularly	12	10.3%
	Rarely	37	31.9%		Rarely	22	19.0%
	Refer	55	47.4%		Refer	66	56.9%
	Never	4	3.4%		Never	16	13.8%
Dietary assessment	Regularly	42	36.2%	FBC (general)	Regularly	24	20.7%
	Rarely	34	29.3%		Rarely	38	32.8%
	Refer	38	32.8%		Refer	44	37.9%
	Never	2	1.7%		Never	10	8.6%
HIV test	Regularly	11	9.5%	Mammogram	Regularly	22	19.0%
	Rarely	20	17.2%		Rarely	21	18.1%
	Refer	56	48.3%		Refer	61	52.6%
	Never	29	25.0%		Never	12	10.3%
MRI	Regularly	38	32.8%	Osteoporosis screening	Regularly	45	38.8%
	Rarely	26	22.4%		Rarely	29	25.0%
	Refer	50	43.1%		Refer	39	33.6%
	Never	2	1.7%		Never	3	2.6%
Pap test (woman)	Regularly	13	11.2%	Physical activity assessment	Regularly	52	44.8%
	Rarely	19	16.4%		Rarely	43	37.1%
	Refer	64	55.2%		Refer	16	13.8%
	Never	20	17.2%		Never	5	4.3%
Prostate exam (men 50+)	Regularly	13	11.2%	PSA (men 50+)	Regularly	16	13.8%
	Rarely	20	17.2%		Rarely	23	19.8%
	Refer	71	61.2%		Refer	64	55.2%
	Never	12	10.3%		Never	13	11.2%
Serum cholesterol test	Regularly	35	30.2%	Snellen chart	Regularly	7	6.0%
	Rarely	23	19.8%		Rarely	22	19.0%
	Refer	50	43.1%		Refer	69	59.5%
	Never	8	6.9%		Never	18	15.5%
Spinal assessment	Regularly	101	87.1%	Stool culture	Regularly	4	3.4%
	Rarely	10	8.6%		Rarely	18	15.5%
	Refer	4	3.4%		Refer	67	57.8%
	Never	1	0.9%		Never	27	23.3%
Testicular exam (men)	Regularly	11	9.5%	Ultra-sound	Regularly	64	55.2%
	Rarely	14	12.1%		Rarely	26	22.4%
	Refer	63	54.3%		Refer	24	20.7%
	Never	28	24.1%		Never	2	1.7%
X-ray	Regularly	98	84.5%				
	Rarely	11	9.5%				
	Refer	6	5.2%				
	Never	1	0.9%				

Table 4.11 indicates the frequency that participants recommended screenings for at risk patients in practice. 84.5% regularly recommended X - ray, MRI (32.8%) and ultra – sound (55.2%). In addition, 52.6% refer for mammography, colorectal cancer screening (56%) and 61.2% for prostate examination (men 50+).

Table 4.12 Frequency of screening practises

	Frequency	Percent
All the answers above I (practitioner) base on the average patient seen on practice. Not all of them need CT scans or MRIs, obviously that will be recommended when indicated but it won't be recommended for ALL patients?	1	0.9
Arthritis screening/uric acid; auto-immune disorders.	1	0.9
Cardiovascular risk testing such as HS-CRP and homocysteine Vitamin D3 testing Iron Profile with Ferritin	1	0.9
Depends on the extent of symptoms versus plain risk factors	1	0.9
Rheumatic screen	1	0.9
Thyroid testing, Doppler studies	1	0.9
With all the above mentioned examinations, it depends on the level of training. If FBC and other blood tests are part of the core curriculum then I'd agree with including them into what we do. As far as more specialized testing that requires high specificity (breast exam, cancer screening etc.) I'd suggest we leave that to the health care practitioners that specialize in those fields.	1	0.9

The open ended “other“ option (Question 67 and 68; Appendix C3) produced the following qualitative responses (Table 4.12). Regarding Table 4.12, one respondent recommended cardiovascular risk testing (HS – CRP and Homocysteine), Vitamin D3 testing and Iron Profile with Ferritin, one recommended screening for arthritis / uric acid and auto – immune disorders and one recommended Thyroid testing and Doppler studies.

Table 4.13 Frequency of screening practises

	Frequency	Percent
Arthritis profile and Anti-CCP/uric acid; Auto-immune disorder screening	1	0.9
Doppler - rarely Thyroid - refer	1	0.9
Patients generally have to have seen a specialist to get an MRI or CT SCAN done, so would have to be referred if that investigation is required.	1	0.9
Rheumatic screening	1	0.9
Stress testing	1	0.9

From Table 4.13, one respondent mentioned that they would refer for Thyroid testing and that they rarely utilized Doppler studies.

Discussion:

Chiropractors as primary health care professionals are legally obliged within most jurisdictions to reach a diagnosis (Chapman-Smith, 1996; AHPCSA, 2012 and Christensen, 2005).

From the results in Table 4.10, participants in this study showed similar responses to the study by Ivie (2011), where the majority of participants regularly performed screenings related to the neuro - musculoskeletal system as opposed to screenings such as prostate examinations and colorectal cancer screenings with a greater non – musculoskeletal focus. Similarly to the survey by Hawk and Dusio (1995), in a national survey of 492 US chiropractors, the least discussed screenings were laboratory tests (in - office or referred) with 23.5% of the participants reporting that they never did laboratory tests. In comparison, 58.6% of the participants in this study reported they strongly agreed or agreed (35.3%) to recommending blood sugar tests, 24.1% strongly agreed or agreed (39.7%) to recommending HIV tests, 37.9% strongly agreed and 49.1% agreed to recommending FBC and 39.7% strongly agreed or agreed (42.2%) to recommending serum cholesterol tests.

These findings may be as a result of the high prevalence of HIV in South Africa (Unwin, 2006 and Tollman, 2008). Nevertheless, there were still surprising results that reflected that 29.3% of the participants disagreed and 6.9% strongly disagreed to recommending HIV tests. However, this may be due to the majority of the participants practising in middle - upper and upper - class income areas where the prevalence of HIV might be perceived to be less common (Coovadia, 2009). It is suggested that further investigations be implemented to determine the prevalence and relevance of HIV / AIDS screening and counselling practises by chiropractors practising in South Africa.

Furthermore, in a retrospective analysis of laboratory tests done over a 51 month period at a chiropractic training clinic in Quebec, 431 cases of hyperlipidaemia, thyroid dysfunction (42), anemia (32), systemic arthritis (18) and diabetes mellitus (17) were found. The authors concluded that laboratory testing forms an important part of chiropractic practice and state that they are an “essential clinical procedure for complete public protection” (Boisvert, 2006).

Therefore, it may be reasonable to assume, based on the quadruple burden of disease in South Africa (Mayosi, 2009), that the disease profiles of South Africa are far worse than that of Quebec; thus it is even more relevant that chiropractors in South Africa perform / refer for laboratory tests on a regular basis. However, it is not possible to draw comparisons between laboratory tests performed / referred for in chiropractic clinics in South Africa at this time. It is thus recommended that future studies investigate laboratory testing and results that are carried out by chiropractic clinics in South Africa.

4.5.2.3 Attitudes to and frequency of elements of health promotion and disease prevention (institutional, policy, law and evidence - based practise)

4.5.2.4 Elements of health promotion

In Table 4.14, it was found that 39.1% agreed and 9.6% strongly agreed that a *p* value of 0.32 is less statistically significant than a *p* value of 0.52 (an incorrect response indicated by nearly half the participants). In respect of interpreting conclusions in scientific articles, 58.6% agreed and 11.2% strongly agreed that is easy for them (this contrasts with the participants' ability to translate the *p* value). Additionally, 58.6% agreed that the best use of evidence should take into consideration the cultural and social systems of a community in health promotion, with 54.3% agreeing that trade and marketing policies are important to control the over - consumption of unhealthy foods, to 62.9% strongly agreeing that the scope of chiropractic practice includes health promotion and 37.1% agreeing and 18.1% strongly disagreeing that governments proposed National Health Insurance plan is a positive step for health promotion in South Africa.

Table 4.14 Elements of health promotion

		Count	Column N %	
A p value of 0.32 is less statistically significant than a p value of 0. 52.	Strongly agree	11	9.6%	As a chiropractor I fully understar the evidence - based practice procedure.
	Agree	45	39.1%	
	Disagree	37	32.2%	
	Strongly disagree	22	19.1%	
Busy time schedules prevent me from searching, understanding and interpreting articles from scientific journals.	Strongly agree	18	15.5%	Chiropractic clinics should activel support government initiatives to protect health (e.g. Vuka South Africa: move for your health).
	Agree	54	46.6%	
	Disagree	38	32.8%	
	Strongly disagree	6	5.2%	
Chiropractors are prevented from providing disease preventative counselling to patients due to disease prevention counselling services not being reimbursed by medical aid companies.	Strongly agree	11	9.5%	Cigarette smoking should be ban from all public out - door spaces (parks).
	Agree	42	36.2%	
	Disagree	59	50.9%	
	Strongly disagree	4	3.4%	
Colleagues have shared evidence-based guidelines with me.	Strongly agree	17	14.7%	Community - wide campaigns sho be used as a strategy to increase physical activity.
	Agree	59	50.9%	
	Disagree	36	31.0%	
	Strongly disagree	4	3.4%	
Does the scope of chiropractic practice include health promotion.	Strongly agree	73	62.9%	Emphasis is placed on evidence- based practice in chiropractic training institutions.
	Agree	40	34.5%	
	Disagree	3	2.6%	
	Strongly disagree	0	0.0%	
Emphasis should be placed on health promotion and disease prevention in chiropractic training institutions.	Strongly agree	57	49.1%	Governments proposed National Health Insurance plan is a positiv step for health promotion in South Africa.
	Agree	52	44.8%	
	Disagree	6	5.2%	
	Strongly disagree	1	0.9%	
Healthy behaviours are linked to healthy minds.	Strongly agree	73	62.9%	Health professionals should advoc for the protection of the environme during clinical interaction with pati (e.g. energy saving, recycling).
	Agree	41	35.3%	
	Disagree	1	0.9%	
	Strongly disagree	1	0.9%	

Table 4.14 Elements of health promotion continued

		Count	Column N %	
Increasing physical activity at the community level requires multi-disciplinary action (health, environment, transport, sport, culture and the economy).	Strongly agree	55	47.4%	In health promotion the best use evidence should take into consideration the cultural and social systems of a community.
	Agree	57	49.1%	
	Disagree	3	2.6%	
	Strongly disagree	1	0.9%	
Interpreting conclusions in scientific articles is easy for me.	Strongly agree	13	11.2%	It is important to discuss evidenc based guidelines with colleagues
	Agree	68	58.6%	
	Disagree	34	29.3%	
	Strongly disagree	1	0.9%	
It is important to support the development of healthy environments (e.g. sports and recreation facilities) to prevent disease.	Strongly agree	59	50.9%	It is important that chiropractors advocate prevention.
	Agree	56	48.3%	
	Disagree	1	0.9%	
	Strongly disagree	0	0.0%	
Lancet is a more reputable source of evidence based practice compared to Journal of Manipulative and Physiological Therapeutics.	Strongly agree	3	2.6%	Patients are receptive to messag of prevention.
	Agree	17	14.8%	
	Disagree	87	75.7%	
	Strongly disagree	8	7.0%	
Policy changes at the community level lead to better changes in lifestyle habits than counselling patients in clinical practise.	Strongly agree	15	12.9%	Qualitative research would provid the best evidence if I wanted to determine the most likely course a disorder.
	Agree	51	44.0%	
	Disagree	44	37.9%	
	Strongly disagree	6	5.2%	
Scope of practice prevents ordering of diagnostic screening tests.	Strongly agree	23	19.8%	There is insufficient evidence on chiropractic adjustments to guide clinical practice.
	Agree	43	37.1%	
	Disagree	42	36.2%	
	Strongly disagree	8	6.9%	
There is growing evidence supporting the effectiveness of chiropractic maintenance care.	Strongly agree	37	31.9%	Trade and marketing policies are important to control the over-consumption of unhealthy foods.
	Agree	65	56.0%	
	Disagree	14	12.1%	
	Strongly disagree	0	0.0%	
The sale of cigarettes should be banned.	Strongly agree	39	33.6%	Trans - fats should be banned.
	Agree	39	33.6%	
	Disagree	33	28.4%	
	Strongly disagree	5	4.3%	

Discussion:

According to Ivie (2011) environmental factors affect public health through norms, standards and organizational structures provided with that paradigm (ecological paradigm) (Glanz *et al.,* 2008). This paradigm or environment from a healthcare context influences a patient's health through the behaviour and actions of chiropractors (as a representative of the paradigm). Results from Table 4.14 indicate that chiropractors practicing in South Africa, similarly to participants in the study by Ivie (2011), had strong views regarding institutional levels of influences in health promotion, as 49.1% strongly agreed and 44.8% agreed that emphasis be placed on health promotion and disease prevention in chiropractic training institutions. Similarly, 61.2% of the participants strongly agreed and 36.2% agreed that chiropractors advocate prevention and 36.2% strongly agreed and 54.3% agreed that emphasis is placed on EBP in chiropractic training institutions.

An important observation that can be mentioned under the institutional influences on the participants is that despite the majority of the participants being educated in South Africa (Table 4.3) where they are exposed to EBP, they seem to be inappropriately versed in evidence based principles (Table 4.14, Table 4.15, Table 4.16 and Table 4.17). This, contrasts to the fact that EBP is being encouraged within the profession (WFC / ACC / CCIAP Educational Conference: Translating Evidence into Practice, 2012; Hawk *et al.,* 2012(b) and Meeker, 2007). As an example, the majority of participants who are educated in South Africa, are exposed to EBP since they have to complete an extensive research methods module and a Master's research dissertation as part of their training programme (Chiropractic and Somatology Handbook, 2013). However, the results from Table 4.14, Table 4.15, Table 4.16 and Table 4.17 do not reflect this outcome.

Reflected in Table 4.14, 9.6% of the participants strongly agreed and 39.1% agreed that a *p* value of 0.32 is less statistically significant than a *p* value of 0.52, indicating that there is a compromise of the use of EBP by chiropractors in South Africa. Against this, 25% strongly agreed and 58.6% agreed that they fully understand the EBP procedure and 11.2% strongly agreed and 58.6% agreed that interpreting conclusions in scientific articles was easy for them. It may be the case that the training of

chiropractors in South Africa be revised in regards to EBP as has been proposed overseas (Ivie, 2011; Hawk, 2012; Banzai, 2011 and Triano *et al.,* 2010).

In reference to Table 4.16 and Table 4.17 that relates to Objective Two in this study, it would seem that the participants in this study do not have the tools or resolve to be able to move forwards with EBP and therefore it is likely that they do not incorporate this into their practices. However, further and more in - depth investigation on EBP is necessary to confirm these findings.

Furthermore, health promotion is considered to be both social and political in nature (World Health Organisation Health Promotion Glossary, 1998 and Masuku, 2009), where the use of best evidence (being a major component of clinical and economic policy internationally) in guiding clinical practice, lending itself to the development of quality health services (Gerrish, 2006). Therefore, the results obtained in this study (Table 4.14; 4.15; 4.16; 4.17 and section 4.5.3) regarding EBP, undermine the quality of health services provided by chiropractors in South Africa and may negatively affect the profession's goals of being accepted into the South African healthcare system as credible and reliable healthcare professionals.

Regarding policy and law influences on health promotion, it was found that 37.1% disagreed and 18.1% strongly disagreed that the government's proposed NHI plan is a positive step for health promotion in South Africa, while 25.9% strongly agreed and 66.4% agreed that chiropractic clinics should actively support government initiatives to protect health. These responses are congruent with the comments made by Ramathuba (Forbes – Newswatch, 2013), who was reported to have indicated that the current status of healthcare in South Africa mitigates against the possibility of a successful NHI (Forbes – Newswatch, 2013). However, it still does not resolve the responsibility of the health professional to institute active support for public health initiatives outside of the NHI.

Notwithstanding the negative views towards the success of the NHI, the South African government has incorporated the chiropractic profession into the National Department of Health's comprehensive package of services under the NHI (Masuku, 2009). However, the results from this study are not consistent with the NHI values which plan to strengthen the health system through the primary healthcare approach,

with emphasis on public health, disease prevention and health promotion (Naidoo, 2011). It is therefore recommended that more emphasis be placed on public health and health promotion by chiropractors in South Africa, as the NHI would provide a vehicle for the profession to be incorporated into the public health sector of South Africa (Masuku, 2009).

Thus, participants seem undecided over the WHO's action area of reorientation of health services (as set out in the Ottawa Charter) and the South African governments NHI plan, which aims to strengthen the South African health system by making comprehensive healthcare available to all the people of South Africa (South Africa: Department of Health's White Paper for the Transformation of the Health System in South Africa, 1997).

In contrast, findings from Table 4.14 seem to be congruent with four of the five action areas for health promotion as set out by the WHO i.e.:

- developing healthy public policy,
- establishing supportive environments for health,
- strengthening community action and
- developing personal skills.

Additionally, participants seemed to agree with the comments made in the 2011 budget speech by Motsoaledi (Bateman, 2011) which emphasised the desperate need to 'clamp down' on trade and industry by introducing legislations targeting the advertising of cigarettes and alcohol in addition to the production and advertisement of unhealthy foods (Bateman, 2011).

Furthermore, participants seem to recognise the social and political nature of health promotion (World Health Organisation Health Promotion Glossary, 1998 and Masuku, 2009), with over 50% of the participants agreeing that policy changes on trade and marketing can positively impact health, 25% strongly agreeing and 42.2% agreeing that trans - fats should be banned, 33.6% strongly agreeing or agreeing (33.6%) that the sale of cigarettes be banned, while 25.9% strongly agreed and 66.4% agreed that chiropractic clinics should actively support government initiatives to protect health.

Based on the agreement with the WHO principle action areas, one would assume that the participants would be well versed in EBP. However, when Table 14.4 is cross – referenced to Table 4.16, the results are not consistent with each other. The majority (75.7%) disagreed and 7% strongly disagreed (total 82.7%) that the Lancet is a more reputable source of EBP compared to the Journal of Manipulative and Physiological Therapeutic. This underscores the participants lack of ability to acquire evidence from the best, most current research literature as previously noted by Hawk *et al.,* (2012(b)). However, it could be argued that this may be due to participants being interested in research literature that specifically is chiropractic / neuro - musculoskeletal in nature, which can be seen in Table 4.16 (with the majority of participants (57%) indicating that they use the Journal of Manipulative and Physiological Therapeutics to inform best practice, as opposed to only 3% utilizing the Lancet). This again seems to suggest that the participants do not look beyond their field of speciality (viz. neuro – musculoskeletal) and limit their public health activities, health promotion and disease prevention to this limited domain of medicine. In light of this, and due to the complexity of health promotion that draws on a wide variety of resources, research, practices and disciplines (Lundy, 2010), it is important that chiropractors utilize a variety of evidence – based practices. This however does not seem to be substantiated by the outcomes of this study.

In contrast to Ivie's (2011) study, the participants in this study disagreed (50.9%) or strongly disagreed (3.4%) that they are prevented from providing disease preventative counselling to patients for any reason (e.g. medical aid carriers). In Ivie's (2011) study, 79% strongly agreed, while 15% agreed that insurance companies prevent them from being reimbursed for prevention.

Also of importance is that participants in this study were more willing to support government initiatives to protect health, support ban on cigarettes and trans - fats in comparison to the participants in Ivie's (2011) study.

4.5.2.5 Qualitative responses to media sources for information on best practise

Table 4.15 Responses to media sources for information on best practise

	Count	Column N %
Audio / visual	14	12
Books	23	21
Experts	11	10
Internet	96	88
Journal	47	43
News papers / magazines	20	18
None	5	4
library	1	0

In congruence with the previous assertions for lack of research and EBP principles, Table 4.15 shows that the majority of participants used the internet (88%) for information to inform best practice, followed by journal articles (43%) and text books (21%). A very small percentage (4%), indicated that they utilised no sources of information to inform best practice.

This is crucial information in that the participants generally seemed unable to interpret the findings of research / rate journal articles adequately (see discussion for Table 4.14) or evaluate the strength of research within presented work. Therefore, it seemed that the participants in this study were open to easily utilised internet sources which they were unable to fully evaluate and appreciate as a basis for their health promotion and disease prevention activities in their practices. This further implies that the access to literature for EBP is either outdated (books from peer review) and / or predominantly from an incorrect source (internet), which the practitioners have limited ability to adequately critique, as their critiquing criteria are not in line with the tools utilised in research practice (Liddle, 1996; PEDro scale, 1999 and Wells, 2011). Thus, the use of non – internet, appropriate research based publications by those able to review these effectively therefore constituted the minority of the participants.

This again raises the question of whether the participants actually understand EBP and its practice within the domain of health promotion and disease prevention. Additionally, this questions whether the principles of health promotion and disease

prevention are actually employed practically and then again also outside of the neuro - musculoskeletal health domain.

It would therefore be suggested that future studies qualitatively evaluate practice procedures and processes to validate the practical use of EBM within a clinical setting.

4.5.2.6 Qualitative responses to Journals that participants mentioned they utilize to inform best practice

Table 4.16 Qualitative responses to Journals that participants mentioned they utilize to inform best practice

	Count	Volume N %
American Chiropractic Association (ACA)	**2**	**1**
Acta pediatrica	1	0
American Journal of Roentgenology (AJR)	1	0
British Journal of Cancer (BJC)	1	0
British Journal of Roentgenology (BJR)	1	0
BMC Complementary and Alternative Medicine	1	0
British Medical Journal (BMJ)	9	8
Chiropractic and Manual Therapies (CMT)	1	0
Chiropractic and Osteopothy (CO)	2	1
Canadian Chiropractor	**1**	**0**
Chiropractic Report	**12**	**11**
Chiropractic journals	4	3
Clinical Anatomy	1	0
Clinical Chiropractic	3	2
Cochrane Reviews	1	0
Dynamic chiropractic	**2**	**1**
E-medicine	**1**	**0**
Expert	**1**	**0**
Functional Neurology	1	0
Inappropriately identified	**14**	**12**
Integrative medicine	2	1
Journal of American College of Sports Medicine (JACSM)	1	0
Journal of the American Medical Association (JAMA)	1	0
Journal of Applied Physiology (JAP)	1	0
Journal of the Canadian Chiropractic Association (JCCA)	1	0
Journal of Chiropractic Medicine (JCM)	6	5

Journal of Manipulative and Physiological Therapeutics (JMPT)	63	57
Journal of the Neuro - musculoskeletal System (JNMS)	1	0

Table 4.16 Qualitative responses to Journals that participants mentioned they utilize to inform best practice continued …

Journal of Orthopaedic and Sports Physical Therapy (JOSPT)	1	0
Journal of Psychoactive Drugs (JPD)	1	0
Journal of Physical Medicine (JPM)	1	0
Journal of Spinal Disorders (JSD)	1	0
Journal of Sports Medicine (JSM)	8	7
Journal of Vertebral Subluxation Research (JVSR)	**2**	**1**
Journal of Paediatrics	3	2
Journal of biomechanics	1	0
Lancet	4	3
Journal of Molecular Psychiatry (MP)	1	0
Manual Therapy	2	1
Medical chronical	1	0
Medscape	**1**	**0**
Men's Health magazine	**1**	**0**
New England Journal of Medicine (NEJM)	2	1
Natural Medicine Journal (NMJ)	1	0
None	9	8
PAIN	2	1
Pain SA	1	0
Physical Therapy	1	0
Pubmed	**4**	**3**
South African Journal of of Physiotherapy (SAJP)	3	2
South African Medical Journal (SAMJ)	1	0
South African Sports Medicine Journal (SASMJ)	1	0
Spine	17	15

Key: All those highlighted in bold represent non - responses, newspapers, association publications or journals that have very low impact factors and where participants indicated they did not utilise any journals. Inappropriately Identified: Non - responses

Table 4.16 represents the journals that participants used to inform best practice. The most commonly used journals included the: Journal of Manipulative and Physiological Therapeutics (57%), Spine (15%) and the Journal of Sports Management (7%). Additionally, 8% of the participants indicated that they did not use journals to inform best practice and 9% inappropriately identified the question (i.e. non - response). Furthermore, 51 responses were not to journals, but rather newspapers, association publications or journals that have very low impact factors (this cumulatively affected 46% of the population).

This re - iterates that about 40% of the sample were unable to identify appropriate journal sources for EBP. In addition, the participants that were able to identify journals resulted in a wide variety of journals that ranged from an average impact factor to those with a large impact factor. This range of results gives an even smaller pool of participants that would be able to effectively utilise high impact journals (Table 4.17), assess them critically and implement them in practice. This would leave a small proportion of the population that would then be able to actively contribute to the EBP movement within public health in a constructive and meaningful way.

4.5.2.7 Qualitative responses to how participants critically appraise literature

Table 4.17 Qualitative responses to how participants critically appraise literature

	Count	Column / N %
Bias	18	18
Comparisons	6	6
Control	5	5
Inappropriate identified	18	18
Methodology	20	20
No response	11	11
Outcomes	5	5
Patient compliance	1	1
Peer reviewed	12	12
Publication	8	8
References used	8	8
Relevance of study	10	10
Relevance to chiropractic	1	1
Sample selection	5	5
Sample size	24	25
Statistical significance	6	6
Study Design	12	12
Statistical methods	2	2

Table 4.17 represents how participants critically appraised research literature. This shows a varied response from 20% indicating that they critically appraise literature by looking at the methodology used, 12% the study design, 25% the sample size and 18% for any bias. 11% did not respond to the question and 18% answered the question inappropriately.

These findings, reinforce the previous assertions (Table 4.14 discussion and Table 4.16 discussion), where it was identified that participants indicated that they were either unable to contextualise literature or had sourced literature that was potentially inappropriate. In this context, without the tools for appropriate review of the research, practitioners seem to be unable to draw maximum benefit from the information offered.

Therefore, it would seem that the consensus statement from the WFC / ACC education conference in Perth Australia (WFC / ACC / CCIAP Educational Conference: Translating Evidence into Practice, 2012) would hold true: The profession needs to enable a mechanism whereby research reviews (or critical analyse of the literature) be made available to practitioners in a manner that allows for easy access with the need to source and critique removed, as the practitioners seem not to have these abilities practically at hand. Another alternative that was presented at the same conference was the Norwegian model of research development within the profession, where the practitioners in the field were trained over a period of time, to develop in their research capacity, both to assist researchers draw information from field practices but also in order for the practitioners to be able to draw a more meaningful and clinically useful picture from published literature (WFC / ACC / CCIAP Educational Conference: Translating Evidence into Practice, 2012). Both these mechanisms would enable the patient to benefit from the outcomes of research and facilitate EBM (Sackett *et al.,* 1996).

4.5.2.8 Attitudes to information provided in chiropractic practices on disease prevention topics

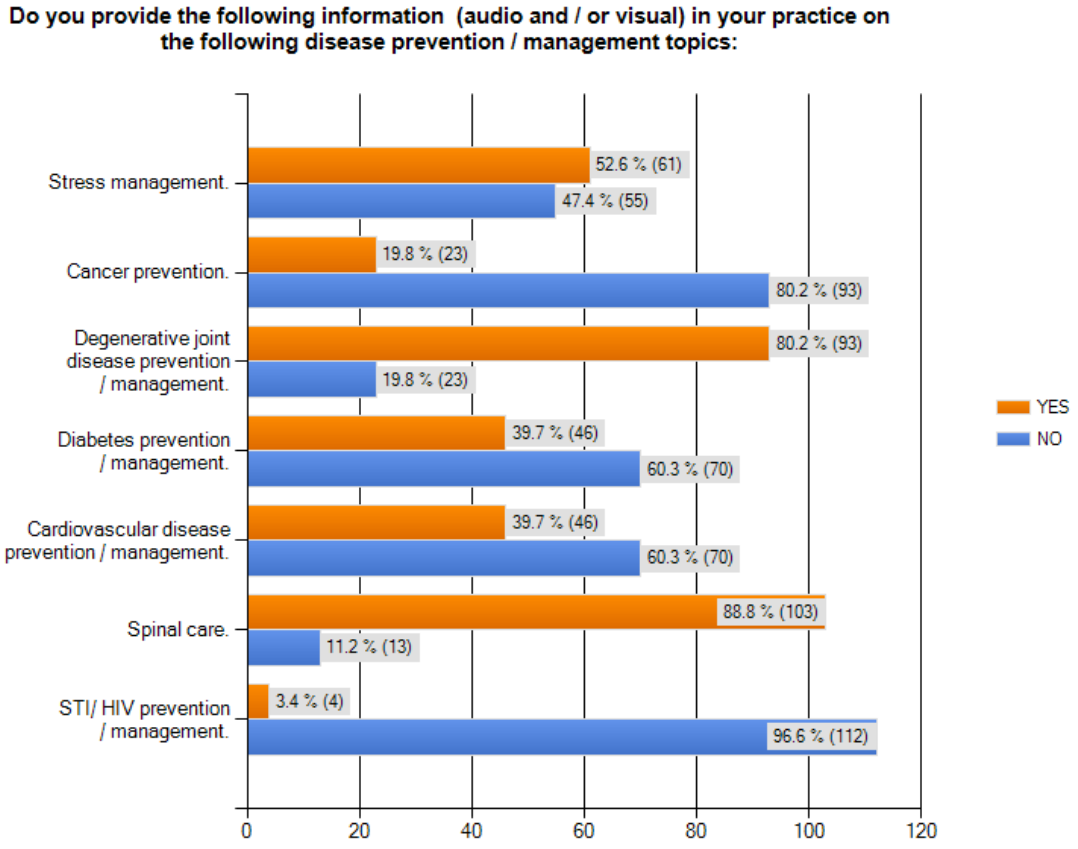

Figure 4.7

Percentage of positive responses to providing information on disease prevention topics

In Figure 4.7 on information (audio and / or visual) that chiropractors provide in practice on disease prevention / management topics; 80.2% provide information on degenerative joint disease prevention / management, spinal care (88.8%), stress management (52.6%) and 96.6% indicated that they did not provide information on STI / HIV prevention / management and diabetes mellitus prevention / management (60.3%).

These results are in line with the predominant focus of chiropractic practice, which is neuro - musculoskeletal in nature (Vear, 1992; Jamison, 2002; Meeker, 2002; Christensen, 2005; Kew, 2006 and Christensen, 2010). The focal points being on

activity, lifestyle, work place and leisure ergonomics, prevention of degenerative joint disease as well as stress management. This again may reflect the chiropractors limited understanding of public health, health promotion and disease prevention.

The results do however reflect that there is a paucity of general health care that is provided to the patients in terms of disease / conditions that fall outside of focus of the scope of practice. This is interesting as the Act 63 of 1982 (as amended) and the disease profiles within the South African context demand both a primary care physician role and exposure to patients with diseases of a non – neuro - musculoskeletal origin respectively. These results seem to support the lack of EBP used in the public health domain – particularly in face of the inability of the practitioners to interpret and therefore implement information on public health principles outside of their specific domain.

It is therefore recommended that future research look directly at this area – viz. the use of informational aids outside of the direct focus of the profession ambit, in order to assist with improving practice in this domain and therefore facilitating a better rounded public health approach within the practitioner's individual practices.

4.5.2.9 Attitudes (Figure 4.8) and knowledge (Table 4.18) towards statements on health promotion and disease prevention

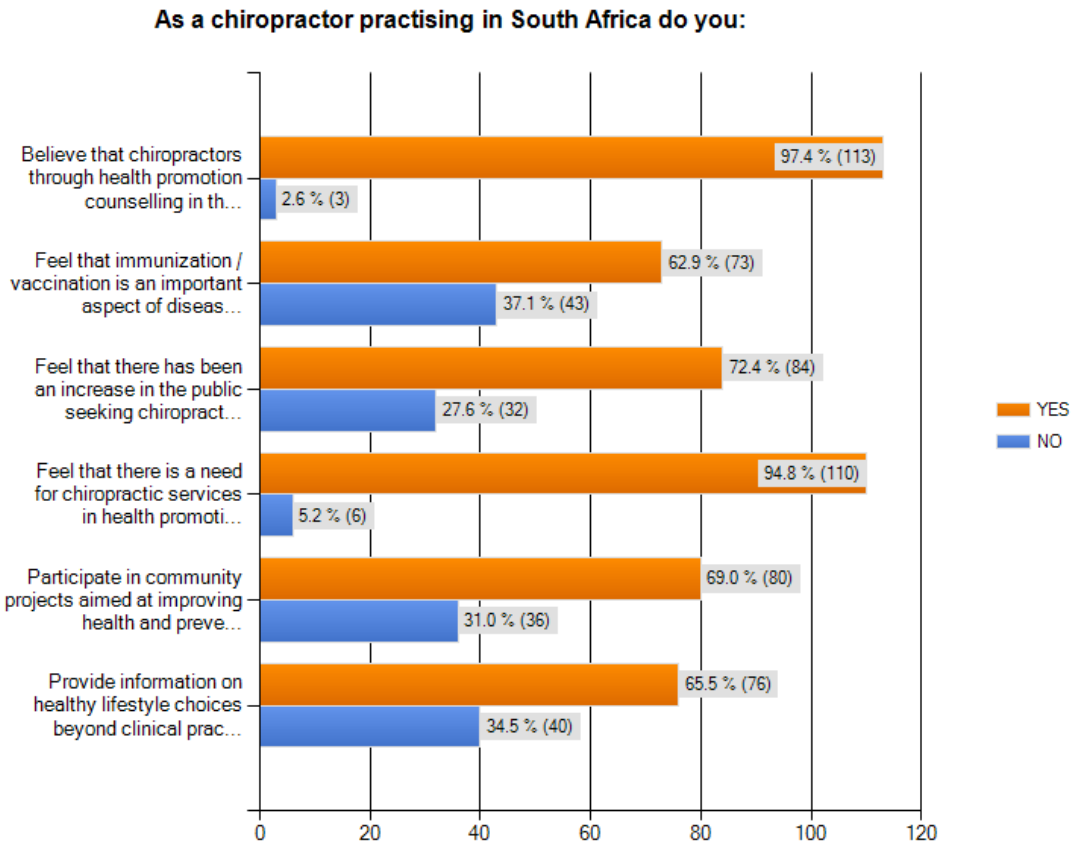

Figure 4.8
Percentage of agreement to various statements about practising as a chiropractor

In Figure 4.8, 72.4% of participants reported that there had been an increase in the public seeking chiropractic care in the management of non – neuro - musculoskeletal complaints, 94.8% reported that there is a need for chiropractic services in health promotion and disease prevention in public health settings (e.g. hospitals, community clinics) and 62.9% indicated that immunization / vaccination is an important aspect of disease prevention.

These responses are, in principle, contradictory to the actual practice noted in Figure 4.7, where little emphasis was placed on providing information to patients through audio or visual aids.

Additionally, the suggestions that chiropractic health services should be in pubic hospital settings (when few practitioners supported the NHI) and that the promotion of immunisation is important are difficult to underscore when the practitioners seemingly have little information outside of their principle domain of operation. The only possible reason for these contradictory responses may lie in the fact that the chiropractic profession historically has portrayed a “cure all approach” by way of manipulation (Wardwell, 1975; Coulter, 1992 and Chapman - Smith, 1996), which may still be evident in some practices in 2013. In the South African context, this approach to EBP in public health would be a significant risk, in that patients present with diseases / conditions that are not amenable to this approach of healthcare, lack of appropriate referral and the sequelae for the patients and the practitioners may be disastrous.

This is of concern as these views and opinions are not from an evidence based vantage point and therefore would not be supported by non - chiropractic physicians and those chiropractors who promote EBP. This lack of EBP also detracts from the integration of the chiropractic profession into the mainstream healthcare system.

4.5.2.10 True and False questions to statements on health promotion and disease prevention

In Table 4.18, 76% of participants answering 'true' for the statement, “The South African Department of Health has a directorate for Health Promotion” and 59.5% that the majority of deaths from non - communicable diseases occur in lower and middle - income countries. Participants were split 50% over the statement, the WHO has not published guidelines on the training and safety of chiropractic.

Table 4.18 True and False questions to statements on health promotion and disease prevention

		Count	Column N %
The South African department of Health has a directorate for Health Promotion.	TRUE	87	76.3%
	FALSE	27	23.7%
Oxfam International is a human rights non-governmental organisation.	TRUE	80	71.4%
	FALSE	32	28.6%
The Alma - Ata Declaration was the first international conference on health promotion.	TRUE	58	52.3%
	FALSE	53	47.7%
The majority of deaths from non - communicable diseases occurs in lower and middle - income countries.	TRUE	69	59.5%
	FALSE	47	40.5%
The World Health Organisation has not published guidelines on the training and safety of chiropractic.	TRUE	58	50.0%
	FALSE	58	50.0%
Pick n Pay has a health promotion community programme.	TRUE	100	87.0%
	FALSE	15	13.0%

Regarding Table 4.18, the statements that were true were: The South African Department of Health has a directorate for Health Promotion (Coulson, 2000 and Onya, 2007), the majority of deaths from non - communicable diseases occur in lower and middle - income countries (Unwin, 2006 and Alwan, 2009), Oxfam International is a human rights non - governmental organisation (http://www.oxfam.org/en, 2013). Statements that were false were; the Alma - Ata Declaration was the first international conference on health promotion, the WHO has not published guidelines on the training and safety of chiropractic (World Health Organization guidelines on basic training and safety in chiropractic, 2005) and Pick n Pay has a health promotion community programme.

Discussion of Objective Two and Three

In the South African context, even with the high prevalence of STI / HIV (Tollman, 2008), only 3.4% of the participants indicated that they provide information in their practices on STI / HIV prevention and management. With reference to the demographic responses, one could conclude that this is the case with the majority of participants, having their practices in upper – middle income (60.3%) and upper class (13.8%) communities. Furthermore, CNCDs, previously thought to be diseases more apparent among the affluent have changed with increasing prevalence in rural communities (Tollman, 2008) and poor communities (Tollman, 2008 and Puoane, 2008). Furthermore, there has been increased and increasing urbanization following the Apartheid era from rural areas (Puoane, 2008), which is more likely to bring practitioners into contact with the greater majority of the population.

The reason for this disjuncture between the participants and the population, could be as a result of a disconnect that exists between chiropractic and the needs of the large majority of the South African population (Myburgh *et al.,* 2007). Myburgh *et al.,* (2007) continues by concluding that the reason for this may be due to chiropractors being located within the private sector of South Africa, providing their services to the medically insured and more affluent members of the South African society (Myburgh *et al.,* 2007).

Another reason may be due to the participants being unable to read the literature appropriately, due to the lack of exposure in their training programme, which is compounded by their inability to be able to adequately interpret research, thus stunting their growth within allied fields is limited (unless they had furthered their education or qualifications).

Furthermore, participants provided similar prevention / management information in their practices in comparison to the study by Jamison (2002), who investigated health information and promotion in chiropractic clinics in Australia with regard to spinal care, stress management, cancer prevention (smaller scale) and cardiovascular disease (smaller scale) prevention / management. Of concern to Jamison (2002), was the low level of information in chiropractic clinics on osteoporosis prevention (23%). Although participants in this study were not asked specifically on information provided in their clinics on osteoporosis prevention, 80.2% indicated that they provide information in their clinics on degenerative joint disease prevention / management. It would however seem that the participants focused principally on neuro – musculoskeletal care.

Findings stated in Table 4.16 indicated that participants agreed that there is a need for chiropractic services in health promotion and disease prevention in public health settings (e.g. hospitals, community clinics). This may be true due to the chronic shortages of health care workers in public health settings in South Africa (Onya, 2007 and Coovadia, 2009). However, only 14.7% of the participants considered themselves as primary health care practitioners in light of the fact that primary health care is the main agenda of the South African government to improve access to health care, health promotion and disease prevention (Coovadia, 2009; Walley, 2008 and South Africa: Department of Health's White Paper for the Transformation of the

Health System in South Africa, 1997). Therefore, it is reasonable to assume that chiropractors may further distance themselves from incorporation into the public health settings of South Africa.

In summary, the results from this study suggest that the participants, although recognising that there is a need for chiropractors in public health settings, have not shown that they have the training or understanding regarding health promotion and disease prevention in public health.

Of further concern from the results in Table 4.16, relates to the area of community action and participation which is mentioned throughout the literature on health promotion (Onya, 2007; Evans, 2008; Johnson, 2008; Onya, 2009 and Milestones in Health Promotion, 2009); Despite over 60% of the participants indicating that they could help develop healthier communities through health promotion in their practices, that they participate in community projects aimed at improving health and preventing disease and that they provide information on healthy lifestyle choices beyond clinical practice, these responses can only be taken lightly as their public health practises in practice may be limited and strong consideration must be taken that they responded from a neuro - musculoskeletal premise.

Table 4.18 reflects a similar picture, where 50% of the participants were unaware that the WHO published guidelines on the training and safety of chiropractic (World Health Organization, 2005). However, generating the results from the statements in Table 4.18 is done with caution in respects to the responses of the participants on public health and health promotion thus far. Regarding the latter, there is a high probability that the participants' guessed the answers. It would seem unlikely that the participants in this study would know that it was the Ottawa Charter and not the Alma - Ata declaration that was the first international conference on health promotion (Milestones in Health Promotion, 2009), or that given the poor responses to Objective Three in this study that they would know that the department of health has a directorate for health promotion (Onya, 2007 and Coulson, 2000).

4.5.3 Objective Four

Objective Four was to determine the knowledge and understanding of chiropractors of the role of selected public health agencies in health promotion and disease prevention in South Africa.

Key:

- Inappropriately Identified = non - responses.
- **Bold** = Incorrectly answered / not a public health agency.

4.5.3.1 Qualitative responses to first choice of public health agencies participants would refer patients to for information about smoking cessation and risks

Table 4.19 represents the respondent's first choice regarding which public health agency they would refer to for information about smoking cessation and risks. An additional 11% of the participants indicated that they would refer to the Cancer Association of South Africa, 6% to Smoke Enders and 3% to the Department of Health. Of all, 59% of the participants did not answer the question and were allocated as answering the question as inappropriately identified.

Table 4.19 Qualitative responses to first choice of public health agencies participants would refer patients to for information about smoking cessation and risks

	Count	Column N %
AHPCSA	1	0
Allan Carr	2	1
Cancer Association of South Africa	12	11
Clinic	2	1
Department of health	4	3
General Practitioner GP	6	5
Inappropriately identified	62	59
Library	1	0
National Council Against Smoking (NCAS)	4	3
Public Health Association of South Africa (PHASA)	1	0
South African National Council on Alcoholism and Drug Dependence (SANCA)	1	0
Smoke Enders	7	6
Smokers anon	1	0

Vitality	1	0

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.2 Qualitative responses to second choice of public health agencies participants would refer patients to for information about smoking cessation and risks

In Table 4.20, the participants identified their second choice on the public health agency they would refer to for information about smoking cessation and risk factors. Two participants indicated that they would refer to Quit smoking South Africa, four participants to Smoke Enders and 67% of the participants were categorised as inappropriately identifying the question either by indicating that they did not know the answer or that they did not provide an answer.

Table 4.20 Qualitative responses to second choice of public health agencies participants would refer patients to for information about smoking cessation and risks

	Count	Column N %
AHPCSA	1	0
Acupuncturist	1	0
Allan Carr	2	1
Cancer Association of South Africa (CANSA)	2	1
Dietician	1	0
Hospital	1	0
Hypnotherapy	1	0
Inappropriately identified	71	67
Lung Foundation	1	0
NCAS	1	0
Quit smoking SA	2	1
Smoke Enders	4	3
Clinic	1	0
Local Government	1	0

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.3 Qualitative responses to public health agencies to report suspected child abuse

Regarding Table 4.21, 35% of the participants indicated that they would report suspected cases of child abuse to Child Line, Social services (13%), the South African Police Department (8%) and 17% either did not answer the question or indicated that they did not know the answer.

Table 4.21 Qualitative responses to public health agencies to report suspected child abuse

	Count	Column N %
Department of Welfare	1	0
Department of child services	1	0
Inappropriately Identified	**19**	**17**
GP	**2**	**1**
Red Cross Childrens Hospital (RCCH)	1	0
SAPS	**9**	**8**
Teddy Bear clinic	5	4
Child welfare	11	10
Child line	39	35
Clinic	**2**	**1**
Non profit organisation	**5**	**4**
Psychologist	**2**	**1**
Social services/ workers	15	13

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.4 Qualitative responses to first choice of HIV related public health agencies

Regarding participants first choice of HIV related public health agencies to which they would refer patients, 14% would refer to Clinics, Hospitals (7%), Love Life (3%) and 57% answered the question inappropriately.

Table 4.22 on qualitative responses to first choice of HIV related public health agencies

	Count	Column N %
AIDS for Africa	1	0
AIDS Foundation	1	0
Clinic	**15**	**14**
Department of health	4	3
Hillcrest AIDS Centre	3	2
HIV SA	1	0
Hospital	**8**	**7**
Ikhwezi Wellness Centre	1	0
Inappropriately identified	**59**	**57**
Lifeline	2	1
Love Life	4	3
Nkosi's Haven	1	0
Philangethemba	1	0
Project Hope	1	0
South African National AIDS Council (SANAC)	1	0
Starfish Foundation	1	0
Treatment Action Campaign (TAC)	1	0

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.5 Qualitative responses to second choice of HIV related public health agencies

Table 4.23 represents participants second choice of HIV related public health agencies to which they would refer patients: Love Life (5%), Hospital (2%) and 60% either didn't answer the question or indicated that they did not know the answer to the question.

Table 4.23 Qualitative responses to second choices of HIV related public health agencies

	Count	Column N%
Ampath	**1**	**0**
Attic	1	0
Centre for AIDS Development, Research and Evaluation (CADRE)	1	0
Clinic	2	1
GP	**2**	**1**
HIV Counselling and Testing campaign (HCT)	1	0
HIV SA	2	1
Hillcrest AIDS Centre	1	0
Hospice	**2**	**1**
Hospital	**3**	**2**
Indlela	1	0
Love Life	6	5
Networking AIDS Community of South Africa (NACOSA)	1	0
PHASA	1	0
Sparrow Villages	1	0
TB/ HIV Care	1	0
Zoe Life	1	0
Inappropriately identified	**62**	**60**

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.6 Qualitative response to public health agencies that co - ordinates awareness and educational campaigns on mental health and mental disorders in South Africa

In Table 4.24 participants indicated that the following public health agencies co - ordinate awareness and educational campaigns on mental health and mental disorders in South Africa: South African Federation of Mental Health (8%), Department of Health (1%), South African Depression and Anxiety Group (2%) and 70% of the participants indicated that they did not know the answer or did not respond to the question.

Table 4.24 Qualitative response to public health agencies that co-ordinates awareness and educational campaigns on mental health and mental disorders in South Africa

	Count	Column N %
Alzheimers Ass	1	0
Cape mental health	2	1
Clinic	**3**	**2**
Department of Mental Health (DMH)	1	0
Department of health	2	1
Elizabeth Donkin	1	0
GP	**1**	**0**
Health Professions Council of South Africa (HPCSA)	**2**	**1**
Headway	1	0
Lifeline	1	0
Mental Health SA	2	1
South African Depression and Anxiety Group (SADAG)	3	2
South African Federation for Mental Health (SAFMH)	9	8
Social services	**1**	**0**
TARA hospital	2	1
Inappropriately identified	**73**	**70**
Psychiatrist	**1**	**0**

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.7 Qualitative response to the public health agency to contact first for patients who present with a suspected notifiable disease

In Table 4.25, participants identified the following public health agencies which they would contact first for a patient who presents with a suspected notifiable disease: Department of Health (18%), hospital (11%), WHO (1%) and 59% either did not answer the question or indicated that they did not know the answer.

Table 4.25 Qualitative responses regarding the public health agencies to contact first for patients who present with a suspected notifiable disease

	Count	Column N %
Center for Disease Control (CDC)	2	1
Clinic	**4**	**3**
Department of Health	20	18
Hospital	**12**	**11**
National Institute of Communicable Disease (NICD)	1	0
National Institute for Virology (NIV)	1	0
WHO	**2**	**1**
Inappropriately identified	**65**	**59**

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.8 Qualitative responses to the public health agency that provides an immunisation resource web site for chiropractors

Table 4.26 represents participants answers to which public health agency provides an immunisation resource web site for chiropractors. Of the participants, 3% indicated the Department of Health, 3% the WHO and 77% either did not know the answer or indicated so.

Table 4.26 Qualitative responses to the public health agency that provides an immunisation resource web site for chiropractors

	Count	Column N %
American Public Health Association (APHA)	**1**	**0**
Chiropractic Association of South Africa (CASA)	**3**	**2**
ChiroBase	**1**	**0**
Department health	4	3
Government health HSS	**1**	**0**
HPCSA	**1**	**0**
Immunization Action Coalition (IAC)	**1**	**0**
Inappropriately identified	**80**	**77**
JMPT	**1**	**0**
PHASA	1	0
Road to health	**1**	**0**
WHO	4	3
chiro.org	**1**	**0**
Google	**1**	**0**
National Vaccine Information Center (NVIC)	1	0

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.9 Qualitative response to public health agencies of which chiropractors are members

With reference to Table 4.27, 17% of the participants indicated that they were members of the AHPCSA, One respondent indicated that they were a member of Pain SA and 76% either did not answer the question or indicated that they did not know the answer.

Table 4.27 Qualitative responses to public health agencies that chiropractors are members of

	Count	Column N %
AHPCSA	**18**	**17**
CANSA	1	0
CASA	**3**	**2**
Institute of Functional Medicine	**1**	**0**
Inappropriately identified	**78**	**76**
Medical Research Council of South Africa	**1**	**0**
Pain SA	**1**	**0**

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBP and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review if for implementation.

4.5.3.10 Qualitative response to the public health agency that is a source for information and support for a patient recently diagnosed with a terminal illness

In Table 4.28 participants provided the following responses to which public health agency they would consider as a source of information and support for a patient recently diagnosed with a terminal illness; Cancer Association of South Africa (8%), Hospice (39%), Hospital (2%) and the Health Professions Council of South Africa (2%). Almost half of the participants (45%) did not respond to the question or indicated that they did not know the answer to the question.

Table 4.28 Qualitative responses to the public health agency that is a source for information and support for a patient recently diagnosed with a terminal illness

	Count	Column N %
CANSA	8	8
Clinic	1	1
HPCSA	**2**	**2**
Hospice	39	39
Hospital	**2**	**2**
Institute of Functional Medicine.	**1**	**1**
Inappropriately identified	**45**	**45**
Social services	**1**	**1**
The Association for the Aged (TAFTA)	1	1

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBM and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

4.5.3.11 Question on whether participants are members of the Public Health Association of South Africa

Table 4.29 shows that only four participants indicated that they were a member of the Public Health Association of South Africa.

Table 4.29 participants that are members of the Public Health Association of South Africa

	Count	Number N %
NO	103	96
YES	4	3

4.5.3.12 Qualitative response to public health agencies for Rape victim

Table 4.30 shows that 12% of the participants would recommend the police as a public health agency resource for a rape victim, 7% to RAPE CRISIS, 5% to Life Line and 52% did not know the answer (Inappropriately Defined).

Table 4.30 Qualitative responses to public health agencies to refer to regarding rape victims

	Count	Column N %
Clinic	**4**	**3**
Department social services	1	0
Greater Rape Intervention Project (GRIP)	1	0
Hospital	3	2
Inappropriately identified	**56**	**52**
Jes Foord Foundation	7	6
Life line	6	5
Open door crisis centre	2	1
People Opposing Women Abuse (POWA)	1	0
Police	**13**	**12**
RAPE CRISIS	8	7
Rape care	1	0
Teddy bear clinic	1	0
Trauma counsellor	1	0
Masimanyane	1	0

These results underscore the fact that the practitioners in this study sample did not substantially contribute to EBM and public health within their practices outside of their neuro - musculoskeletal focus in practice. This could be due to the participants not seeing the need to or that they could not retrieve the appropriate information and review it for implementation.

Discussion:

From the responses regarding public health agencies, it is clear that the participants are not familiar with public health agencies in South Africa. Furthermore, participants did not seem to have a clear understanding of the meaning of a public health agency, even though a definition was provided to guide them. Some of the answer choices that were incorrectly provided by Participants included; Alan Carr, General practitioners, Chiropractic Association of South Africa, Ampath (Incorporated Pathology Laboratory service) and psychologists to name a few.

According to Baird (2011) public health services are organised and delivered by governmental, non - governmental (private) and quasi - governmental agencies. Through public health agencies, policies are developed that protect the health of communities (Hawk, 2005). Government and non - government agencies are classified according to the demographic areas or constituencies they operate in (i.e. International, National, State or local) (Baird, 2011).

In South Africa, health promotion falls under the Directorate of health promotion and the South African Department of Health (Wills, 2010 and Onya, 2007). In Table 4.19, the participants were not incorrect in stating that they would refer to the Public Health Association of South Africa (PHASA) when referring to information on cigarettes cessation and risks. However, chiropractors should be aware that the WHO together with the WFC developed the “Chiropractors Against Tobacco” campaign that provides chiropractic practitioners and patients with tobacco cessation tools and information (Hawk, 2005). Similarly, the Chiropractic Health Care Section of the APHA developed an immunisation resource web site for chiropractors providing up to date, evidence - based information regarding immunization / vaccinations (Khorsan, 2009).

Regarding Table 4.25, 18% of the participants were correct in identifying the Department of Health as the public health agency to report a notifiable disease (Weber, 2007). In South Africa, notification of notifiable diseases is done by health providers filling out the GW 17 / 5 form which is sent to the relevant local or district authorities (i.e. municipalities) (Department of Health, 2011).

In the study by Hawk *et al.,* (2004), 22% of chiropractic faculty staff indicated that they were members of the APHA, 1% of the practising chiropractors were members

of the APHA, with 4% indicating they were members of a local public health agency. In comparison, four of the participants (Table 4.29) indicated that they were members of the PHASA, one belonged to the Cancer Association of South Africa and one to PAIN South Africa. However, it must be noted that none of the participants indicated membership to the PHASA in Table 4.27.

Tables 4.21 dealt with the topic of Child abuse, Table 4.22 and Table 4.23, HIV and Table 4.30, Rape. It was felt that due to the severity and prevalence of HIV, child abuse and Rape in South Africa (South African Human Rights Commission, 2002; Coovadia, 2009; The National antenatal Sentinel HIV and Syphilis Prevalence Survey South Africa 2011; Statistics South Africa Mid-year population estimates, 2011), that chiropractors practising in South Africa be familiar with public health agencies for support in these areas.

Regarding Table 4.22 and Table 4.23, over 50% of the participants could not provide one HIV related public health agency, either governmental or non – governmental. The majority of the participants who did get the answer right mentioned non - governmental organisations e.g. Love Live, Life Line, AIDS Foundation, HIV South Africa. Responses regarding Rape and Child abuse produced similar results, indicating that chiropractors in South Africa are not cognisant of the wider social problems within the country or simply do not come into contact with them.

4.5.4 Summary and conclusions

Generally, perceptions and attitudes of chiropractors in this study were low regarding public health and health promotion. Regarding disease prevention (i.e. disease screenings, counselling and immunization) the participants where found to be consistent with the findings from similar studies overseas. However, in comparison to other studies they were below par in terms of public health and health promotion. Participants were particularly poor regarding EBP. Thus, increasing the awareness and education of the participants on public health, health promotion and EBP may

CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The majority of chiropractors in this study were found to be White, spoke English and practiced in upper – middle income communities. The attitudes and perceptions of these chiropractors practising in South Africa have been described in this study, regarding public health, health promotion and disease prevention.

The international discourse with regards to the chiropractic profession's attitudes and perceptions to public health was shown not to be reflected locally. Although the participants showed some proficiency with regards to clinical prevention matters, they were found to be lacking on general public health concepts relevant to the South African healthcare landscape.

The majority of the participants in this study perceived themselves to be neuro - musculoskeletal specialists, which is in contrast to the chiropractors investigated on public health, health promotion and disease prevention overseas, who tended to view themselves as primary care practitioners. It could be argued that chiropractors in South Africa were thus found to be practicing within a limited capacity, which completely undermines their aspirations of being incorporated into mainstream healthcare in South Africa. This finding in itself strongly influenced the outcomes of this study, as it is the primary care approach to healthcare that allows health care professionals to provide a broad range of health care services that contributes to a well functioning healthcare system. This has been emphasised by both the WHO and the South African Department of Health.

This suggests that chiropractors in South Africa may be at odds with regards to the greater health needs and realities of South Africa. The results in this study seem to confirm this, where a large majority of the participants failed to identify public health agencies which to refer patients in regards to HIV, child abuse, terminal illnesses and rape, all of which are highly prevalent in the South African society. However, this could be due to the reason that the majority of patients visit chiropractors are for neuro - musculoskeletal complaints.

However, this may not be the case as the participants agreed that there was an increase in the public visiting their practices for non - neuro – musculoskeletal complaints. Furthermore, chiropractors in South Africa are located within the private health care sector which may separate them from the social determinants of health that mainly affect the poor and rural people who make up the majority of the South African population. Further research is required to determine the implications that chiropractors being located within the private health care sector has on the future development of the chiropractic profession in South Africa.

The results of this study also highlighted that there are inconsistencies between chiropractors trained in South Africa, where they are extensively exposed to research principles and the implementation of EBP by having to complete a Master's research dissertation. This undermines their ability to function as an evidence based clinician and brings into question the ability of the training institutions to successfully transfer evidence – based principles to future practitioners. However, further studies are needed to confirm this finding, as there are limitations in the structure of this type of study (e.g. sample bias). Results regarding public health agencies further highlighted the respondent's inability to search the literature beyond their neuro - musculoskeletal based practices.

This study provided useful and necessary information relevant to health care in South Africa today, motivating a need for future enquiry into the development and role of the chiropractic profession in the healthcare system of South Africa on the topics of public health, health promotion and disease prevention. The results suggest that there is a negligible interest regarding public health and health promotion by chiropractors in South Africa which may threaten the future acceptance of the profession by the people and healthcare system of South Africa. Even though results regarding issues of disease prevention were relatively positive, they were undermined by the poor application and participation regarding EBP and health promotion in public health. From these results the chiropractic profession needs to re – evaluate its goals for the profession (education and clinical practice) and for the greater healthcare system if it wants to be considered as a respected and proficient health care provider by the public and healthcare system of South Africa.

5.2 Recommendations

5.2.1 Questionnaire

- In Question 3, the statement, ‘second language” should have been provided in brackets after the option of 'other'.
- In Question 6, the statement, 'not your chiropractic degree' should have been put in brackets, as the statement, 'in addition to chiropractic degree' may have caused confusion.
- In the Tables with questions regarding frequency of counselling (numbers 69 to 90) and screenings (numbers 91 to 120), the answer categories of 'regularly, rarely, refer and never' should have been changed to percentages of patients within a one month period e.g. < 25%; 26 – 50%; 51 – 75%; > 75%; refer, and the statement, 'within a one month period' added to the question. This would have allowed for more accurate data regarding the frequency with which the participants counselled and recommended screenings.
- In Question 124, an example not related to topics closely associated to chiropractic should have been given e.g. Love Life. This would have tested the participants on initiatives more representative of the public health care focus in South Africa.
- Regarding the Table on elements of promotion (numbers 121 to 150), question 146 should of read, 'There is insufficient evidence on the effectiveness of the chiropractic adjustment for the prevention of neuro - musculoskeletal disease'.
- In Question 151, participants should perhaps have been asked to give one example of the most common source they use to obtain information to improve evidence - based practice. Furthermore, the word media should have been removed.
- In Question 153, the question should perhaps have read, 'please give three examples of how you would critically appraise a systemic review'. This would have limited the participants answer choices, making them more specific and thus more readily analysable. This consideration would however not list all strategies for analysis of a systematic review.
- Regarding the questions on public health agencies, these questions (170 to 179) should have been allocated earlier on in the questionnaire, as they were the hardest questions and the participants may have been fatigued by this time. This could have led to some of the participants merely skipping through the questions to complete the questionnaire.

- Regarding the true and false questions (180 to 185), statements investigating simple concepts of public health and health promotion should have been asked that tested the participants understanding of these concepts, e.g. question 181 and 182 should have been replaced with, 'health is a state of complete mental, physical and spiritual well being' or 'public health is the domain of the public health sector'.

5.2.2 Research

- Extensive research needs to be completed regarding the chiropractic professions knowledge and practice regarding evidence – based principles and practice.
- Further research is required on the role of chiropractors in South Africa on public health and health promotion.
- Research needs to be undertaken to determine how the chiropractic profession can better communicate with policy makers and the South African Department of Health.
- Knowledge and perceptions of rural communities on chiropractic needs to be determined. Similarly, research needs to be undertaken to determine what is required to make the profession more relevant to the rural population of South Africa.
- Research to determine the attitudes and perceptions of chiropractors on the different theories and concepts of health (i.e. Salutogenic Model of Health, Integral Theory of Health and Medical Model of Health) needs to be further investigated.
- Research utilizing a qualitative design that investigates the in - depth perception and attitudes of key figures within the chiropractic profession on public health and health promotion also needs to be explored.

5.2.3 Profession

- Further education regarding EBP should be made available, either through correspondence or through short courses.
- The chiropractic education curriculum should be revised with regards to public health, health promotion and EBP.
- Strategies need to be developed and implemented to better incorporate the chiropractic profession into mainstream healthcare in South Africa and to stimulate practitioners interest and participation in public healthcare initiatives (e.g. Straighten Up South Africa).
- To develop best practice guidelines for chiropractors practising in South Africa on

References

Act 63 of 1982 (as amended). Allied Health Professions Council. Published under Government Notice No. R. 127 of 12/2/2001. As corrected by: Government Notice No. R. 266 of 26/3/2001.

Allied Health Professions Council of South Africa. 2012 .[Online]. Available at: http://www.ahpcsa.co.za. [Accessed 12 January 2008].

Allen RE. (ed.). 1990. The concise oxford dictionary. Oxford University Press, USA.

Alwan A, MacLean DR. 2009. A review of non -c ommunicable disease in low - and middle - income countries. International Health. 1: 3-9.

Anonymous. 2001. Journal of the American Chiropractic Association, 38 (10): 8- 17.

ANZCO, Australian and New Zealand Classification of Occupations. 2006. Census of population and housing, chiropractors, profile using data from census 2006. [Online]. Available at: www.health.vic.gov.au/__data/assets/pdf.../chiropracticprofile. pdf [Accessed 19th September 2009].

Astin JA. 1998. Why patients use alternative medicine. Journal of the American Medical Association, 279(19):1548 – 1553.

Atkinson RL. Atkinson RC. Smith EE. Bem DJ. and Nolen-Hoeksema S. 2000. Hilgard's Introduction to Psychology. 13th ed. United States of America: Harcourt College Publishers.

Baird R. (ed.). 2005. Chiropractic, health promotion and wellness. Dynamic Chiropractic, 23(21): 16.

Baird R and Haas M. 2011. Introduction to public health, public health agencies, and the APHA. In Gartside M (ed.) and Sekerak R (ed.). Introduction to public health for chiropractors. [online]. Available at: http://samples.jbpub.com/9780763758226/58226_CH01_FINAL.pdf, [Accessed 21 March 2012].

Banzai R, Derby DC, Long CR and Hondras MA. 2011. International web survey of chiropractic students about evidence-based practice: a pilot study. Chiropractic & Manual Therapies. 19(6): 1-9.

Basic Principles of Healthy Cities: Health for All [online]. 2009. Available at: http://www.chp.gov.hk/files/pdf/basic_principles_of_healthy_cities-health_for_all.pdf, [Accessed 13 December 2011].

Bateman C. 2011. Motsoaledi declares war on disease causing products. South African Medical Journal, 101(8): 503.

Beaglehole R, Epping-Jordan JA, Patel V, Chopra M, Ebrahim S, Kidd M and Haines A. 2008. Alma- Ata: Rebirth and Revision 3- Improving the prevention and mangement of chronic disease in low- income and middle- income countries: a priority for primary health care. Lancet. 372: 940-949.

Bergh ZC and Theron AL. 1999. Psychology in the Work Context. 1st ed. South Africa: International Thompson Publishing.

Bloland P, Simone P, Burkholder B, Slutsker L, De Cock KM. 2012. The role of public health institutions in global health system strengthening efforts: the us cdc's perspective. PLoS Med 9(4): 1-4.

Blum C, Globe G, Terre L, Mirtz TA, Greene L and Globe D. 2008. Multinational survey of chiropractic patients: reasons for seeking care. The Journal of the Canadian Chiropractic Association, 52(3): 175 - 181.

Boisvert D, 2006. Retrospective analysis of laboratory testing at the chiropractic clinic of Université du Québec à Trois-Rivières (UQTR). Journal of the Canadian Chiropractic Association, 50(3): 219 – 224.

Breton M, Denis J-L and Lamothe L. 2010. Incorporating public health more closely into local governance of health care delivery: Lessons from the Québec experience. Canadian Journal of Public Health, 101(4): 314-317.

Brown DW. 2009. The dawn of Healthy People 2020: A brief look back at its beginnings. Preventive Medicine, 48: 94 - 96.

Bunge JA. 2007. A survey to determine post graduate student confidence in their knowledge and skills acquired during the chiropractic course at the University of Johannesburg. M: Tech Chiropractic. University of Johannesburg, South Africa.

Byfield D. 2010. What will it take to gain acceptance. Clinical Chiropractic, 13(1): 102 -106.

Caldwell K, Coleman K, Copp G, Bell L and Ghazi F. 2007. Preparing for professional practice: How well does professional training equip health and social care practitioners to engage in evidence - based practice? Nurse Education Today, 27: 518 – 527.

Cameron D, Katch E, Anderson P and Furlong MA. 2004. Healthy doctors, healthy communities. Journal of Ambulatory Care Management, 27(4): 328 – 338.

Carter JR, 2005. Chiropractors struggle with change. Journal of the Canadian Chiropractic Association, 49(1): 9 – 12.

CASA, 2008. Register of Members and Information Booklet, Bethlehem, South Africa.

CASA. 2012. Register of Members and Information Booklet, Bethlehem, South Africa.

CASA. 2010 – 2011. Register of Members and Information Booklet, Bethlehem, South Africa.

Chapman – Smith DA, 1996. Legislative approaches to the regulation of the chiropractic profession. Journal of the Canadian Chiropractic Association, 40(2): 108 – 114.

Chelenyane M and Endacott R. 2006. Self - reported infection control practices and perceptions of HIV/AIDS risk amongst emergency department nurses in Botswana. Accident and Emergency Nursing, 14: 148 – 154.

Chiropractic and Somatology Handbook. 2013. Faculty of Health Sciences. Durban University of Technology, Durban. South Africa.

Chiropractic Handbook. 2002. Faculty of Health Sciences. Durban Institute of Technology, Durban.

Chopra M, Lawn JE, Sanders D, Barron P, Karim SSA, Bradshaw D, Jewkes R, Karim QA, Flisher AJ, Mayosi BM, Tollman SM, Churchyard GJ and Coovadia H. 2009. Achieving the health millennium development goals for south africa: challenges and priorities. The Lancet. 374: 1023-1030.

Christensen MG. (ed.). and Kollasch MW. (ed.). 2005. Job analysis of chiropractic: A project report, survey analysis, and summary of the practice of chiropractic within the united states. National Board of Chiropractic Examiners.

Christensen MG (ed.)., Kollasch MW. (ed.). and Hyland JK. (ed.). 2010. Practical analysis of chiropractic: a project report, survey analysis, and summary of the practice of chiropractic within the united states. Chapter 2. National Board of Chiropractic Examiners: Greeley Colorado. USA.

Clarke M, Dicks J and Lewin S. 2008. Community health workers in South Africa: Where in this maze do we find ourselves? South African Medical Journal Forum, 98(9): 680-681.

Conducting survey research. 1999. The Health Communication Unit at the Centre for Health Promotion University of Toronto [online], Available at: http://www.esf-agentschap.be/uploadedFiles/Voor_ESF_promotoren/Zelfe valuatie_ESF-project/niet%20experimenteel%20onderzoek.pdf, [Accessed 15 December 2011].

Cooper RA. 2001. Health care workforce for the twenty-first century: The impact of nonphysician clinicians. Annual Review of Medicine, 52: 51-61.

Coovadia H, Jewkes R, Barron P, Sanders D and McIntyre D. 2009. The Health and health system of South Africa: Historical roots of current public health challenges. The Lancet, 374(1). 817-833.

Copp G, Caldwell K, Atwal A, Brett-Richards M and Coleman K. 2007. Preparation for cancer care: Perceptions of newly qualified health care professionals. European Journal of Oncology Nursing, 11: 159 – 167.

Coulson N. 2002. health promotion. Health Systems Trust. [online], Available at: http://www.healthlink.org.za/uploads/files/chapter21_99.pdf, [Accessed 17 April 2012].

Coulson N. 2000. Editorial. Health Systems Trust Update. [online], Available at: http://www.hst.org.za/sites/default/files/upd53.pdf, [Accessed 20 March 2012].

Coulter ID. 1992. The Sociology of Chiropractic: Future options and directions.In Haldeman, S. (ed.) Principles and Practice of Chiropractic. Appleton and Lang.

Cullinan K. 2006. Health services in South Africa: A basic introduction. Health-e News Service : 3

Daar AS, Singer PA, Persad DL, Pramming SK, Matthews DR, Beaglehole R, Bernstein A, Borysiewicz LK, Colagiuri S, Ganguly N, Glass RI, Finegood DT, Koplan J, Nabel EG, Sarna G, Sarrafzadegan N, Smith R, Yach D and Bell J. 2007. Grand challenges in chronicnon - communicable diseases. Nature. 450: 494-496.

Dagenais S. (ed.). and Haldeman S. (ed.). 2012. Evidence - based management of low back pain. St. Mosby, Inc: Louis Missouri.

De Gouveia, 2009. The knowledge, perception and utilisation of vitamin and mineral supplements, natural medicines and pharmacological agents as adjuncts to Chiropractic practice in South Africa. M: Tech Chiropractic. Durban University of Technology. Durban. South Africa.

Department of Health, 2011. Epidemiological Comments. Public Health Surveillance System. No. 2. Pretoria.

Descarreaux M, Blouin J-S, Drolet M, Papadimitriou S and Teasdale N. 2004. Efficacy of preventive spinal manipulation for chronic low-back pain and related disabilities: a preliminary study. Journal of Manipulative and Physiological Therapeutics. 27: 509- 514.

Duenas R, Carucci GM, Funk MF and Gurney MW. 2003. Chiropractic primary care, neuromusculoskeletal care, or musculoskeletal care? Results of a survey of chiropractic college presidents, chiropractic organization leaders, and connecticut-licensed doctors of chiropractic. Journal of Manipulative and Physiological Therapeutics, 26(8): 515.

Duenas R. 2002. United states chiropractic practice acts and institute of medicine defined primary care practice. Journal of Chiropractic Medicine, 1(4): 155

Dyer C. 1997. Beginning Research in Psychology: A practical guide to research methods and statistics. Blackwell Publishers Ltd. Oxford.

Egan JT. 2006. Chiropractic and Public Health: Two Great Tastes That Taste Great Together. Dynamic Chiropractic, 24(19): 52.

Ernst E. 2009. Chiropractic maintenance treatment, a useful preventative approach? Preventive Medicine. [online], 49:99. Available at: http://pdn.sciencedirect .com/_ science_ob=MiamiImageURL&_cid=272375&_user=3077905&?_pii=S0091743509002205 &_check=y&_origin=article&_zone=toolbar&_coverDate=30-Sep-2009&view=c&originContentFamily=serial&wchp=dGLzVlk-zSkWb&md5=b00588a26b7abc2ba7c5da73dfcd5dad/1-s2.0-S0091743509002205-main.pdf, [Accessed 26 November 2011].

Esterhuizen T. 2013. Interviewed by T. W. Ford. Chiropractic Department. Durban University of Technology, Durban. South Africa

Evans R, Bronfort G, Bittell S and Anderson AV. 2003. A pilot study for a randomized clinical trial assessing chiropractic care, medical care, and self-care education for acute and subacute neck pain patients. Journal of Manipulative and Physiological Therapeutics, 26(7): 403 - 411

Evans Jr MW, Williams RD and Perko M. 2008. Public health advocacy and chiropractic: A guide to helping your community reach its health objectives. Journal of Chiropractic Medicine, 7: 71-77.

Fan W and Yan F. 2009. Factors affecting response rates of the web survey: A systematic review**.** Computers in Human Behaviour, 26: 132 – 139.

Fernandez CE and Delaney PM. 2004. Applying evidence - based health care to musculoskeletal patients as an educational strategy for chiropractic interns (A one - group pretest - posttest study). Journal of Manipulative and Physiological Therapeutics, 27: 253-261.

Fielding JE, Teutsch S and Breslow L. 2010. A Framework for Public Health in the United States. Public Health Reviews, 32(1): 174- 189.

Fletcher J. 2005. A survey of treatment regimes of chiropractic in South Africa. University of Johannesburg. Johannesburg, South Africa.

Forbes Newswatch. Wrong timing for NHI. News 24, 10 February 2013: 3.

Friel JP. (ed.). 1985. Dorland's illustrated medical dictionary. 26th ed. Saunders, Philadelphia.

Gatterman MI. 2006(a). Health promotion and wellness: A paradigm Lost. Dynamic Chiropractic, 24(19): 14- 16.

Gatterman MI. 2006(b). the patient- centered paradigm: A model for chiropractic health promotion and wellness. Chiropractic Journal of Australia. 36: 92-96.

Gaumer GL, Walker A and Su S. 2001. Chiropractic and the new taxonomy of primary care activities. Journal of manipulative and Physiological Therapeutics, 24(4): 239 – 259.

Gerrish K, Ashworth P, Lacey A, Bailey J, Cooke J, Kendall S and McNeilly. 2006. Factors influencing the development of evidence- based practice: a research tool. Journal of Advanced Nursing. 57(3): 328- 338.

Gilbert T and Gilbert L. 2004. Globilisation and local power: influences on health matters in South Africa. [online], 67: 247. Available at: http://pdn.sciencedirect.com/scienceob=MiamiImageURL&_cid=271761&_user=3077905&_pii=S0168851003001209&_check=y&_origin=search&_zone=rslt_list_item&_coverDate=2004-03-31&wchp=dGLbVBA-zSkzV&md5=c3c6ab3183c63353b8e855d906f84d7b/1-s2.0-S0168851003001209-main.pdf, [Accessed 26 April 2011].

Glanz K, (ed.)., Rimer BK, (ed.). and Viswanath K.(ed.). 2008. Health behavior and health education, theory, research, and practice. 4th ed. John Wiley and Sons, San Francisco.

Globe GA, Azen SP and Valente T. 2005. Improving preventive health services training in chiropractic colleges: A pilot impact evaluation of the introduction of a model public health curriculum. Journal of manipulative and Physiological Therapeutics, 28(9): 702-707.

Goldman AH. 1981. Epistemology and the psychology of perception. American Philosophical Quarterly. 18(1): 43- 51.

Haigh RA. 1999. Reconstructing paradise: Canada's health care system, alterntive medicine and the Charter of Rights. Health Law Journal, 7: 141-91.

Hall G. 2011. Attitudes of chiropractors to evidence-based practice and how this compares to other healthcare professionals: A qualitative study. Clinical Chiropractic. 14: 106- 111.

Halpin HA, Morales-Suarez-Varela MM and Martin - Moreno JM. 2010. Chronic disease prevention and the new public health. Public Health Reviews, 32(1): 120-154.

Hardcastle LE, Record KL, Jacobson PD and Gostin LO. 2011. Improving the population's health: the affordable care act and the importance of integration. Public Health Reform, Fall 2011. 317- 319.

Hawk C. 2004. Chiropractic and wellness: Are we walking the walk? Dynamic Chiropractic, 22(21): 36.

Hawk C. 2005. The interrelationships of wellness, public health and chiropractic. Journal of Chiropractic Medicine, 4(4): 191-194.

Hawk C, Cambron JA and Pfefer MT. 2009. Pilot study of the effect of a limited and extended course of chiropractic care on balance, chronic pain, and dizziness in older adults. Journal of manipulative and Physiological Therapeutics, 32: 438- 447).

Hawk C and Dusio ME. 1995. A survey of 492 U.S. Chiropractors on primary care and prevention – related issues. Journal of manipulative and Physiological Therapeutics, 18(2): 57 – 64.

Hawk C, Long CR, Perillo M and Boulanger KT. 2004. A survey of US chiropractors on clinical preventive services. Journal of manipulative and Physiological Therapeutics, 27(5): 287-298.

Hawk C, Ndetan H and Evens Jr MW. 2012(a). Potential role of complementary and alternative health care providers in chronic disease prevention and health promotion: An analysis of National Health Interview survey data. Preventive Medicine. [online], 18-22. Available at:http://pdn.sciencedirect.com/science_ob=MiamiImageURL&_cid=272375&_user=3077905&_pii=S0091743511002477&_check=y&_origin=search&_zone=rslt_list_item&_coverDate=2012-01-01&wchp=dGLzVlk-zSkzk&md5=99e0c37c883052286d3251a6c25cf313/1-s2.0-S0091743511002477-main.pdf, [Accessed 28 February 2012].

Hawk C, Schneider M, Evans Jr MW, Redwood D. 2012(b). Consensus process to develop a best-practice document on the role of chiropractic care in health promotion, disease prevention, and wellness. Journal of manipulative and Physiological Therapeutics, 1-12.

Hayes N. 1994. Foundations of psychology. An introductory text. 1st ed. Great Britain: Routledge.

Haynes SN, Richard DCS and Kubany ES. 1995. Content validity in psychological assessment: A functional approach to concepts and methods. Psychological Assessment, 7(3): 238.

Herbert CP. 1995. Clinical health promotion and family physicians: a canadian perspective. Patient Education and Counseling, 25: 277-282.

Heslop SJ. 2008. The knowledge and perceptions of Paediatricians in South Africa with respect to Chiropractic. M: Tech Chiropractic. Durban University of Technology, Durban. South Africa.

Hill FJ. 2003. Complementary and alternative medicine: the next generation of health promotion? Health Promotion International, 18(3): 265-267.

Hill F. 2005. Health promotion and complementary medicine: the extent and future of professional collaboration and integration. Health Education, 106(4): 281- 293.

Hunter SJ. 2004. The perceptions and attitudes of South African physiotherapists about the chiropractic profession. Durban University of Technology, Durban.

Huston SA and Hobson EH. 2008. Using focus groups to inform pharmacy research. Research in social and administrative pharmacy. [online], (4): 187-199. Available at: http://pdn.sciencedirect.com/science?_ob=MiamiImageURL&_cid=273422&_user=3077905&_pii=S1551741107000903&_check=y&_origin=search&_zone=rslt_list_item&_coverDate=2008-09-30&wchp=dGLbVlV-zSkzk&md5=dc11f330948fdb559ed3920ebff418bc/1-s2.0-S1551741107000903-main.pdf, [Accessed 21 December 2011].

Iarossi, G. 2006. The power of survey design: A user's guide for managing surveys, interpreting results, and influencing respondents. The World Bank. [online]. Available at: http://wwwwds.worldbank.org/external/default/WDSContent Server/IW3P/IB/2006/01/26/000012009_20060126110514/Rendered/PDF/350340The0Powe1n0REV01OFFICIAL0USE1.pdf, [Accessed 5 January 2012].

Ivie R, Perko MA, Evans MW and Ndetan H. 2011. A survey of alabama chiropractors regarding health promotion, primary prevention, and primary care. Topics in intergrative health care an international journal. [online], 2(3). Available at: http://www.tihcij.com/Articles/A-Survey-of-Alabama-Chiropractors-Regarding-Health-Promotion-Primary-Prevention-and-Primary-Care.aspx?id=0000303, [Accessed 5 December 2011].

Jacobsen ET, Rasmussen SR, Christensen M, Engberg M and Lauritzen T. 2005. Perspectives on lifestyle intervention: The views of general practitioners who have taken part in a health promotion study. Scandinavian Journal of Public Health, 33: 4 – 10.

Jamison JR. 1995. Chiropractic referral: The views of a group of conventional medical practitioners with an interest in unconventional therapies. Journal of Manipulative and Physiological Therapeutics, 18 (8): 512-518.

Jamison J. 2002. Health information and promotion in chiropractic clinics. Journal of Manipulative and Physiological Therapeutics, 25(4): 240-250.

Jamison JR. 2007. Wellness from the perspective of Australian chiropractic patients. Chiropractic Journal of Australia, 37: 11 – 14.

Johnson C, Baird R, Dougherty PE, Globe G, Green BN, Haneline M, Hawk C, Injeyan HS, Killinger L, Kopansky-Giles D, Lisi AJ, Mior SA and Smith M. 2008. Chiropractic and public health: Current state and future vision. Journal of Manipulative and physiological Therapeutics, 31(6): 397-410.

Johnson C and Green BN. 2009. Public health, wellness, prevention, and health promotion: considering the role of chiropractic and determinants of health. Journal of Manipulative and physiological Therapeutics, 32: 405-412.

Johnston JM, Leung GM, Fielding R, Tin KYK and Ho L-M. 2003. The development and validation of a knowledge, attitude and behaviour questionnaire to assess undergraduate evidence-based practice teaching and learning. Medical Education, 37: 992-994.

Juneau C-E, Jones CM, McQueen DV and Potvin L. 2011. Evidence-based health promotion: an emerging field. Global Health Promotion, 18(1): 85.

Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P and the Task Force on Community Preventive Services. 2002. The effectiveness of interventions to increase physical activity: a systematic review. American Journal of Preventive Medicine, 22(4S): 73-107.

Kapustin J. 2010. Chronic disease prevention across the lifespan. The Journal for Nurse Practitioners, 6(1): 16 – 22.

Kelley K, Clark B, Brown V and Sitzia J. 2003. Good practise in the conduct and reporting of survey research. International Journal for Quality in health Care. [online], 15(3): 263. Available at: https://research.chm.msu.edu/Resources/Good_practice_in_survey_research.pdf, [Accessed 15 December 2011].

Kent C. 2002. Wellness care - where's the evidence? Chiropractic Journal, 16(7): 26.

Kew MF. 2006. The assessment of the knowledge and perception of personal trainers within Durban with respect to chiropractic. M: Tech Chiropractic. Durban University of Technology, Durban. South Africa.

Keyter K. 2010. The perceptions of South African chiropractors, regarding their professional identity. M: Tech Chiropractic. Durban University of Technology, Durban. South Africa.

Khorsan R, Smith M, Hawk C and Haas M. 2009. A public health immunization resource website for chiropractors: Discussion of current issues and future challenges for evidence-based initiatives for the chiropractic profession. Journal of Manipulative and Physiological Therapeutics, 32(6): 500-504.

Klassen RD and Jacobs J. 2001. Experimental comparison of web, electronic and mail survey technologies in operations management. Journal of Operations Management, 19: 713 – 728.

Korporaal C. 2013. Chiropractic Association of South Africa. Interviewed by T. Ford. Durban University of Technology, Durban, 9 February 2013.

Kremer RG, Duenas R and McGuckin B. 2002. Defining primary care and the Chiropractic Physicians' role in the evolving health care system. Journal of Chiropractic Medicine, 1(1): 3-8.

Kumar S. 2007. History of Public Health. [online]. Available at: http://priory.com/history

_of_medicine/public_health.htm, [Accessed 29 February 2012].

Lapane KL, Quilliam BJ and Hughes CM. 2007. A Comparison of two distribution methods on response rates to a patient safety questionnaire in nursing homes. Journal of the American Medical Directors Association, 8: 1 – 6.

Leboeuf-Yde C, Hestbaek L. 2008. Maintenance care in chiropractic – what do we know? Chiropractic and Osteopathy, 16(3): 1 – 7.

Leon AC, Davis LL and Kraemer HC. 2010. The role and interpretation of pilot studies in clinical research. Journal of Psychiatric Research. [online], 45: 627. Available at:http://pdn.sciencedirect.com/science_ob=MiamiImageURL&_cid=271251&_user=3077905&_pii=S002239561000292X&_check=y&_origin=article&_zone=toolbar&_coverDate=31-May-2011&view=c&originContentFamily=serial&wchp= dGLbVlS-zSkzk&md5=52ce2bf596e1055a75c6ab7e0dd1c7a4/1-s2.0-S002239561000292X-main.pdf, [Accessed 21 December 2011].

Liddle J, Williamson M and Irwig I. 1996. Method for evaluating research and guideline evidence. New south Wales Department of Health, Sydney.

Lindorff - Larsen K, Rasmussen HH, Kondruo, Staun M and Ladefoged K and The Scandinavian Nutrition Group. 2007. Management and perception of hospital undernutrition — A positive change among Danish doctors and nurses. Clinical Nutrition, 26: 371 – 378.

Lindstrom M. 2007. Social capital, anticipated ethnic discrimination and self-reported psychological health: A population-based study. Social Science and Medicine.

Louw JD. 2005. The knowledge of general practitioners about chiropractic as a factor that may influence health care integration in South Africa. M: Tech Chiropractic. Durban

University of Technology, Durban. South Africa.
Lundy T. 2010. A paradigm to guide health promotion into the 21st century: the integral idea whose time has come. Global Health Promotion, 17(3): 48-52.

MacLennan A and Wilson D. 1996. Prevalence and cost of alternative medicine in Australia. Lancet, 347(9001): 569.

Maharaj P. 2009. The knowledge and perceptions of provincial and national health portfolio committee members of south african regarding the chiropractic profession. M: Tech. Chiropractic. Durban University of Technology, Durban. South Africa.

Massey OT. 2010. A proposed model for the analysis and interpretation of focus groups in evaluation research. Evaluation and Program Planning. [online], 34(1): 21-28. Available at: http://pdn.sciencedirect.com/science_ob=MiamiImageURL&_cid?=271855&_user=3077905&_pii=S0149718910000625&_check=y&_origin=search&_zone=rslt_list_item&_coverDate=2011-02-28&wchp=dGLbVlS-zSkWA&md5=53cd49aadd152e89bd607dd3c84ce3f1/1-s2.0-S0149718910000625-main.pdf, [Accessed 21 December 2011].

Masuku B, 2009. National health insurance policy (NHI) proposal. Memorandum. To Secretary general Cde Gwede Mantashe. Albert Luthuli House, 6th Floor.

Mathews, M. 2006. The prevalence and factors associated with occupational overuse syndromes in the hands and wrists of chiropractors in South Africa. M: Tech Chiropractic. Durban University of Technology, South Africa.

Maund, 1999. Understanding People and Organisations - An introduction to organisational behaviour. Stanley Thorne Publishers Ltd. Cheltenham, United Kingdom.

Myers DG. 1996. Exploring psychology. 3rd ed. Worth Publishers. USA.

Mayosi BM, Flisher AJ, Laloo UG, Sitas F, Tollman SM and Bradshaw D. 2009. The burden of non-communicable diseases in south africa. The Lancet. 374(4): 934-947.

Meeker WC and Haldeman S. 2002. Chiropractic: A profession at the crossroads of mainstream and alternative medicine. Annals of Internal Medicine, 136(3): 216 – 227.

Meeker WC and Lawrence D. 2007. Research and evidence-based practice require a cultural change in chiropractic education. Dynamic Chiropractic. 25(21): 11.

Menniti-Ippolito F, Gargiulo L, Bologna E, Forcella E and Raschetti R. 2002. The use of unconventional medicine in Italy: A nation-wide survey. European Journal of Pharmacology, 58:61 - 64.

Millar M and Dillman. 2011. improving response to web and mixed – mode surveys. Public Opinion Quarterly, 75(2): 249 – 269.

Milestones in health Promotion: Statements from Global Conferences. [Online]. 2009. Available at: http://www.who.int/healthpromotion/milestones.pdf, [Accessed 22 November 2011].

Moher D, Schulz KF and Altman DG. 2001. The CONSORT statement : revised recommendations for improving the quality of reports of parallel group randomized trials. BMC Medical Research Methodology, 1(2).

Mootz RD. 2007. Chiropractic's current state: Impacts for the future. Journal of Manipulative and Physiological Therapeutics, 30(1): 1 – 3.

Mootz RD, Hansen DT, Breen A, Killinger LZ and Nelson C. 2006. Health services research related to chiropractic: Review and recommendations for research prioritization by the chiropractic profession. Journal of Manipulative and Physiological Therapeutics, 29(9): 707 - 725.

Morris DL, Fenton MV and Mercer ZB. 2004. Identification of national trends in nursing education through the use of an online survey. Nursing Outlook, 52(5): 251.

Myburgh C and Mouton J. 2007. Developmental issues in chiropractic: a south african practitioner and patient perspective. Journal of Manipulative and Physiological Therapeutics, 30: 206-208.

Myers DG, 1996. Exploring psychology. 3rd ed. New York: Worth Publishes.

Naidoo S. 2011. National health insurance – what the people want, need and deserve! South African Medical Journal, 101(10): 678.

National Centre for Complementary and Alternative Medicine, 2004. [Online]. Available at: http://www.aamc.org/research/adhocgp/pdfs/nccam.pdf, [Accessed 21 January 2013].

Northstar Research Partners. 2004. Consultation on Identity, Quantitative Research Findings. [Online]. Available at: http://www.wfc.org [Accessed 23 January 2013].

Nutbean D. 2008. What would the Ottawa Charter look like if it were written today? Critical Public Health, 18(4) 435-441.

Omran AR. 2001. The epidemiological transition: A theory of the epidemiology of population change. Bulletin of the World Health Organization, 79(2): 161-163.

Onya H. 2007. Health promotion in South Africa. Global Health Promotion, 14(4): 233-235.

Oxfam International. [online]. 2012. Available at: http://www.oxfam.org/en, [Accessed 10 April 2012].

Painter FM. 2010. Chiropractic reaches consensus on terminology for stages of care. [online], Available at: http://www.chiro.org/wordpress/?p=4137, [Accessed 5 September 2012].

Parker W, Steyn N, Levitt NS and Lombard CJ. 2010. They think they know but do they? Misalignment of perceptions of lifestyle modification knowledge among health professionals. Public Health Nutrition, 14(8): 1429 - 1438

Passmore SR and Descarreaux M. 2012. Performance based objective outcome measures and spinal manipulation. Journal of Electromyography and Kinesiology, 22: 697-707.

PEDro scale. [online]. 1999. Available at: www.pedro.org.au, [Accessed 06 June 2011].

Perkins R. 2011. Using research – based practices to increase response rates of web – based surveys. EDUCAUSE Quarterly Magazine, 34(2).

Pooley D. 1999. Chiropractic: Positioning in the evolving health paradigm. Journal of the Canadian Chiropractic Association, 43(3): 136-140.

Puoane T, Tsolekile L, Sanders D and Parker W. 2008. Chronic non-communicable diseases. South African Health Review. Chapter 5: 73 – 87.

Reubens B. 1996. Orthopaedic surgeons, neurologists and neurosurgeons views of the chiropractic profession in South Africa. Technikon Natal. Durban, South Africa.

Riley DL, Stewart DE and Grace SL, 2007. Continuity of cardiac care: Cardiac rehabilitation participation and other correlates. International Journal of Cardiology, 119: 326 – 333.

Ross-Adjie GM, Leslie G and Gillman L. 2007. Occupational stress in the ED: What matters to nurses? Australasian Emergency Nursing Journal, 10: 117 – 123.

Rose KA and Adams A. 2000. A Survey of the Use of Evidence-Based Health Care in Chiropractic College Clinics. The Journal of Chiropractic Education, 14(2): 72-74.

Ruff CC, Alexander IM and Mckie C. 2005. The use of focus group methodology in health disparities research. Nursing Outlook. 53(3): 134-140.

Rupert, R.L. 2000. A survey of practice patterns and the health promotion and prevention attitudes of US chiropractors. Maintenance care: part 1. Journal of Manipulative and Physiological Therapeutics, 23(1): 1-9.

Rupert RL, Manello D and Sandefur R. 2000. Maintenance care: health promotion services administered to US chiropractic patients aged 65 and older, part II. Journal of Manipulative and Physiological Therapeutics, 23(1): 10-19.

Sackett DL, Rosenberg WMC, Gray JAM, Haynes, RB and Richardson WS 1996. Evidence based medicine: What it is and what it isn't. British Medical Journal, 312: 71 – 72.

Samb B, Desai N, Nishtar S, Mendis S, Bekedam H, Wright A, Hsu J, Martiniuk A, Celletti F, Patel K, Adshead F, Mckee M, Evans T, Alwan A and Etienne C. 2010. The Lancet. 376: 1785- 1797.

Schuster TL, Dobson M, Jauregui M and Blanks RHI. 2004. Wellness lifestyles II: modeling the dynamic of wellness, health lifestyle practices, and network spinal analysis. The Journal of Alternative and Complementary Medicine, 10(2): 357-367.

Shield RF. 2005. The self-concept of chiropractic students as science students. Journal of Chiropractic Medicine, 4: 70-74.

Shortell SM, Marsteller JA, Lin M, Pearson ML, Wu S-Y, Mendel P, Cretin S and Rosen M. 2004. The role of perceived team effectiveness in improving chronic illness care. Medical Care, 42: 1040-1048.

Silverman, D. 2001. Interpreting qualitative data: Methods for analysing talk, text and interaction. 2nd ed. California. Sage Publications: 16.

Simon MK. 2011. Conducting pilot studies. Dissertation and scholarly research: Recipes for success. [online], Available at: http://dissertationrecipes.com/wp-content /uploads/2011/04/Conducting-Pilot-Studies.pdf, [Accessed 5 January 2012].

Smith M. 2001. That was the, this is now – chiropractic health care, public health, and the health care system. Dynamic Chiropractic, 19(9): 22.

Smith M and Carber L. 2002. Chiropractic health care in health professional shortage areas in the United States. American Journal of Public Health [online], 92(12): 2001-2009. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC14473 66/, [Accessed 8 September 2011].

South African declaration on the prevention and control of non - communicable diseases. 2011. [online]. Available at: http://www.health.uct.ac.za/usr/health/research/groupings/cdia/ downloads/SA_NCD_Declaration.pdf, [Accessed 16 August 2012].

South Africa: The Department of Health's White Paper for the Transformation of the Health System in South Africa. 1997. [online]. Available at: http://www.info.gov.za/whitepapers/1997/health.htm#top, [Accessed 15 August 2012].

South African Human Rights Commission. 2002. Report on sexual offences against children: Does the criminal justice system protect children. Johannesburg. South Africa.

Stacey K, Vindigni D and Stacey P. 2002. Chiropractic, Health Promotion and the Potential for Synergy. Chiropractic Journal of Australia, 32(1): 7-13.

Stainsby BE, Porr JTC, Kim P, Collinge AM and Hunter JC. 2011. A survey of wellness management strategies used by canadian doctors of chiropractic. Journal of Manipulative and Physiological Therapeutics, 34(6): 388-393.

St-Pierre M, Reinharz D and Gauthier J-B. 2006. Organizing the public health-clinical health interface: Theoretical bases. Medicine, Health Care and Philosophy, 9: 97-106.

Statistics South Africa mid - year population estimates, 2011. Statistics South Africa, Pretoria.

Strategic priorities for the national health system 2004-2009: Department of Health. [online]. Available at: http://www.info.gov.za/view/DownloadFileAction?id=123785, [Accessed 24 November 2012].

Strydom PDF. 2006. Black economic empowerment in South Africa. [oline]. Available at: http://www.sabusinesshub.co.za/section/content.phpContentId=1381&SectionId=23&SubsectionId=12, [Accessed 8 February 2013].

Symon AG, McStea B and Murphy-Black T. 2005. An exploratory mixed-methods study of Scottish midwives' understandings and perceptions of clinical near misses in maternity care. Midwifery, 22:125 – 136.

Talmage G. 2007. An exploritory mixed-methods study to determine factors which may affect satisfaction levels of patients outside of a clinical setting. M: Tech Chiropractic. Durban University of Technology. Durban, South Africa.

Tatalias JA. 2006. A prospective, epidemiological pilot study to investigate the level of knowledge of homeopathy and its contextualization in health shops in the Gauteng area. M: Tech Chiropractic. Durban University of Technology. Durban, South Africa.

Tengland PA. 2010. Health promotion or disease prevention: A real difference for public health practice? Health Care Anal, 18: 204-217.

Terry C. 2012. In communication with the Allied Health Professions Council of South Africa. 6 February 2012.

Thabane L, Ma J, Chu R, Cheng Ji, Ismaila A, Rios LP, Robson R, Thabane M, Giangregorio L and Goldsmith CH. 2010. A tutorial on pilot studies: the what, why and how. BMC Medical Research Methodology. [online], 10: 1. Available at: http://www.biomedcentral.com/content/pdf/1471-2288-10-1.pdf, [Accessed 3 January 2012].

Tharaldsen JE, Olsen E and Rundmo T. 2007. A longitudinal study of safety climate on the Norwegian continental shelf. Safety Science, 46(3): 427 – 439.

The National Antenatal Sentinel HIV and Syphilis Prevalence Survey, South Africa, 2011. National Department of Health. Pretoria. South Africa.

Tollman SM, Kahn K, Sartorius B, Collinson MA, Clark SJ and Garenne ML. 2008. Implications of mortality transition for primary health care in rural south africa: a population-based surveillance study. The Lancet, 372: 893-901.

Triano JJ, Goertz C, Weeks J, Murphy DR, Kranz KC, McClelland GC, Kopansky-Giles D, Morgan W and Nelson CF. 2010. Chiropractic in north america: Toward a strategic plan for professional renewal — outcomes from the 2006 chiropractic strategic planning conference. Journal of Manipulative and Physiological Therapeutics, 33: 395 – 405.

Unwin N and Alberti KGMM. 2006. Chronic non-communicable diseases. Annals of Tropical Medicine and Parasitology, 100(5): 455-459.

Van As RK. 2005. The knowledge and perception of vocational counselors in South Africa with respect to chiropractic. Durban University of Technology. Durban, South Africa.

van Teijlingen R and Hundley V. 2001. Social research update: The importance of pilot studies. [onlione], Available at: http://sru.soc.surrey.ac.uk/SRU35.pdf, [Accessed 5 September 2012].

Vear HJ. 1992. Chiropractic standards and practice of quality care. Gaithersburg Maryland. Aspen, USA.

Villanueva - Russell Y. 2005. Evidence-based medicine and its implications for the profession of chiropractic. Social Science and Medicine, 60: 545-561.

Walley J, Lawn JE, Tinker A, de Francisco A, Chopra M, Rudan I, Bhutta ZA, Black RE and the Lancet Alma – Ata Working Group. 2008. Primary health care: making Alma – Ata a reality. Alma – Ata: Rebirth and revision 8. The Lancet, 372: 1001 – 1007.

Wardell WI. 1975. The impact of spinal manipulative therapy on the health care system. In Goldstein M. (ed.). The research status of spinal manipulative therapy. National Institute of Health, Maryland: 15.

Watson E, Hewitson P, Brett J, Bukach C, Evans R, Edwards A, Elwyn G, Cargill A and Austoker J. 2006. Informed decision making and prostate specific antigen (PSA) testing for prostate cancer: A randomised controlled trial exploring the impact of a brief patient decision aid on men's knowledge, attitudes and intention to be tested. Patient Education and Counseling, 63: 367 - 379

Weber B. 2007. Evaluation of the notifiable disease surveillance system in Gauteng province, South Africa. University of Pretoria. Pretoria.

Wells GA, Shea B, O'Connell D, Peterson J, Welch V and Losos M et al., .The Newcastle-Ottawa Scale (NOS) for assessing the quality if nonrandomized studies in meta-analyses. [online]. 2011. Available at: http://www.ohri.ca/programs/clinical_epidemiology/oxford.htm. [Accessed 6 June 2011].

Wenban AB and Nielsen MK. 2005. Chiropractic maintenance care and quality of life of a patient presenting with chronic low back pain. Journal of Manipulative and Physiological Therapeutics, 28: 136-142.

WFC / ACC / CCIAP Educational Conference: Translating Evidence into Practice, 2012. Murdoch University. Perth: Western Australia.

Whitehead D. 2006. Health Promotion in the practice setting: Findings from a review of clinical issues. Worldviews on Evidence-Based Nursing, 3(4): 166.

Wickes D. 2002. Educating primary care chiropractic physicians. Journal of Chiropractic Medicine, 1(4): 175 – 178.

Wills J and Rudolph M. 2010. Health promotion capacity building in South Africa. Global Health Promotion, 17(3): 29-34.

World Health Organization country cooperation strategy 2008-2013 South Africa. [online]. 2009. Available at: http://www.afro.who.int/en/south-africa/country-cooperation-strategy.html, [Accessed 13 May 2011].

World Health Organization. 2007. Everybody's business - Strengthening health systems to improve health outcomes [online]. Available at: http://www.who.int/healthsystems/strategy/everybodys_business.pdf , [accessed 7 January 2013].

World Health Organization guidelines on basic training and safety in chiropractic, 2005. WHO Press, Switzerland, Geneva.

World Health Organization Health Promotion Glossary [online]. 1998. Available at: http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf [accessed 16 November 2011].

World Health Report [online]. 2002. Available at: http://www.who.int/whr/2002/en/, [Accessed 27 September 2011].

APPENDIX A1

PERMISSION FROM THE CHIROPRACTIC ASSOCIATION OF SOUTH AFRICA

Date:	Tue, May 29, 2012 at 7:39 AM,
From:	Dr Reg Engelbrecht <drreg@mweb.co.za>
Subject:	Re: research
To:	"Tim Ford" <twford4@gmail.com>

Dear Timothy
No problem - provided confidentiality is maintained and participants agree to assist.
Regards

Dr Reg Engelbrecht
Chief Executive Officer

Chiropractic Association of South Africa
P O Box 706, Bethlehem 9700
SOUTH AFRICA
Tel & Fax: +27 0583034571

Tim Ford <twford4@gmail.com> wrote:
Dear Dr Reg Engelbrecht (CEO Chiropractic Association of South Africa):

Thank you for you time in reading this letter.

I Timothy William Ford, I.D 8310015220085 , a masters student at the Durban University of Technology, under recommendations of the Institutional Research Ethics Committee at the Durban University of Technology, kindly ask your permission as CEO of the Chiropractic Association of South Africa to conduct research on chiropractors practising in South Africa in my research titled Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

The study aims to investigate the position of chiropractors practising in South Africa on health promotion and disease prevention by means of a web-based questionnaire and where appropriate a paper / printed questionnaire. Participation will be completely voluntary and all data collected will be treated strictly confidential with all respondents remaining anonymous throughout the research process in accordance to the guidelines set out by the Institutional Research Ethics Committee at the Durban University of Technology.

Your assistance in this matter is greatly appreciated.

Yours Sincerely

Timothy William Ford (research student)

APPENDIX A2

PERMISSION FROM DR RONALD IVIE

Date:	Thu, May 31, 2012 at 11:34 PM,
From:	Dr Ronald Ivie <rfi1234@aol.com>
Subject:	Re: Research Permission
To:	"Tim Ford" <twford4@gmail.com>

Tim:
Your welcome to use the survey instrument, just cite it if you publish your work. Good luck with your research. If I can help let me know. Ron

Tim Ford <twford4@gmail.com> wrote:
Dear Dr Ronald Ivie

I Timothy William Ford, ID 8310015220085 , a masters student at the Durban University of Technology, South Africa kindly ask permission to utilize your questionnaire from: A Survey of Alabama Chiropractors Regarding Health Promotion, Primary Prevention, and Primary Care (Ivie, 2011) published in the international journal, Topics in Integrative Health Care 2(3) in reference to my research titled: Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

The questionnaire is being designed according to the latest literature and from discussions held by a group of experts on topics of health promotion and disease prevention as pertains to mainstream health care in the South African context. Of particular interest to me is your coverage of health promotion at the interpersonal, institutional, community and public policy levels. The questionnaire shall be adapted to represent Chiropractors practicing in South Africa on aspects of disease prevention and health promotion as pertains to mainstream health care in the South African context.

I have immense interest in this area of research and feel it of great importance and need for the future development and growth of the chiropractic profession in South Africa. Your permission will be greatly appreciated and of valuable assistance to my study.

Yours Sincerely
Timothy William Ford (Masters Student of Chiropractic)

APPENDIX B1

PRE - CONTACT POSTAL INFORMATION LETTER

Dear Doctor of Chiropractic

A warm welcome to my research.

The title of my research project is:
Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

Principle Investigator: Timothy Ford
Co-investigator: Dr Charmaine Korporaal (M. Tech Chiropractic; CCFC; CCSP; ICSSD)

Aims of the Study:

- To determine the epidemiological profile of chiropractors in South Africa.
- To determine the attitudes and perceptions of chiropractors on the practice of health promotion and disease prevention (i.e. counselling on modifiable risk factors, chronic diseases of daily lifestyle and immunization, disease screening tests, and evidence-based practice).
- To determine the knowledge and understanding of chiropractors of the role of selected public health agencies in health promotion and disease prevention in South Africa.

Brief introduction and purpose of this study:
Internationally through the World Health Organisation and locally by the South African Department of Health emphasis is being placed on health promotion and disease prevention as opposed to costly and unsustainable curative care (South African Declaration on the prevention and control of non-communicable diseases, 2011). As Public health is a major function in our society and health promotion is a core function of public health, it is important that chiropractors include health promotion and disease prevention as part of the clinical encounter as recommended by the world health organisation (Hawk, 2012). In light of the above the international literature suggests a strong push by the chiropractic profession in establishing itself as key players in public health based on its strong foundations in health and wellness, increased public health coursework in chiropractic training programs and various studies indicating that chiropractors provide health promotion and disease prevention services as part of their clinical encounter with patients. However, in the South African context the perceptions, attitudes and position of chiropractors on the practice of health promotion and disease prevention has not been investigated.

Benefits:

- It is hoped that this research better educates the public, policy makers and health-care providers in South Africa on the health services chiropractors provide as relates to health promotion and disease prevention.
- The information gathered from this study may better integrate chiropractic with mainstream public health activities and advance chiropractic credibility and communication within the South African health care system.

Procedure:
You may only participate in this research if you are in active practice and reside in South Africa.

Should you wish to participate in the study, please print, read and sign the attached letter of information and informed consent (signatures are on the last page) and return it by fax to 0866486360 or scan and return by email to the sender (researcher). Please also indicate on the return fax, the preferred e-mail address that you wish me as the researcher to utilise. Once it is established that you have an active / working email address (provided by yourself) and you have returned the letter of information and informed consent; a follow up e-mail (the pre-contact e-mail) will be sent to your email in-box containing a link to the on-line questionnaire together with a unique access code to access the online Questionnaire. An 'opt out' option will be provided in the pre-contact email if you do not wish to participate in this study.

Confidentiality:

- Your participation is completely voluntary and all responses will be treated confidentially.
- Anonymity will be maintained by the e-mail addresses not being linked to the submitted online questionnaires.
- Secure Sockets Layer (SSL) technology, the most advanced and secure internet security technology available ensures all data collected is safe, secure and accessed only by the researcher.
- All data collected will be deleted permanently from the survey website on completion of the research study.

Remuneration and costs of study:

There will be no monetary remuneration or costs for undertaking this study by any of the participants in this study.

Persons to contact for problems or questions:

Researcher: Timothy Ford: 078 311 8176
Supervisor: Dr Charmaine Korporaal (031) 373 2611
Institutional Research Ethics Committee Administrator: Ms Lavisha Deonarian (031) 373 2900

Your opinions and experiences are important, therefore a questionnaire web-survey design was chosen to make it quick, friendly, easy to access and complete. This allows you to effectively and efficiently respond with minimal impact to your working day.

Thank you for your participation and looking forward to your speedy responses.

Tim Ford
Research student

APPENDIX B2

PRE - CONTACT EMAIL

Dear Doctor of Chiropractic

A warm welcome to my research.

The title of my research project is:
Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

Principle Investigator: Timothy Ford
Co-investigator: Dr Charmaine Korporaal (M. Tech Chiropractic; CCFC; CCSP; ICSSD)

Introduction and Purpose of the study:

The Aim of this study is to determine the perceptions and attitudes of chiropractors in South Africa regarding health promotion and disease prevention.

The World Health organisation (WHO) proposes that for health systems to function appropriately and meet the health needs of the population depends on the service delivery of health care (patient centred, providing disease prevention, diagnostic screening, disease prevention, rehabilitative, therapeutic and palliative services) and public health (At the population level, providing health promotion and disease prevention services). With the advent of Chronic non-communicable diseases of daily lifestyle replacing communicable diseases as the major causes of morbidity and mortality globally, emphasis on health promotion and disease prevention in health care and public health alike is being advocated.

In light of the above the international literature suggests a strong push by the chiropractic profession in establishing itself as key players in public health based on its strong foundations in health and wellness, increased public health coursework in chiropractic training programs and various studies indicating that chiropractors provide health promotion and disease prevention services as part of the clinical encounter with patients.

In the South African context the perceptions, attitudes and position of chiropractors on the practice of health promotion and disease prevention has not been established. To better educate policy makers, ourselves and the public of South Africa your valuable time and participation in this research study is greatly needed and appreciated.

Aims of the Study:

- To determine the epidemiological profile of chiropractors in South Africa.
- To determine the attitudes and perceptions of chiropractors on the practice of health promotion and disease prevention.
- To determine the knowledge and understanding of chiropractors of the role of selected public health agencies in health promotion and disease prevention in South Africa.

Procedure:

You may only participate in this research if you are in active practice and reside in South Africa.
Completing the questionnaire is easy. Just click on the link provided in this e-mail from your computer and type in the **unique access code** you have been provided with to access the online questionnaire. On completion click the **submit button** to send the questionnaire to the researcher.

Please note that by accessing the link, you have accepted to participate in this research.
If not willing or unable to participate in this research for any reason please select the 'opt out' application provided for at the end of this e-mail.

NB Link to online questionnaire : http:

Benefits:

The results of this research may be published in a journal publication as this study is being undertaken in accordance with an M. Tech : Chiropractic qualification from the Durban University of Technology, Durban. Also, results will be available for observation on the Durban University of Technology web site on completion of this study.

Remuneration and costs of study:

There will be no monetary remuneration or costs for undertaking this study by any of the participants in this study.

Confidentiality:

Your participation is completely voluntary and all responses will be treated confidentially. Your name and practice location will not be required for this study. Individual responses will not be identified as the survey results will be presented only as percentages and averages.

Persons to contact for problems or questions:

Researcher: Timothy Ford: 078 311 8176

Supervisor: Dr Charmaine Korporaal (031) 373 2611

Institutional Research Ethics Committee Administrator: Ms Lavisha Deonarian (031) 373 2900

Your opinions and experiences are important! The questionnaire is quick and easy to complete as all the questions only require you to tick the appropriate answer. Thank you for your participation.

Opt Out

APPENDIX B3

POSTAL INFORMATION LETTER

Dear Doctor of Chiropractic

A warm welcome to my research.

The title of my research project is:
Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

Principle Investigator: Timothy Ford
Co-investigator: Dr Charmaine Korporaal (M. Tech Chiropractic; CCFC; CCSP; ICSSD)

Aims of the Study:

- To determine the epidemiological profile of chiropractors in South Africa.
- To determine the attitudes and perceptions of chiropractors on the practice of health promotion and disease prevention (i.e. counselling on modifiable risk factors, chronic diseases of daily lifestyle and immunization, disease screening tests, and evidence - based practice).
- To determine the knowledge and understanding of chiropractors of the role of selected public health agencies in health promotion and disease prevention in South Africa.

Introduction and Purpose of the study:

The Aim of this study is to determine the perceptions and attitudes of chiropractors in South Africa regarding health promotion and disease prevention.

Internationally through the World Health Organisation and locally by the South African Department of Health emphasis is being placed on health promotion and disease prevention as opposed to costly and unsustainable curative care (South African Declaration on the prevention and control of non-communicable diseases, 2011). As Public health is a major function in our society and health promotion is a core function of public health, it is important that chiropractors include health promotion and disease prevention as part of the clinical encounter as recommended by the World Health Organisation (Hawk, 2012). In light of the above the international literature suggests a strong push by the chiropractic profession in establishing itself as key players in public health based on its strong foundations in health and wellness, increased public health coursework in chiropractic training programs and various studies indicating that chiropractors provide health promotion and disease prevention services as part of their clinical encounter with patients. However, in the South African context the perceptions, attitudes and position of chiropractors on the practice of health

promotion and disease prevention has not been investigated.

Procedure:

You may only participate in this research if you are in active practice and reside in South Africa.

Completing the questionnaire is easy and should not take more that twenty minutes to complete. On completion of the questionnaire please return the questionnaire in the envelope provided. Returned postage is provided at no cost to you.

Benefits:

- It is hoped that this research better educates the public, policy makers and health-care providers in South Africa on the health services chiropractors provide as relates to health promotion and disease prevention.
- The information gathered from this study may better integrate chiropractic with mainstream public health activities and advance chiropractic credibility and communication within the South African health care system.

Remuneration and costs of study:

There will be no monetary remuneration or costs for undertaking this study by any of the participants in this study.

Confidentiality:

Your participation is completely voluntary, and all responses will be treated confidentially. Your name and practice location will not be required in this study. Individual responses will not be identified as the survey results will be presented only as percentages and averages.

Persons to contact for problems or questions:

Researcher: Timothy Ford: 078 311 8176

Supervisor: Dr Charmaine Korporaal (031) 373 2611

Institutional Research Ethics Committee Administrator: Ms Lavisha Deonarian (031) 373 2900

Statement of agreement to participate in the research study:

I....., ID number....., have read this Document in its entirety and understand its contents. Where I have had any questions or queries, these have been explained to me by..... to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore voluntarily agree to participate in this study.

Subjects name (print):.....Subjects signature.....Date.....

Researchers name (print).....Researchers signature.....Date.....

Witness name (print).....Witness signature.....Date.....

Supervisors name (print).....Supervisors signature.....Date.....

Your opinions and experiences are important! The questionnaire is quick and easy to complete as the majority of the questions only require that you to tick or circle the appropriate answer. Thank you for your participation and looking forward to your speedy responses.

Timothy Ford

APPENDIX C1

QUESTIONNAIRE - PRE - EXPERT GROUP

Questionnaire Draft format

	Objective I: Epidemiological profile of chiropractors in South Africa. **Please indicate with an X in the spaces provided where applicable to you.**														
1)	Age (years)	< 30		30-39		40-49		50-59		> 60					
2)	Sex	Female				Male									
3)	Language (first language only)		English		Afrikaans		IsiNdebele		IsiXhosa						
			Sepedi		Sesotho		Setswana		IsiZulu						
			Xitsonga		Tshivenda		siSwati								
4)	Race		African		White		Coloured		Indian/ Asian						
			Other												
5)	Institute of chiropractic graduation		Durban University of Technology				University of Johannesburg				UK				
			USA				other								
6)	Highest academic degree		BS/BA		MS/ MA/		Ph.D.		MPH						
7)	Years in active practice		0-5		6-10		11-15		16-20						
			>20												
8)	Practice hours/ week		≤ 29		30-39		40-49		≥ 50						
9)	Practise location		Urban (city)		Sub-urban (plot)		Small town		Rural		Other				
10)	Economic status of community where practice is located		Upper class		Middle class		middle-lower				Lower class				
11)	Professional identity		Gatekeeper				Neuromusculoskeletal specialist								
			Primary care				Spinal specialist								

The following table is to determine your attitude and perceptions on counselling patients on health promotion and disease prevention:

Column A - Please mark with an X in the spaces provided as to how strongly you agree / disagree chiropractors council patients on the following health risk factors and chronic diseases in patients of the appropriate age / sex / gender:

Column B – Please mark with an X in the spaces provided as to the frequency you counsel patients on the following health risk factors and chronic diseases for all patients of the appropriate age / gender / Risks:

		Column A				**Column B**		
		Strongly agree	Agree	Disagree	Strongly disagree	Regularly	Rarely	Refer
12)	Exercise for disease prevention / fitness	1	2	3	4	5	6	7
13)	Dietary habits	1	2	3	4	5	6	7
14)	Dietary supplements	1	2	3	4	5	6	7
15)	Injury prevention	1	2	3	4	5	6	7
16)	Musculoskeletal risk reduction	1	2	3	4	5	6	7
17)	Osteoporosis prevention	1	2	3	4	5	6	7
18)	Tobacco cessation and risks	1	2	3	4	5	6	7
19)	Alcohol abuse	1	2	3	4	5	6	7
20)	Social drugs	1	2	3	4	5	6	7
21)	Skin cancer prevention	1	2	3	4	5	6	7
22)	Safe sex practices STD / HIV	1	2	3	4	5	6	7
23)	Stress (occupational / environmental)	1	2	3	4	5	6	7
24)	Obesity / weight control	1	2	3	4	5	6	7
25)	Subscription / over the counter medications	1	2	3	4	5	6	7
26)	Depression / anxiety	1	2	3	4	5	6	7
27)	Domestic violence	1	2	3	4	5	6	7
28)	Cardiovascular disease	1	2	3	4	5	6	7
29)	Chronic respiratory disease	1	2	3	4	5	6	7
30)	Diabetes Mellitus	1	2	3	4	5	6	7

31)	Cancer prevention	1	2	3	4	5	6	7

The following table deals with how you feel and utilize diagnostic screening tests in practice.

Column A – Please mark with an X in the blocks provided as to how strongly you agree / disagree that chiropractors recommend the following screening tests for all patients of the appropriate age / sex / risks:

Column B – Please mark with an X in the blocks provided as to the frequency you recommend the follow screening tests for all patients of the appropriate age / sex / risks:

		Column A				**Column B**		
		Strongly agree	**Agree**	**Disagree**	**Strongly disagree**	**Regularly**	**Rarely**	**Refer**
32)	Blood pressure testing	1	2	3	4	5	6	7
33)	Blood sugar testing	1	2	3	4	5	6	7
34)	FBC / screening panel	1	2	3	4	5	6	7
35)	Serum cholesterol test	1	2	3	4	5	6	7
36)	Prostate exam / PSA (men 50+)	1	2	3	4	5	6	7
37)	Breast exam (Woman)	1	2	3	4	5	6	7
38)	Colorectal cancer screening (men 50+)	1	2	3	4	5	6	7
39)	Pap test (woman)	1	2	3	4	5	6	7
40)	Testicular exam (men)	1	2	3	4	5	6	7
41)	HIV test	1	2	3	4	5	6	7
42)	Blood lead test	1	2	3	4	5	6	7
43)	Dietary assessment	1	2	3	4	5	6	7
44)	BMI calculation	1	2	3	4	5	6	7
45)	Physical activity assessment	1	2	3	4	5	6	7
46)	Subluxation screening	1	2	3	4	5	6	7
47)	Scoliosis screening	1	2	3	4	5	6	7
48)	Osteoporosis screening	1	2	3	4	5	6	7

Please mark with an X in the spaces provided as to how much you agree / disagree with the

following evidence based principles in the practice of health promotion and disease prevention.						
		Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
49)	Keep current on the latest scientific literature	1	2	3	4	5
50)	Interpret conclusions of scientific articles	1	2	3	4	5
51)	Use research to inform practise	1	2	3	4	5
52)	There is a strong evidence base for health promotion	1	2	3	4	5
53)	There is growing evidence supporting the effectiveness of chiropractic maintenance care.	1	2	3	4	5
54)	In health promotion the best use of evidence must account for the culture and social systems within a community.	1	2	3	4	5

	Do you provide the following information (Magazines, posters, pamphlets etc.) in your practise on the following disease prevention topics:		
		Yes	No
55)	Stress control		
56)	Cancer prevention		
57)	Degenerative joint disease prevention		
58)	Cardiovascular disease prevention		
59)	Spinal hygiene		
60)	STD/ HIV prevention		

	Please indicate in the spaces provided as to how strongly you agree/ disagree with the following aspects of health promotion					
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
61)	Trade and marketing policies are important to control the over-consumption of unhealthy	1	2	3	4	5

	foods.					
62)	It is important to support the development of healthy environments to prevent disease (e.g. sports and recreation facilities).	1	2	3	4	5
63)	Emphasis is placed on health promotion and disease prevention in chiropractic training institutions.	1	2	3	4	5
64)	Chiropractors are prevented by insurance companies from being reimbursed for providing prevention services.	1	2	3	4	5
65)	Cigarette smoking should be banned from all public out-door spaces (i.e. parks)	1	2	3	4	5
66)	It is **not** important that chiropractors advocate prevention.	1	2	3	4	5
67)	Trans-fats should be banned.	1	2	3	4	5
68)	The sale of cigarettes should be banned.	1	2	3	4	5
69)	South African law makes prevention a difficult service to provide.	1	2	3	4	5
70)	Chiropractic clinics should actively support government initiatives to protect health (e.g. Vuka South Africa: move for your health).	1	2	3	4	5
71)	South African Law prevents ordering of diagnostic screening tests.	1	2	3	4	5
72)	Governments proposed National Health Insurance plan is a positive step for health care in South Africa.	1	2	3	4	5
73)	Patients are receptive to messages of prevention.	1	2	3	4	5
74)	Community-wide campaigns should be used as a strategy to increase	1	2	3	4	5

	physical activity.					
75)	Healthy behaviours are linked to healthy minds.	1	2	3	4	5
76)	Health professionals should advocate for protection of the environment in their practices (e.g. posters, magazines, pamphlets).	1	2	3	4	5
77)	Reducing physical inactivity requires multi-disciplinary action (Health, environment, transport, sport, culture and the economy).	1	2	3	4	5
78))	Spinal manipulation can be effectively used to prevent disease.	1	2	3	4	5

	As a chiropractor practising in south Africa do you:	YES	NO
85)	Participate in community projects aimed at improving health and preventing disease(i.e. Walk for Life, Stand up straight South Africa)?		
86)	Provide information on healthy lifestyle choices to patients only		
87)	Feel that immunization is an important aspect of disease prevention		
88)	Feel that there is a need for chiropractic services in health promotion and disease prevention in public health settings (e.g. hospitals, community clinics?		
89)	Counsel patients on immunization based on the most current scientific evidence?		
90)	Feel that there has been an increase in the public seeking chiropractic care in the management of non-neuromusculoskeletal complaints?		
91)	Believe that chiropractors through health promotion counselling in there practices can assist in developing healthier communities.		

The following section is to determine your knowledge and understanding of the role of selected public health agencies in health promotion and disease prevention in South Africa:				
	Regarding interactions with public health agencies:	**Yes**	**No**	**N\A**
92)	Do you refer patients for health promotion and disease prevention to public health agencies.			
93)	Are you knowledgeable of the role government plays in health promotion policy.			
94)	Do you fulfil the responsibilities to public health agencies.			

Regarding your experience with the following selected public health agencies:		Familiar with	Unfamiliar with	Member	N\A
95)	World Health Organisation				
96)	UNICEF				
97)	Cancer Association of South Africa				
98)	Public Health Association of South Africa				
99)	Oxfam International				
100)	International Union for Health Promotion and Education				
101)	South African Department of health				
102)	Childline				
103)	Lifeline				

APPENDIX C2

QUESTIONNAIRE – POST - EXPERT GROUP

Questionnaire – post focus group / pre pilot

Demographic profile of chiropractors practising in South Africa.											
Please indicate with an X in the spaces provided (or as otherwise stated) where applicable to you.											
1)	Age (years)										
2)	Gender	Female				Male					
3)	Language (first language only)	Afrikaans	English		IsiNdebele		IsiXhosa		IsiZulu		
		Sepedi	Sesotho		Setswana		siSwati		Tshivenda		
		Xitsonga	Other								
4)	Race	Asian	African	Coloured	Indian	White	Other				
5)	Institute of chiropractic graduation			Please state name of institution :							
6)	Highest academic degree (in addition to chiropractic degree)			Bachelors	Honours		Masters	PhD	None		
				Specify field:							
7)	Years in active practice		yrs	8)	Practice hours/ week			hrs			
9)	Practise location	Urban	Rural	Suburban			Small town				
10)a)	Economic status of community where practice is located (i.e. not the patient base)			High- income		Upper-Middle income		Lower-middle income		Low- income	
10)b)	Economic status of your patient base			High- income		Upper-Middle income		Lower-middle income		Low- income	
11)	Perceived role as a health care professional)			Primary care practitioner			Neuromusculoskeletal specialist			Spinal specialist	
				Other (please specify)							

The following table is to determine your personal lifestyle practices.				
Please mark with a X in the boxes provided where most applicable to you (may mark more than one box)				
12	Exercise	> 30 min moderate-intensity, 5 / week	> 20 min vigorous activity, 3 days / week	Balance / strength / proprioception
13	Nutrition	4-5 servings of fruit and vegetable/ day	Read food labels	Supplement daily
14	Cigarette smoking	Do not smoke	Do smoke	Never smoked
15	Car safety (seat belt)	Never	Sometimes	Always
16	Environment	Recycle	Use aircon in summer	Use heater in winter

The following table is to determine your attitudes and perceptions on counselling patients on health promotion and disease prevention					
Please mark with an X (in the spaces provided) as to how strongly you agree / disagree that chiropractors should counsel on the following health risk factors and chronic diseases for all patients of the appropriate age / gender / risks:					
		Strongly agree	**Agree**	**Disagree**	**Strongly disagree**
17)	Alcohol abuse	1	2	3	4
18)	Cancer prevention	1	2	3	4
19)	Cardiovascular disease	1	2	3	4
20)	Child abuse	1	2	3	4
21)	Chronic respiratory disease	1	2	3	4
22)	Contraception	1	2	3	4
23)	Diabetes Mellitus	1	2	3	4
24)	Dietary habits	1	2	3	4
25)	Dietary supplements	1	2	3	4
26)	Ergonomic risk reduction	1	2	3	4
27)	Exercise for disease prevention / fitness	1	2	3	4
28)	Injury prevention	1	2	3	4
29)	Mental ill health	1	2	3	4
30)	Obesity / weight control	1	2	3	4
31)	Osteoporosis prevention	1	2	3	4
32)	Personal stress	1	2	3	4
33)	Postural habits	1	2	3	4
34)	Prescription / over the counter medications	1	2	3	4
35)	Safe sex practices STI / HIV	1	2	3	4
36)	Social drugs	1	2	3	4
37)	Technology addiction	1	2	3	4
38)	Tobacco cessation and risks	1	2	3	4

Please mark with an X in the spaces provided as to how strongly you agree / disagree that chiropractors should recommend the following screening tests for all patients of the appropriate age / gender / risks:					
		Strongly agree	**Agree**	**Disagree**	**Strongly disagree**
39)	Blood culture	1	2	3	4
40	Blood pressure testing	1	2	3	4
41)	Blood sugar testing	1	2	3	4
42)	BMI calculation	1	2	3	4
43)	Bone Scan	1	2	3	4
44)	Breast exam	1	2	3	4
45)	Colorectal cancer screening	1	2	3	4
46)	CT	1	2	3	4
47)	Dental screening	1	2	3	4
48)	Dietary assessment	1	2	3	4
49)	FBC	1	2	3	4
50)	HIV test	1	2	3	4
51)	Mammogram	1	2	3	4
52)	MRI	1	2	3	4
53)	Osteoporosis screening	1	2	3	4
54)	Pap test (women)	1	2	3	4
55)	Physical activity assessment	1	2	3	4
56)	Prostate exam / PSA (men 50+)	1	2	3	4
57)	Serum cholesterol test	1	2	3	4
58)	Snellen chart	1	2	3	4
59)	Spinal assessment	1	2	3	4
60)	Stool culture	1	2	3	4
61)	Testicular exam (men)	1	2	3	4
62)	Ultra-sound	1	2	3	4
63)	X-ray	1	2	3	4
64)	Other : (specify)				
65)	1	1	2	3	4
66)	2	1	2	3	4

Please mark with an X (in the spaces provided) as to the frequency you counsel patients on the following health risk factors and chronic diseases for all patients of the appropriate age / gender / risks:					
		Regularly	**Rarely**	**Refer**	**Not at all**
67)	Alcohol abuse	1	2	3	4
68)	Cancer prevention	1	2	3	4
69)	Cardiovascular disease	1	2	3	4
70)	Child abuse	1	2	3	4
71)	Chronic respiratory disease	1	2	3	4
72)	Contraception	1	2	3	4
73)	Diabetes Mellitus	1	2	3	4
74)	Dietary habits	1	2	3	4
75)	Dietary supplements	1	2	3	4
76)	Ergonomic risk reduction	1	2	3	4
77)	Exercise for disease prevention / fitness	1	2	3	4
78)	Injury prevention	1	2	3	4
79)	Mental ill health	1	2	3	4
80)	Obesity / weight control	1	2	3	4
81)	Osteoporosis prevention	1	2	3	4
82)	Personal stress	1	2	3	4
83)	Postural habits	1	2	3	4
84)	Prescription / over the counter medications	1	2	3	4
85)	Safe sex practices STI / HIV	1	2	3	4
86)	Social drugs	1	2	3	4
87)	Technology addiction	1	2	3	4
88)	Tobacco cessation and risks	1	2	3	4

Please mark with an X in the spaces provided as to the frequency you recommend the following screening tests for all patients of the appropriate age/ gender/ risks.					
		Regularly	Rarely	Refer	Never
89)	Blood culture	1	2	3	4
90)	Blood pressure testing	1	2	3	4
91)	Blood sugar testing	1	2	3	4
92)	BMI calculation	1	2	3	4
93)	Bone scan	1	2	3	4
94)	Breast exam	1	2	3	4
95)	Colorectal cancer screening	1	2	3	4
96)	CT	1	2	3	4
97)	Dental screening	1	2	3	4
98)	Dietary assessment	1	2	3	4
99)	FBC (general)	1	2	3	4
100)	HIV test	1	2	3	4
101)	Mammogram	1	2	3	4
102)	MRI	1	2	3	4
103)	Osteoporosis screening	1	2	3	4
104)	Pap test (woman)	1	2	3	4
105)	Physical activity assessment	1	2	3	4
106)	Prostate exam / PSA (men 50+)	1	2	3	4
107)	Serum cholesterol test	1	2	3	4
108)	Snellen chart	1	2	3	4
109)	Spinal assessment	1	2	3	4
110)	Stool culture	1	2	3	4
111)	Testicular exam (men)	1	2	3	4
112)	Ultra-sound	1	2	3	4
113)	X-ray	1	2	3	4
114)	Other : (specify)				
115)	1	1	2	3	4
116)	2	1	2	3	4

Please indicate (in the spaces provided) as to how strongly you agree / disagree with the following elements of health promotion (interpersonal, policy, law and evidence-based practise).		Strongly Agree	Agree	Disagree	Strongly Disagree
117)	A p value of 0.32 is less statistically significant than a p value of 0. 52.	1	2	3	4
118)	As a chiropractor I fully understand the evidence-based practice procedure.	1	2	3	4
119)	Busy time schedules prevent me from searching, understanding and interpreting articles from scientific journals.	1	2	3	4
120)	Chiropractic clinics should actively support government initiatives to protect health (e.g. Vuka South Africa: move for your health).	1	2	3	4
121)	Chiropractors are prevented by medical aid companies from being reimbursed for providing prevention services.	1	2	3	4
122)	Cigarette smoking should be banned from all public out-door spaces (i.e. parks).	1	2	3	4
123)	Colleagues have shared evidence-based guidelines with me.	1	2	3	4
124)	Community-wide campaigns should be used as a strategy to increase physical activity.	1	2	3	4
125)	Does the scope of chiropractic practice enable health promotion.	1	2	3	4
126)	Emphasis is placed on evidence-based practice in chiropractic training institutions.	1	2	3	4
127)	Emphasis should be placed on health promotion and disease prevention in chiropractic training institutions.	1	2	3	4
128)	Governments proposed National Health Insurance plan is a positive step for health promotion in South Africa.	1	2	3	4
129)	Healthy behaviours are linked to healthy minds.	1	2	3	4
130)	Health professionals should advocate for the protection of the environment during clinical interaction with patients (e.g. energy saving, recycling).	1	2	3	4
131)	Increasing physical activity at the community level requires multi-disciplinary action (health, environment, transport, sport, culture and the economy).	1	2	3	4
132)	In health promotion the best use of evidence should account for the cultural and social systems of a community.	1	2	3	4
133)	Interpreting conclusions in scientific articles is easy for me.	1	2	3	4
134)	It is important to share evidence based guidelines with colleagues.	1	2	3	4
135)	It is important to support the development of healthy environments (e.g. sports and recreation facilities) to prevent disease.	1	2	3	4
136)	It is important that chiropractors advocate prevention.	1	2	3	4
137)	Lancet is a more reputable source of evidence based practice compared to Journal of Manipulative and Physiological Therapeutics.	1	2	3	4
138)	Patients are receptive to messages of prevention.	1	2	3	4
139)	Policy changes at the community level lead to better changes in lifestyle habits than counselling patients in clinical practise.	1	2	3	4
140)	Qualitative research would provide the best evidence if I wanted to determine the most likely course of a disorder.	1	2	3	4
141)	Scope of practice prevents ordering of diagnostic screening tests.	1	2	3	4
142)	There is insufficient evidence on chiropractic adjustments to guide clinical practice.	1	2	3	4
143)	There is growing evidence supporting the effectiveness of chiropractic maintenance care.	1	2	3	4
144)	Trade and marketing policies are important to control the over-consumption of unhealthy foods.	1	2	3	4
145)	The sale of cigarettes should be banned.	1	2	3	4
146)	Trans-fats should be banned.	1	2	3	4

147)	**Please give three media sources where you access information to inform your best practise.**	
148)	**Please give three Journals you most frequently utilize to inform your best practise.**	
149)	**Please give 3 examples how you critically appraise research literature.**	

	Do you provide the following information (audio and / or visual) in your practise on the following disease prevention / management topics:	**YES**	**NO**
150)	Stress management	1	2
151)	Cancer prevention	1	2
152)	Degenerative joint disease prevention /management	1	2
153)	Diabetes	1	2
154)	Cardiovascular disease management	1	2
155)	Spinal care	1	2
156)	STI/ HIV prevention and management	1	2
157)	Other (specify)		
158)	1	1	2
159)	2	1	2

As a chiropractor practising in South Africa do you:		**YES**	**NO**
160)	Believe that chiropractors through health promotion counselling in there practices can assist in developing healthier communities.	1	2
161)	Feel that immunization / vaccination is an important aspect of disease prevention	1	2
162)	Feel that there has been an increase in the public seeking chiropractic care in the management of non-neuromusculoskeletal complaints.	1	2
163)	Feel that there is a need for chiropractic services in health promotion and disease prevention in public health settings (e.g. hospitals, community clinics).	1	2
164)	Participate in community projects aimed at improving health and preventing disease (e.g. Run-Walk for Life, Straighten up South Africa).	1	2
165)	Provide information on healthy lifestyle choices beyond clinical practice (e.g. Schools, seminars).	1	2

The following section is to determine your knowledge and understanding of the role of selected public health agencies in health promotion and disease prevention in South Africa			
Public health agencies are organisational resources through which public health services are organised and delivered. They are classified as governmental, non-governmental and quasi-governmental and operate internationally, nationally or locally.			
166)	As a chiropractor practising in South Africa which 2 public health agencies would you refer to for information about cigarette cessation / risks / management ?	**1.**	**2.**
167)	Which public health agency would you report to for suspected child abuse ?	**1.**	**-**
168)	Please name any two local HIV/ AIDS related public health agencies ?	**1.**	**2.**
169)	Which local public health agency co-ordinates awareness and educational campaigns on mental health and mental disorders in South Africa ?	**1.**	**-**
170)	Which public health agency would you contact first for a patient who presents to you with a suspected notifiable disease ?	**1.**	**-**
171)	Which public health agency provides an immunisation resource web site for chiropractors ?	**1.**	**-**
172)	Name any public health agency you are a member of …	**1.**	**-**
173)	Name one public health agency that you would consider as a source of information and support for a patient recently diagnosed with a terminal illness.	**1.**	**-**
174)	Are you a member of the Public Health Association of South Africa ?	**1.**	**-**
175)	Which public health agency resource would you recommend for a rape victim ?	**1.**	**-**

Please mark with an X as to which of the following statements are TRUE or FALSE			
		TRUE	FALSE
176)	The South African department of Health has a directorate for Health Promotion.		
177)	Oxfam International is a human rights non-governmental organisation.		
178)	The Alma- Ata Declaration was the first international conference on health promotion.		
179)	The majority of deaths from non-communicable diseases occurs in lower and middle-income countries.		
180)	The World Health Organisation has not published guidelines on the training and safety of chiropractic		
181)	Pick n Pay has a health promotion community programme		

APPENDIX C3

POST - PILOT QUESTIONNAIRE

Demographic profile of chiropractors practising in South Africa.										
Please indicate with an X in the spaces provided (or as otherwise stated) where applicable to you.										
1)	Age (years).									
2)	Gender.	Female				Male				
3)	Language (first language only).	Afrikaans	English		IsiNdebele		IsiXhosa		IsiZulu	
		Sepedi	Sesotho		Setswana		siSwati		Tshivenda	
		Xitsonga	Other							
4)	Race.	Asian	African	Coloured	Indian	White	Other			
5)	Institute of chiropractic graduation.			Please state name of institution :						
6)	Highest academic degree (in addition to chiropractic degree).			Bachelors	Honours		Masters	PhD	None	
				Specify field:						
7)	Years in active practice.		yrs	8)	Practice hours/ week.			hrs		
9)	Practise location.	Urban	Rural	Suburban			Small town			
10)a)	Economic status of community where practice is located (i.e. not the patient base).			High- income		Upper-Middle income		Lower-middle income		Low- income
10)b)	Economic status of your patient base.			High- income		Upper-Middle income		Lower-middle income		Low- income
11)	Perceived role as a health care professional.			Primary care practitioner			Neuromusculoskeletal specialist			Spinal specialist
				Other (please specify)						

The following table is to determine your personal lifestyle practices.				
Please mark with a X in the boxes provided where most applicable to you (may mark more than one box)				
12	Exercise	> 30 min moderate-intensity, 5 / week	> 20 min vigorous activity, 3 days / week	Balance / strength / proprioception
13	Nutrition	4-5 servings of fruit and vegetable/ day	Read food labels	Supplement daily
14	Cigarette smoking	Do not smoke	Do smoke	Never smoked
15	Car safety (seat belt)	Never	Sometimes	Always
16	Environment	Recycle	Use aircon in summer	Use heater in winter

The following table is to determine your attitudes and perceptions on counselling patients on health promotion and disease prevention.					
Please mark with an X (in the spaces provided) as to how strongly you agree / disagree that chiropractors should counsel on the following health risk factors and chronic diseases for all patients of the APPROPRIATE AGE / GENDER / RISKS:					
		Agree	**Strongly agree**	**Disagree**	**Strongly disagree**
17)	Alcohol abuse	1	2	3	4
18)	Cancer prevention	1	2	3	4
19)	Cardiovascular disease	1	2	3	4
20)	Child abuse	1	2	3	4
21)	Chronic respiratory disease	1	2	3	4
22)	Contraception	1	2	3	4
23)	Diabetes Mellitus	1	2	3	4
24)	Dietary habits	1	2	3	4
25)	Dietary supplements	1	2	3	4
26)	Ergonomic risk reduction	1	2	3	4
27)	Exercise for disease prevention / fitness	1	2	3	4
28)	Injury prevention	1	2	3	4
29)	Mental ill health	1	2	3	4
30)	Obesity / weight control	1	2	3	4
31)	Osteoporosis prevention	1	2	3	4
32)	Personal stress	1	2	3	4
33)	Postural habits	1	2	3	4
34)	Prescription / over the counter medications	1	2	3	4
35)	Safe sex practices STI / HIV	1	2	3	4
36)	Social drugs	1	2	3	4
37)	Technology addiction	1	2	3	4
38)	Tobacco cessation and risks	1	2	3	4

Please mark with an X (in the spaces provided) as to how strongly you agree / disagree that chiropractors should recommend the following screening tests for all patients of the APPROPRIATE AGE / GENDER / RISKS:					
		Agree	Strongly agree	Disagree	Strongly disagree
39)	Allergy sensitivity	1	2	3	4
40)	Blood culture	1	2	3	4
41)	Blood pressure testing	1	2	3	4
42)	Blood sugar testing	1	2	3	4
43)	BMI calculation	1	2	3	4
44)	Bone Scan	1	2	3	4
45)	Breast exam	1	2	3	4
46)	Colorectal cancer screening	1	2	3	4
47)	CT scan	1	2	3	4
48)	Dental screening	1	2	3	4
49)	Dietary assessment	1	2	3	4
50)	FBC	1	2	3	4
51)	HIV test	1	2	3	4
52)	Mammogram	1	2	3	4
53)	MRI	1	2	3	4
54)	Osteoporosis screening	1	2	3	4
55)	Pap test (women)	1	2	3	4
56)	Physical activity assessment	1	2	3	4
57)	Prostate exam (men 50+)	1	2	3	4
58)	PSA (men 50+)	1	2	3	4
59)	Serum cholesterol test	1	2	3	4
60)	Snellen chart	1	2	3	4
61)	Spinal assessment	1	2	3	4
62)	Stool culture	1	2	3	4
63)	Testicular exam (men)	1	2	3	4
64)	Ultra-sound	1	2	3	4
65)	X-ray	1	2	3	4
66)	Other : (specify)				
67)	1	1	2	3	4
68)	2	1	2	3	4

Please mark with an X (in the spaces provided) as to the frequency you counsel patients on the following health risk factors and chronic diseases for all patients of the APPROPRIATE AGE / GENDER / RISKS:					
		Regularly	**Rarely**	**Refer**	**Not at all**
69)	Alcohol abuse	1	2	3	4
70)	Cancer prevention	1	2	3	4
71)	Cardiovascular disease	1	2	3	4
72)	Child abuse	1	2	3	4
73)	Chronic respiratory disease	1	2	3	4
74)	Contraception	1	2	3	4
75)	Diabetes Mellitus	1	2	3	4
76)	Dietary habits	1	2	3	4
77)	Dietary supplements	1	2	3	4
78)	Ergonomic risk reduction	1	2	3	4
79)	Exercise for disease prevention / fitness	1	2	3	4
80)	Injury prevention	1	2	3	4
81)	Mental ill health	1	2	3	4
82)	Obesity / weight control	1	2	3	4
83)	Osteoporosis prevention	1	2	3	4
84)	Personal stress	1	2	3	4
85)	Postural habits	1	2	3	4
86)	Prescription / over the counter medications	1	2	3	4
87)	Safe sex practices STI / HIV	1	2	3	4
88)	Social drugs	1	2	3	4
89)	Technology addiction	1	2	3	4
90)	Tobacco cessation and risks	1	2	3	4

Please mark with an X (in the spaces provided) as to the frequency you recommend the following screening tests for all patients of the APPROPRIATE AGE/ GENDER/ RISKS:					
		Regularly	**Rarely**	**Refer**	**Never**
91)	Allergy sensitivity	1	2	3	4
92)	Blood culture	1	2	3	4
93)	Blood pressure testing	1	2	3	4
94)	Blood sugar testing	1	2	3	4
95)	BMI calculation	1	2	3	4
96)	Bone scan	1	2	3	4
97)	Breast exam	1	2	3	4
98)	Colorectal cancer screening	1	2	3	4
99)	CT scan	1	2	3	4
100)	Dental screening	1	2	3	4
101)	Dietary assessment	1	2	3	4
102)	FBC (general)	1	2	3	4
103)	HIV test	1	2	3	4
104)	Mammogram	1	2	3	4
105)	MRI	1	2	3	4
106)	Osteoporosis screening	1	2	3	4
107)	Pap test (woman)	1	2	3	4
108)	Physical activity assessment	1	2	3	4
109)	Prostate exam (men 50+)	1	2	3	4
110)	PSA (men 50+)	1	2	3	4
111)	Serum cholesterol test	1	2	3	4
112)	Snellen chart	1	2	3	4
113)	Spinal assessment	1	2	3	4
114)	Stool culture	1	2	3	4
115)	Testicular exam (men)	1	2	3	4
116)	Ultra-sound	1	2	3	4
117)	X-ray	1	2	3	4
118)	Other : (specify)				
119)	1	1	2	3	4
120)	2	1	2	3	4

Please indicate (in the spaces provided) as to how strongly you agree / disagree with the following elements of health promotion (interpersonal, policy, law and evidence-based practice).		Agree	Stron glyagr ee	Disagree	Strongly disagree
121)	A p value of 0.32 is less statistically significant than a p value of 0. 52.	1	2	3	4
122)	As a chiropractor I fully understand the evidence-based practice procedure.	1	2	3	4
123)	Busy time schedules prevent me from searching, understanding and interpreting articles from scientific journals.	1	2	3	4
124)	Chiropractic clinics should actively support government initiatives to protect health (e.g. Vuka South Africa: move for your health).	1	2	3	4
125)	Chiropractors are prevented from providing disease preventative counselling to patients due to disease prevention counselling services not being reimbursed by medical aid companies.	1	2	3	4
126)	Cigarette smoking should be banned from all public out-door spaces (i.e. parks).	1	2	3	4
127)	Colleagues have shared evidence-based guidelines with me.	1	2	3	4
128)	Community-wide campaigns should be used as a strategy to increase physical activity.	1	2	3	4
129)	Does the scope of chiropractic practice include health promotion.	1	2	3	4
130)	Emphasis is placed on evidence-based practice in chiropractic training institutions.	1	2	3	4
131)	Emphasis should be placed on health promotion and disease prevention in chiropractic training institutions.	1	2	3	4
132)	Governments proposed National Health Insurance plan is a positive step for health promotion in South Africa.	1	2	3	4
133)	Healthy behaviours are linked to healthy minds.	1	2	3	4
134)	Health professionals should advocate for the protection of the environment during clinical interaction with patients (e.g. energy saving, recycling).	1	2	3	4
135)	Increasing physical activity at the community level requires multi-disciplinary action (health, environment, transport, sport, culture and the economy).	1	2	3	4
136)	In health promotion the best use of evidence should take into consideration the cultural and social systems of a community.	1	2	3	4
137)	Interpreting conclusions in scientific articles is easy for me.	1	2	3	4
138)	It is important to discuss evidence based guidelines with colleagues.	1	2	3	4
139)	It is important to support the development of healthy environments (e.g. sports and recreation facilities) to prevent disease.	1	2	3	4
140)	It is important that chiropractors advocate prevention.	1	2	3	4
141)	Lancet is a more reputable source of evidence based practice compared to Journal of Manipulative and Physiological Therapeutics.	1	2	3	4
142)	Patients are receptive to messages of prevention.	1	2	3	4
143)	Policy changes at the community level lead to better changes in lifestyle habits than counselling patients in clinical practise.	1	2	3	4
144)	Qualitative research would provide the best evidence if I wanted to determine the most likely course of a disorder.	1	2	3	4
145)	Scope of practice prevents ordering of diagnostic screening tests.	1	2	3	4
146)	There is insufficient evidence on chiropractic adjustments to guide clinical practice.	1	2	3	4
147)	There is growing evidence supporting the effectiveness of chiropractic maintenance care.	1	2	3	4
148)	Trade and marketing policies are important to control the over-consumption of unhealthy foods.	1	2	3	4
149)	The sale of cigarettes should be banned.	1	2	3	4
150)	Trans-fats should be banned.	1	2	3	4

151)	**Please give three media sources where you access information to inform your best practise.**	
152)	**Please give three Journals you most frequently utilize to inform your best practise.**	
153)	**Please give 3 examples how you critically appraise research literature.**	

	Do you provide the following information (audio and / or visual) in your practice on the following disease prevention / management topics:	**YES**	**NO**
154)	Stress management.	1	2
155)	Cancer prevention.	1	2
156)	Degenerative joint disease prevention / management.	1	2
157)	Diabetes prevention / management.	1	2
158)	Cardiovascular disease prevention / management.	1	2
159)	Spinal care.	1	2
160)	STI/ HIV prevention / management.	1	2
161)	Other (specify).		
162)	1	1	2
163)	2	1	2

As a chiropractor practising in South Africa do you:		**YES**	**NO**
164)	Believe that chiropractors through health promotion counselling in their practices can assist in developing healthier communities.	1	2
165)	Feel that immunization / vaccination is an important aspect of disease prevention.	1	2
166)	Feel that there has been an increase in the public seeking chiropractic care in the management of non-neuromusculoskeletal complaints.	1	2
167)	Feel that there is a need for chiropractic services in health promotion and disease prevention in public health settings (e.g. hospitals, community clinics).	1	2
168)	Participate in community projects aimed at improving health and preventing disease (e.g. Run-Walk for Life, Straighten up South Africa).	1	2
169)	Provide information on healthy lifestyle choices beyond clinical practice (e.g. Schools, seminars).	1	2

The following section is to determine your knowledge and understanding of the role of selected public health agencies in health promotion and disease prevention in South Africa. (Please write eligibly and where unable to give an answer please indicate with an X in the spaces provided).			
Public health agencies are organisational resources through which public health services are organised and delivered.			
170)	As a chiropractor practising in South Africa which 2 public health agencies would you refer to for information about cigarette cessation / risks / management?	**1.**	**2.**
171)	Which public health agency would you report to for suspected child abuse?	**1.**	**-**
172)	Please name any two local HIV/ AIDS related public health agencies?	**1.**	**2.**
173)	Which local public health agency co-ordinates awareness and educational campaigns on mental health and mental disorders in South Africa ?	**1.**	**-**
174)	Which public health agency would you contact first for a patient who presents to you with a suspected notifiable disease?	**1.**	**-**
175)	Which public health agency provides an immunisation resource web site for chiropractors ?	**1.**	**-**
176)	Name any public health agency you are a member of …	**1.**	**-**
177)	Name one public health agency that you would consider as a source of information and support for a patient recently diagnosed with a terminal illness?	**1.**	**-**
178)	Are you a member of the Public Health Association of South Africa?	**1.**	**-**
179)	Which public health agency resource would you recommend for a rape victim?	**1.**	**-**

Please mark with an X as to which of the following statements are TRUE or FALSE			
		TRUE	**FALSE**
180)	The South African department of Health has a directorate for health promotion.		
181)	Oxfam International is a human rights non-governmental organisation.		
182)	The Alma- Ata Declaration was the first international conference on health promotion.		
183)	The majority of deaths from non-communicable diseases occurs in lower and middle-income countries.		
184)	The World Health Organisation has not published guidelines on the training and safety of chiropractic.		
185)	Pick n Pay has a health promotion community programme.		

APPENDIX D1

PRE - CONTACT INFORMATION LETTER – EXPERT GROUP

Dear Participant,

A very warm welcome and many thanks for attending this expert group for my research study.

The title of my research project is:
Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

Principle Investigator: Timothy Ford
Co-investigator: Dr Charmaine Korporaal (M. Tech Chiropractic; CCFC; CCSP; ICSSD)

Brief Introduction and Purpose of the study:
The aim of this study is to determine the perceptions and attitudes of chiropractors on the practice of health promotion and disease prevention in South Africa.

Health promotion and disease prevention have been described as core functions of public health. Over the years there has been and continues to be a shift in focus in public health from that of costly curative health-care to that of health promotion and disease prevention. This shift in focus is mainly due to chronic non-communicable diseases of daily lifestyle over taking communicable diseases as the major causes of morbidity and mortality globally and in particular low and middle income countries. Various studies have indicated that the chiropractic profession is ideally suited to provide health promotion and disease prevention services to patients in practice and thus the public as a whole. However no studies have been conducted on chiropractors practising in South Africa on health promotion and disease prevention in practise.

Aims of the study:

- To determine the epidemiological profile of chiropractors in South Africa.
- To determine the attitudes and perceptions of chiropractors on the practice of health promotion and disease prevention.
- To determine the knowledge and understanding of chiropractors of the role of selected public health agencies in health promotion and disease prevention in South Africa.

Procedure:
Before commencement of this focus group, kindly read and sign the informed consent form, confidentiality statement and code of conduct. Each member will then receive a copy of the questionnaire and the questions discussed in sequential order. The questions are concerned with your knowledge of chiropractic, the role of chiropractic in providing health promotion and disease prevention services in South Africa, the practice and utilization of evidence based medicine by chiropractors in practice and knowledge of selected public health agencies by chiropractors practising in South Africa. All proposed changes or inconsistencies found in the questionnaire will require a unanimous vote to institute a change to the questionnaire.

Remuneration and costs of study:
Participation in this expert group is voluntary and there will be no remuneration or costs incurred by participants in the expert group.

Confidentiality:
All comments and recommendations from this expert group discussion will be kept confidential throughout. The results of this discussion will only be used for the purpose of this research study.

Persons to contact for problems or questions:
Researcher: Timothy Ford: 078 311 8176
Supervisor: Dr Charmaine Korporaal (031) 373 2611
Institutional Research Ethics Committe Administrator: Ms Lavisha Deonarian (031) 373 2900

Statement of agreement to participate in the research study:

I....., ID number....., have read this Document in its entirety and understand its contents. Where I have had any questions or queries, these have been explained to me by..... to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore voluntarily agree to participate in this study.
Subjects name (print):..... Subjects signature.....Date.....
Researchers name (print).....Researchers signature.....Date.....
Witness name (print).....Witness signature..... Date.....
Supervisors name (print).....Supervisors signature..... Date.....

Your time, opinions and professional assistance in participating in this expert group is greatly appreciated.

Thank you

Timothy Ford

APPENDIX D2

LETTER OF INFORMED CONSENT
(TO BE COMPLETED BY THE PARTICIPANTS OF THE EXPERT GROUP)

DATE: _____

TITLE OF RESEARCH PROJECT : Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa.

NAME OF SUPERVISOR : Dr. Charmaine Korporaal: (031) 373 2611

NAME OF RESEARCH STUDENT : Timothy Ford: 078 3118176

Please circle the appropriate answer:

1. Have you read the research information sheet?	Yes	No
2. Have you had an opportunity to ask questions regarding this study?	Yes	No
3. Have you received satisfactory answers to your questions?	Yes	No
4. Have you had an opportunity to discuss this study?	Yes	No
5. Have you received enough information about this study?	Yes	No
6. Do you understand the implications of your involvement in this study?	Yes	No
7. Do you understand that you are free to		
a) withdraw from this study at any time?	Yes	No
b) withdraw from the study at any time, without reasons given	Yes	No
c) withdraw from the study at any time without affecting your future health care or relationship with the Chiropractic day clinic at the DurbanUniversity of Technology.	Yes	No
8. Do you agree to voluntarily participate in this study	Yes	No
9. Who have you spoken to regarding this study?		

_____

If you have answered NO to any of the above, please obtain the necessary information from the researcher and / or supervisor before signing. Thank You.

Please Print in block letters:

Focus Group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

APPENDIX D3

CONFIDENTIALITY STATEMENT – EXPERT GROUP

IMPORTANT NOTICE:

THIS FORM IS TO BE READ AND FILLED IN BY EVERY MEMBER PARTICIPATING IN THE EXPERT GROUP, BEFORE THE EXPERT GROUP MEETING CONVENES.

DECLARATION

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.

2. The returned questionnaires will be coded and kept anonymous in the research process.

3. None of the information shall be communicated to any other individual or organization outside of this specific focus group as to the decisions of this focus group.

4. The information from this focus group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

Once this form has been read and agreed to, please fill in the appropriate information below and sign to acknowledge agreement.

Please print in block letters:

Expert Group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

APPENDIX D4

CODE OF CONDUCT – EXPERT GROUP

This form needs to be completed by every member of the Focus Group prior to the commencement of the focus group meeting.

As a member of this committee I agree to abide by the following conditions:

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.

2. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.

3. The information from this focus group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

Member represents	**Member's Name**	**Signature**	**Contact Details**

Appendix E1

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

27 June 2012

IREC Reference Number: **REC 35/12**

Mr T W Ford
139 Edmonds Road
Glenwood
Durban

Dear Mr Ford

Chiropractic and public health: A study on the perceptions and attitudes of Chiropractors on health promotion and disease prevention in South Africa

I am pleased to inform you that Full Approval has been granted to your proposal REC 35/12.

The Proposal has been allocated the following Ethical Clearance number IREC 021/12. Please use this number in all communication with this office.

Approval has been granted for a period of one year, before the expiry of which you are required to apply for safety monitoring and annual recertification. Please use the Safety Monitoring and Annual Recertification Report form which can be found in the Standard Operating Procedures [SOP's] of the IREC. This form must be submitted to the IREC at least 3 months before the ethics approval for the study expires.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC SOP's. In addition, you will be responsible to ensure gatekeeper permission.

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

Please note that you may continue with validity testing and piloting of the questionnaire. Research on the proposed project may not proceed until IREC reviews and approves the final questionnaire.

Yours Sincerely

[redacted]

Dr D F Naude
Chairperson: IREC

Appendix E2

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

12 September 2012

IREC Reference Number: **REC 35/12**

Mr T W Ford
139 Edmonds Road
Glenwood
Durban

Dear Mr Ford

Chiropractic and public health: A study on the perceptions and attitudes of Chiropractors on health promotion and disease prevention in South Africa

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the questionnaire has been APPROVED; subject to the following amendment:

- The objectives are to be removed from the questionnaire.

Please note that you may now proceed with research on the proposed project.

Yours Sincerely,

[redacted]

Dr D F Naude
Chairperson: IREC

APPENDIX F

STATEMENT OF AGREEMENT TO PARTICIPATE IN THE RESEARCH STUDY

I....., ID number....., have read this Document in its entirety and understand its contents. Where I have had any questions or queries, these have been explained to me by..... to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore voluntarily agree to participate in this study.

Subjects name (print):..... Subjects signature.....Date.....
Researchers name (print).....Researchers signature.....Date.....
Witness name (print).....Witness signature..... Date.....
Supervisors name (print).....Supervisors signature..... Date.....

Your opinions and experiences are important! The questionnaire is quick and easy to complete as all the questions only require you to tick the appropriate answer. Thank you for your participation.

Timothy Ford