The status of paediatric care in chiropractic practices in KwaZulu-Natal

By

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I, Kirsten Evans, do declare that this dissertation is representative of my own

work in both conception and execution (except where acknowledgements indicate to the contrary)

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DEDICATION

I dedicate this research to my father, Steve. Thank you for never leaving my side and for always having full confidence in me to succeed. Thank you for your continued patience, support, love and understanding throughout my studies. You have always kept me positive and are the reason where I am in my life today.

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ABSTRACT

Background: Paediatric visits to complementary and alternative medicine (CAM) practitioners results from a wide range of childhood disorders. As there are significant anatomical differences between children and adults, scientific evidence for the effectiveness of chiropractic care for adults is not applicable to paediatrics, leaving a paucity of information supporting the management of paediatric conditions by chiropractors. Most studies regarding paediatrics have been performed in first world countries, leaving a paucity of information about third world countries, where the health care milieu differs. Therefore, this research aimed to determine the practice characteristics regarding paediatric care in chiropractic practices in KwaZulu-Natal.

Objectives: This prospective, quantitative, descriptive, cross-sectional study based on a focus group refined and piloted questionnaire, determined the practice characteristics with regards to paediatric practice amongst chiropractors in KwaZulu-Natal. The total sample population was n=118, with each practitioner receiving a Letter of Information and Informed Consent Form and a Questionnaire. Data was analysed using the data analysis tools of Microsoft Office Excel and a p value of <0.05 was considered as statistically significant.

Results: A response rate of 36% was obtained. Most of the respondents were middle-aged, female chiropractors who had been practicing for less than a decade. Very few of the chiropractors held paediatric qualifications (18.6%). In terms of paediatric care, most of the respondents used a variety of conservative approaches as evidenced by the type and number of assessments, treatment and management procedures used in practice.

Conclusions: The results showed that few chiropractors in KwaZulu-Natal see paediatric patients in their practices; however the chiropractors that managed paediatric conditions were predominantly conservative. This is positive for the chiropractic profession, as it shows diligent and responsible decision making within a vulnerable population group. Future research must assist with facilitating inter-professional relations with other health care professionals and public relations need to be aimed at creating more awareness generally regarding chiropractic paediatric care.

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LIST OF DEFINITIONS

Bodywork

"Therapies and techniques in complementary medicine which involve touching or manipulating the body." (Oxford English Dictionary, 2012)

Care:

Hawk, Schneider, Ferrance, Hewitt, Van Loon and Tanis (2009) defined care as encompassing the assessment, treatment and management of patients

Children:

Children are defined as younger than 15 years of age (World Health Organization, 2007).

"For the purposes of the United Nations Convention on the Rights of the Child, a child is a human being younger than 18 years, unless under the law applicable to the child, majority is attained earlier. The United Nations General Assembly defines youth as people 15–24 years old. All United Nations statistics on youth are based on this definition, and children are therefore frequently assumed to be people 14 years old and younger." (World Health Organization, 2007)

For the context of this study, a paediatric patient will be referred to as an individual 14 years and younger.

Chiropractic:

Defined by the World Federation of Chiropractic (2009) as: "A health profession concerned with the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system, and the effects of these disorders on the function of the nervous system and general health. There is an emphasis on manual treatments including spinal adjustment and other joint and soft-tissue manipulation."

In this study the term chiropractor/doctor of chiropractic is used interchangeably with the term practitioner.

Complementary and Alternative Medicine (CAM):

According to the World Health Organization (2011), the terms "complementary medicine" or "alternative medicine" are used inter-changeably with traditional medicine in some countries.

They refer to a broad set of health care practices that are not part of that country's own tradition and are not integrated into the dominant health care system.

CAM embraces those therapies that may either be provided alongside conventional medicine (complementary) or which may, in the view of their practitioners, act as a substitute for it. Alternative disciplines purport to provide diagnostic information as well as offering therapy (The United Kingdom Parliament, 2000).

There is considerable debate around the definition of CAM (Lorenc, Ilan-Clarke, Robinson and Blair, 2009). According to Morgan (2005), CAM is a loose term encompassing a wide range of therapies, basically anything that is not medical regardless of its established merit. However, Birdee, Phillips, Davis and Gardiner (2010), defined CAM as a group of diverse medical and health care systems, practices, and products that are not generally considered to be part of conventional medicine.

Integrative Medicine

“Integrative medicine is defined as relationship-centered care that focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, health care professionals and disciplines to achieve optimal health and healing and therefore includes the best of evidence-based CAM therapies and evidenced-based conventional therapies.” (Consortium of Academic Health Centers for Integrative Medicine, 2012)

Paediatric patient:

It has been noted that different age ranges are offered to define a paediatric patient. For example, UNAIDS defines an adult as 15 years and above, and a young woman/man as aged 15-24, whereas for UNICEF, the definition of a child is a person under 18 years (UNAIDS, 2007; UNICEF, 2009).

According to the KwaZulu-Natal Health Department, the South African definition of a paediatric patient is a child less than or equal to 14 years of age (Health KwaZulu-Natal, 2004).

Practice:

“To be professionally engaged; the continuous exercise of a profession.” (Merriam-Webmaster, 2011)

According to the Chiropractors Section 331-010 of 2011 (Missouri General Assembly, 2011), the "practice of chiropractic" is defined as the science and art of examination, diagnosis, adjustment, manipulation and treatment both in inpatient and outpatient settings, by those

methods commonly taught in any chiropractic college or chiropractic program in a university which has been accredited by a council or approved by a board. It shall not include the use of operative surgery, obstetrics, osteopathy, podiatry, nor the administration or prescribing of any drug or medicine nor the practice of medicine (Missouri General Assembly, 2011).

Prevalent

"Widespread in a particular area or at a particular time." (Oxford English Dictionary, 2012) Prevalence is "The fact or condition of being prevalent; commonness." (Oxford English Dictionary, 2012)

Primary Health Care

The World Health Organization (1978) defines Primary Health Care as: "Essential health care; based on practical, scientifically sound, and socially acceptable method and technology; universally accessible to all in the community through their full participation; at an affordable cost; and geared toward self-reliance and self-determination."

Profession

According to Haldeman (2005), a profession constitutes a social group of people who have acquired specific knowledge and skills, and therefore, have exclusive powers, rights and authority. The social group has controlled entry, is self-governing and is regulated by the government (Haldeman, 2005).

Status

"A relative social or professional position or standing." (Oxford English Dictionary, 2012)

Traditional Medicine

According to the World Health Organization (2012), "Traditional medicine is the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses." Individuals that practice traditional medicine are termed traditional healers.

Traditional medicine that has been adopted by other populations (outside its indigenous culture) is often termed alternative, conventional, allopathic or complementary medicine

(World Health Organization, 2012). Traditional medicine is used interchangeably with the term Western medicine.

ABBREVIATIONS

ACA = American Chiropractic Association

ADD = Attention deficit disorder

ADHD = Attention deficit hyperactivity disorder

AECC = Anglo-European Chiropractic College

AHPCSA = Allied Health Professions Council of South Africa

CAMDOC = Alliance made up of European alternative medical councils

CASA = Chiropractic Association of South Africa

DC = Doctor of chiropractic

DICCP = Diplomat in Clinical Chiropractic Paediatrics

DUT = Durban University of Technology

GP = General Practitioner

ICA = International Chiropractic Association

LBP = Lower back pain

MNTHS = Months

NIP = NeuroImpulse Protocol

OPSSA = Organisation for Paediatric Support in South Africa

SAPA = South African Paediatric Association

UJ = University of Johannesburg

UNAIDS = Joint United Nations Programme on HIV/AIDS

UNICEF = United Nations Children's Fund

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

There has been a change of attitude in the public towards health and health care with respect to complementary and alternative medicine (CAM) (Bodeker and Kronenberg, 2002). CAM, also known as non-allopathic, unconventional, holistic or natural therapy, encompasses a broad spectrum of practices and beliefs and refers to almost any form of alternative therapy, which falls outside conventional modern medicine (Mattheus, 2004; Nienstedt, 1998). According to Ernst, Pittler, Stevinson and White (2001:2), CAM can be defined as a "diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, satisfying a demand not met by orthodoxy, or diversifying the conceptual framework of medicine."

CAM is the primary source of health care for over 70% of the world's population (Truter, 2005) and has become increasingly popular for people of all ages, including children and adolescents (Breuner, 2002; Fisher and Ward, 1994). Natural lifestyles, a healthy environment and greater attention to personal well being are aspects which are increasingly becoming part of all cultures as well as the knowledge base of today's health care consumer (Tatalias, 2006). The relative popularity of complementary alternative therapies differs between countries, but public demand is strong and growing (McDonough, Devine and Baxter, 2007; Giovannini, Schmidt, Canter and Ernst, 2004; Pal, 2002; Meeker, 2000; Fisher and Ward, 1994). Regulation of practitioners varies widely; however, in most countries only registered CAM professionals may practice (CAMDOC Alliance, 2010; Gqaleni, Moodley, Kruger, Ntuli and McLeod, 2007; Pal, 2002; Fisher and Ward, 1994). Therefore, a growing number of paediatric generalists and subspecialists have begun to offer complementary therapies and advice as part of their practice (Kemper, Vohra and Walls, 2008). In addition, there are a growing number of academic paediatric integrative medicine programmes (Boon and Kachan, 2008; Kemper, Vohra and Walls, 2008) and new initiatives that promote systematic sharing, support, and dissemination of information to improve collaborative and comprehensive care.

To support the above, Mullin, Alcantara, Barton and Dever (2010) indicate that CAM continues to grow in both popularity and utilization by adults in the USA and other first world

countries such as Canada and the UK. With the expanding use of CAM by adults comes the developing interest in CAM therapies for children (Alcantara, Ohm and Kunz, 2009). A study by Breuner (2002), reported that those parents who used CAM for their own medical problems were more likely to use it for their children. The health and well-being of children is a natural concern for all parents and societies particularly as evidence is mounting that good health and lifestyle early in life may have a profound impact on health and quality of life in later years (Hartvigsen and Hestbaek, 2009). In this context, an array of CAM therapies is available to children, with chiropractic being the most popular practitioner-based CAM therapy (Alcantara, Ohm and Kunz, 2009). Chiropractors have generally treated children in the course of their practice since the inception of the chiropractic profession; it is only after a century of chiropractic care of children, that paediatrics is beginning to emerge as a speciality discipline in chiropractic practice (Davies and Jamison, 2000). To date therefore, all laws governing the authority and responsibilities of chiropractors provide for full access to and responsibility for the care of children, as they do for patients of all ages (Child, 2001). In this respect, chiropractors are considered by definition, primary care practitioners (Shalen, 2000).

To this end, children constitute a substantial number of patients in chiropractic practices (Lee, Li and Kemper, 2000). A study by Breuner (2002), showed that 20 million children were seen by chiropractors in the USA, in 1993; additionally according to Lee, Li and Kemper (2000), an estimated 420 000 paediatric chiropractic visits were made in a USA city in 1998. It is apparent that chiropractic care for many families is no longer considered an alternative form of health care but rather another form of routine health care for the prevention of diseases and the promotion of health (Breuner, 2002). Given its continuing popularity, paediatric chiropractic, therefore, represents a substantial and significant aspect of CAM therapy for children (Alcantara, Ohm and Kunz, 2009).

With significant anatomical, physiological, developmental and psychological differences between children and adults, it is possible that the body of scientific evidence for the effectiveness of chiropractic care for adults is not applicable to infants, children, and adolescents (Hawk, Schneider, Ferrance, Hewitt, Van Loon, Tanis, 2009). Thus, while recognizing that differences in approach and manner may be necessary in addressing the needs of specialty groups (e.g. paediatrics), Child (2001) contends that the basic principles of chiropractic apply to patients of all ages. This is of particular relevance in that Hartvigsen and Hestbaek (2009) suggest that at present no health care profession has convincingly assumed the responsibility of spinal and musculoskeletal health for children. Therefore, they suggest it may be a good opportunity for chiropractors to take responsibility for and engage

in an effort to bring forward evidence-based strategies for prevention of spinal pain and other musculoskeletal problems in children. This concurs with Heslop's (2008) findings, which indicated that the chiropractic profession must focus on the production of scientifically validated literature on the safety and efficacy of chiropractic care for paediatric conditions. Hartvigsen and Hestbaek (2009), go further to suggest that chiropractors may play a significant role in finding and implementing evidence-based prevention and treatment strategies for musculoskeletal care aimed at infants, children, and adolescents. Thus, knowledge of the common presenting complaints and scope of treatment is valuable to the profession as it provides chiropractors with the knowledge on how to deal with the various paediatric cases that may present to them.

Research indicates that chiropractors see children ranging in age from a week to 18 years of age (Davies and Jamison, 2005). According to Ohm (2000), some of the most common reasons parents seek chiropractic care for their children is pain as a result of trauma. This is followed by the perceived resolution of a particular symptom or condition[1] because they have heard from other parents that chiropractic care can assist in that context. In order to assess these various complaints, a study done in Boston by Lee, Li and Kemper (2000), looked at the scope of practice in treating children in chiropractic practices / paediatric organisations. The study showed that doctors of chiropractic reported performing various diagnostic procedures, including but not limited to the neurological examination, radiographic examination, orthopaedic examination and laboratory tests. The most commonly used treatment in practice was an adjustment; however, according to Hartvigsen and Hestbaek (2009), chiropractors have much more to offer and can play an active and important role in a broader public health-oriented approach to children.

Therefore, given that approximately one third of children who use complementary alternative medicine, receive chiropractic care, there is a case for the profession to promote the benefits of chiropractic care for children (Carlton, Johnson and Cunliffe, 2009); investigate the risks and become actively engaged in the health care delivery mechanism. It is here that chiropractors can become a greater part of the solution for spinal and musculoskeletal health care for infants, children, and adolescents (Hartvigsen and Hestbaek, 2009). Health promotion through well child maintenance care is an invaluable contribution to which

[1] viz. colic, ear infections, asthma, allergies and headaches (Ohm, 2000), musculoskeletal, neurological, ear, nose and throat disorders, immune dysfunction, challenged child, constipation, enuresis and acid reflux (Alcantara, 2008), orthopaedic/spinal concerns (pain in various regions – viz. such as back, neck, head, and shoulder, as well as scoliosis), wellness, and stomach-related disorders (Rubin, 2007).

chiropractic can contribute to the health and well-being of the developing child (Davies and Jamison, 2000).

With this in mind, a review of the literature revealed a number of studies exploring the relationship between chiropractic, the South African public, and other health care professions. However, few studies have been done in the field of paediatrics and no studies have assessed paediatric care in chiropractic practices in South Africa and specifically KwaZulu-Natal. Many of the studies were performed in first world countries such as the USA and the UK and since South Africa is largely a third world country, the chiropractic profession has different needs and opportunities to that of more developed countries (Till and Till, 2000). According to Heslop (2008), there is a vast under-service of health care for paediatric patients in many areas of South Africa and, therefore, there is a great need for improved services.

Therefore, this research aimed to determine the status of paediatric care in chiropractic practices in KwaZulu-Natal.

1.2 Aims and Objectives

The aim of this research was to determine the status of paediatric care in chiropractic practices in KwaZulu-Natal.

Objective One: To determine the practice characteristics amongst chiropractors in KwaZulu-Natal, with regards to paediatrics.

Objective Two: To correlate the assessment, management and treatment procedures utilized in chiropractic practices to various paediatric conditions in KwaZulu-Natal.

1.3 Rationale

- As more parents refer their children for chiropractic care more often than any other form of CAM therapy (homeopathy, naturopathy, acupuncture, osteopathy, oligotherapy); it would suggest that this form of health care intervention should be given priority as improved paediatric care is sought (Rosner, 2003). This is particularly true in the face of chiropractic having a “limited” license in terms of paediatric care (Hestbaek and Stochkendahl, 2010) yet the scope of what is seen

presenting in chiropractic practices is increasing, as reported in chiropractic literature and in paediatric medical journals (Rubin, 2007). Therefore, it is both apparent and timely that chiropractors determine (through research) who is being seen in chiropractic practices and what is being done in terms of their care. This is particularly evident in that there has been much discussion about the role of chiropractic care in the evaluation, management, and treatment of paediatric patients. However, to date, no specific guidelines have been adopted that address this issue from an evidence based perspective (Hawk et al. 2009). Therefore, this study questionnaire included questions on assessment, management and treatment procedures performed in chiropractic practices in KwaZulu-Natal.

- Research regarding chiropractic care for children conducted in Boston by Lee, Li and Kemper (2000), only considered family chiropractic practices and members of paediatric organizations and excluded doctors of chiropractic whose practices were limited to adult back and neck pain and / or sports medicine. Therefore, the paediatric patient load, techniques, and practices of the respondents did not reflect the entire chiropractic community (Lee, Li and Kemper, 2000).

Therefore, to address the recommendations noted in the publication by Hawk et al. (2009), this research covered the greater chiropractic community in KwaZulu-Natal, involving those chiropractors who primarily treat paediatric patients, or who see a limited numbers of paediatric patients and the chiropractors who do not see paediatric patients at all.

1.4 Benefits

The benefits of this study were to gain an insight into the current status of paediatric care in chiropractic practices in KwaZulu-Natal. It identified problems with regards to practice characteristics and chiropractic care when dealing with paediatric patients. Furthermore, this study highlighted the importance of continued learning, education and experience in the field of paediatrics, especially amongst those chiropractors who treat children in their practices.

1.5 Limitations

It was assumed that all respondents were able to understand and respond in English. This assumption is possible as chiropractors would most likely have received English medium tertiary training to the level of a Master's Degree in South Africa (DUT, 2011; UJ, 2011).

Those practitioners from outside of South Africa were determined to be principally from the USA and UK, thus negating the need for non-English questionnaires. All chiropractors were required to report honestly and openly their reality of their situation (Mouton, 1996). If they elected to respond dishonestly it would be impossible for the researcher to determine as such (unless blatant), and therefore, such responses would still be included in the outcomes.

1.6 Conclusion

The aim of this study was to determine the status of paediatric care in chiropractic practices in KwaZulu-Natal.

In the remaining chapters, the researcher will review the related literature (Chapter Two) describe in detail the methodology of this study (Chapter Three) and present the statistics (Chapter Four); the results and interpretation (Chapter Five) and the conclusions thereof (Chapter Six). Thereafter, and continued in Chapter Six, recommendations will be made for suggested improvements with regards to paediatric care in chiropractic practices in KwaZulu-Natal.

CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will review the current literature pertaining to the development of CAM and chiropractic globally and then discuss the literature with regards to the paediatric patient. The management of the paediatric patient will be discussed with regards to chiropractic with a particular focus to a South African context. Perception will also be discussed.

2.2 CAM IN A GLOBAL CONTEXT

Recent definitions divide CAM into mind-body medicine, biologically based therapies, manipulative and body-based systems and energy medicine, and whole system approaches such as ayurveda and traditional Chinese medicine (Lorenc, Ilan-Clarke, Robinson and Blair, 2009). In this context, CAM is used by people suffering from a variety of conditions, though it is often used, not as a primary intervention, but rather as an additional form of care (Lawrence and Meeker, 2007). Reasons given for seeking alternative care ranges from personal experience, lack of appropriate treatments available from conventional medicine, to referral from a doctor (Miller, 2010).

Examples of alternative treatment, techniques and practices include: advice on herbal medicine, vitamins; therapeutic massage, acupuncture, imagery, homeopathy; chiropractic, yoga, and prayer (Breuner, 2002), as well as osteopathic manipulation, nutritional supplements, mind-body medicine (hypnosis, biofeedback, meditation, Tai Chi), energy healing (Reiki, therapeutic touch), naturopathy, environmental therapies (magnets, lights) and other healing spiritual practices (Sawni and Thomas, 2007).

The interest in CAM has increased during the past decade and the attitude of the general public towards CAM has become mainly positive (Frass, Strassl, Friehs, Müllner, Kundi and Kaye, 2012). CAM is experiencing a substantial growth in all first world nations (Mbutho, Gqaleni and Korporaal, 2012; Lewith, Hyland and Gray, 2001; Eisenberg, Kessler, Foster, Norlock, Calkins, Delblanco, 1993). As Western medicine has experienced an ever-growing exposure to increased scientific evidence and basic science research, with regards to CAM; so an increased interest in CAM has resulted (Frass et al. 2012).

Studies examining the provision of CAM in the UK suggested that in 1980, there were between 12 and 15 million CAM consultations and that CAM use in the USA and Australia had doubled over the last decade (Lewith, Hyland and Gray, 2001). CAM use increased substantially during the 1990's, the United States' public spent an estimated $36 to $47 billion on CAM in 1997 alone (Eisenberg et al. 1993). Up to 80% of the people in developing counties rely on CAM, specifically traditional medicine for their primary health care due to cultural traditions or lack of an alternative option (SouthAfrica.info, 2012; Chandy, 2004; Bodeker and Kronenberg, 2002).

Research by Lewith et al. (2001) revealed that there are still many people who are sceptical about CAM for reasons such as:

- CAM therapies should be subject to more scientific testing before they can be accepted by conventional medical doctors.
- CAM can be dangerous in that it can prevent people from getting proper treatment.
- CAM works largely through the placebo effect.
- CAM should only be used as a last resort when conventional medicine has nothing to offer.

However, According to Lewith et al. (2001), there are also many positive attitudes towards the use of CAM:

- CAM can produce longer lasting and more complete clinical results then conventional medicine.
- CAM is safe and has few side effects.
- CAM therapies could be effectively prescribed instead of giving patients repeat prescriptions.

CAM is growing in popularity, especially within the paediatric population (Barnes, Bloom and Nahin, 2007; Breuner, 2002). However, research on CAM practitioners and their specialties, such as paediatrics, is lacking (Pohlman, Hondras, Long and Haan, 2010; Kreitzer, Kligler and Meeker, 2009; Ernst, Cohen and Stone, 2004).

Given the recent rise in popularity of "natural" and "holistic" remedies and foods, the probability increases that growing numbers of children would receive at least part of their health care through these methods (Davis and Darden, 2003), particularly among children with chronic diseases such as cystic fibrosis, cancer and asthma, with CAM use ranging from 11–80% in the USA (Ferrance and Miller, 2010; Sawni and Thomas, 2007). Research by Tsao, Meldrum, Kim, Jacob and Zeltzer (2006), suggested that the use of CAM in paediatric populations is increasing substantially, with prevalence estimates from 51% in Australia, 17,9% to 37% in the UK, 12% in the USA and 11% in Canada (Lorenc, Ilan-Clarke, Robinson and Blair, 2009). Research by Carlton, Johnson and Cunliffe (2009), on

the use of CAM for children has indicated that in Europe, 25–50% of adults used CAM as did 20–30% of children, whilst they found that many other studies (Breuner, 2002; Lee, Li and Kemper, 2000; Spigelblatt, Laine-Ammara, Pless and Guyver, 1994) have found the percentage of child CAM users to be closer to 10–15%. Carlton, Johnson and Cunliffe (2009), concluded that chiropractic still accounts for approximately 36% of all CAM use. Studies in the USA regarding CAM use as primary care for paediatrics show a prevalence of 12–21%. As a result of this and the interest and use of CAM among adults and children, primary care medical doctors are confronted with patients who want information about CAM or are using CAM (Sawni and Thomas, 2007). According to Barnes, Bloom and Nahin (2007), children whose parents used CAM were almost five times as likely to use CAM compared to children whose parents did not use CAM. Two estimates of CAM use in paediatric populations, in the USA, were published in 1994 by Verhoef, Russell and Love. This study reported that 12.7% of 11 year olds and 24.4% of 12-17 year olds had consulted an alternative care practitioner and many of these had included chiropractors. Although rates of reported CAM usage among children vary between studies, prevalence is still notable across populations. Approximately 10-40% of healthy children and more than 50% of children with chronic, recurrent, or incurable conditions use CAM, most often in conjunction with conventional care (Barnes, Bloom and Nahin, 2007).

Vallone, Miller, Larsdotter and Barham-Floreani (2010) revealed that one of the major problems facing doctors is that parents often fail to communicate that their children are receiving CAM therapies when they visit their offices for routine wellness visits. It is unknown as to why many parents do this but this may be perceived as increasing the malpractice risk for the practitioner when they are administering therapeutic measures without being fully informed (Vallone et al. 2010). This communication gap may also adversely affect patient safety related to interactions between CAM and conventional care (Barnes, Bloom and Nahin, 2007).

The hesitancy that families have in discussing their health related preferences, values, and beliefs raises significant concern for paediatricians providing family-centered care (Kemper and O'Connor, 2004). Integrative paediatrics is meant to address this concern by equipping clinicians with the education to address families' health related preferences and communication about CAM. Most paediatricians have stated they are interested in learning more about CAM therapies, and are starting to feel more comfortable referring to CAM providers (Kemper and O'Connor, 2004). Integrative medicine is based the biopsychosocial model of medicine in that it focuses on the whole person, but it also articulates a commitment to evidence based practice using multiple therapeutic modalities, including CAM therapies.

2.3 CAM IN A LOCAL CONTEXT

Many of the above mentioned studies were performed in first world countries (Barnes, Bloom and Nahin, 2007; Breuner, 2002; Lee, Li and Kemper, 2000). South Africa is largely a third world country and has different needs and opportunities to that of more developed countries (first world countries) (Till and Till, 2000). Almost 20% of the South African population has ready access to health care while 80% have limited or no access (About South Africa>Health, 2012).

The use of CAM is based on tradition, availability and experience of an individual (Ashraf, Rahman, Satwani, Naz, Abbas and Hassan, 2010). In developing countries, due to high cost of medicines and access to allopathic practitioners, the provision of safe and effective traditional or alternative therapies are gaining popularity. According to the World Health Organization (2012), various countries like China, South Korea and Vietnam have fully integrated traditional medicine into their health systems. In Africa about 85% of the population uses CAM for various diseases (Ashraf et al. 2010). CAM usage in children, in developing parts of the world, is mostly used because of word of mouth, personal experience or on recommendation by a senior family member. Whereas, in other countries such as Australia, the UK and the USA, there are CAM specialists who recommend their therapies, therefore, making it more controlled and monitored (Ashraf et al. 2010).

South Africa is one of the few nations that have made significant progress to integrate traditional and complementary medicine into the legislative framework for health practitioners (Gqaleni et al. 2007). In South Africa, traditional healers have a crucial role in providing health care to the majority of the country (Word Health Organization, 2011). They are deeply interwoven into the fabric of cultural and spiritual life as traditional healers are present in almost every community (Gqaleni et al. 2007). They are the first to be consulted in up to 80% of cases, especially in rural areas. There are over 200 000 traditional healers in South Africa (Gqaleni et al. 2007; World Health Organization, 2011) and only 27 000 allopathic medical practitioners. The Traditional Healers' Organization currently represents more than 180 000 traditional healers from South Africa and a number of neighbouring countries such as Zimbabwe and Botswana. Every year 1 500 tons of traditional medicines are sold in medicine markets in Durban alone. The traditional medicine industry is, therefore, worth up to 2 300 000 South African rand (ZAR) per year (World Health Organization, 2011).

Across the world, organisations such as the Association for the Wellbeing of Children in Healthcare in Australia or the European Association for Children in Hospital with more than 20 members and associate members; as well as programmes like the Child Life Services in the USA or the Hospital Play Specialists in the UK, advocate for the support of children in health care facilities (OPSSA, 2012). In South Africa, there are organizations such as: The South African Paediatric Association (SAPA),

which all paediatricians are urged to join in order to strengthen the organizations' role in advocating child health issues and promoting the paediatric community (SAPA, 2012); The Bigshoes Foundation, for whom the South African government and other organizations are committed to improving the quality of life of vulnerable children through health care interventions; and the Organisation for Paediatric Support in South Africa (OPSSA) who utilize Child Life principles to empower children and families in health care. These organizations strive to increase the availability of information regarding paediatric health care and to promote quality health care in all medical facilities throughout South Africa (OPSSA, 2012).

2.4 CAM AND CHIROPRACTIC

Research by Davis and Darden (2003) showed that the percentage of childhood CAM use that is attributable to the use of chiropractic therapies is substantial. According to Lawrence and Meeker (2007), CAM and chiropractic often offer lower costs for comparable results compared to conventional medicine. Breuner (2002) reported that the most frequently consulted CAM providers were doctors of chiropractic (DC's). Spigelblatt et al. (1994) reported that combined usage of chiropractic, homeopathy, naturopathy and acupuncture accounted for 84% of CAM among children in Canada. Research by Alcantara, Ohm and Kunz (2009) showed that chiropractic was the most popular form of practitioner-based CAM therapies for children and given its continuing popularity, paediatric chiropractic, therefore, represents a substantial and significant aspect of CAM therapy for children. A National Health Statistics report in the USA, in 2007, revealed that the most frequent complaint causing children to seek CAM care, in general, was back and neck pain (Barnes, Bloom and Nahin, 2007).

Breuner (2002), believes that chiropractic care for many families is no longer considered an alternative of health care but rather another form of routine health care for the prevention of diseases and the promotion of health, hence the integration of CAM into conventional care is starting to take place (Lawrence and Meeker, 2007). Although there are still a number of emerging issues such as safety of CAM practices, quality control, integration of CAM and standards of practice, the potential for CAM and its evidence-base is still growing (Lawrence and Meeker, 2007).

In 1895, the world saw the beginning of a health care profession that based its existence on a simple principle: vertebral subluxations interfere with health. This original idea is the basic foundation of the chiropractic premise of health and disease (Tetrault, 2004). For much of its history, chiropractic care has been a complementary therapeutic paradigm separate from, or marginal to, the mainstream health care system (Pollentier and Langworthy, 2007). According to Vallone et al. (2010), over the last decade, CAM health care providers, including chiropractors, have made sufficient inroads into

paediatric health care to warrant increased interest among leaders in the field of conventional western medicine. There are now chiropractors in over 100 countries all over the world, with most countries only having one chiropractor for every hundred thousand to ten million people (Tetrault, 2004). Depending on education, geographic location, scope of practice, as well as consumer preference, chiropractors may assume the role of primary health care for families who are pursuing a more natural and holistic approach to health care for their families (Vallone et. al. 2010).

2.5 CHIROPRACTIC AND PAEDIATRICS

Hestbaek and Stochkendahl (2010) stated that between 5%-10% of chiropractic patients are children and that most of these children visit their chiropractor because of spinal pain, or other musculoskeletal complaints. A trend toward greater utilization of chiropractic by children has not gone unnoticed by the medical profession (Homola, 2010). A study by Vallone et al. (2010) revealed that approximately 14% of chiropractic patients are children under the age of 18 and over the last two decades, chiropractors in the USA have become the most common CAM providers visited by children (Vallone et al. 2010; Lee, Li and Kemper 2000), and therefore, chiropractors continue to seek integration with other health care providers to provide the most appropriate care for their paediatric patients.

The scope of health complaints amongst children differ somewhat for different age groups, and the management strategy including choice of treatment methods have to be adapted to the individual, but this is not specific to children (Leboeuf- Yde and Hestbaek, 2010). The chiropractor's role in wellness care, prevention and treatment of injury or illness is based on education in anatomy and physiology, nutrition, exercise and healthy lifestyle counselling as well as referral to other health practitioners (Vallone et al. 2010).

2.5.1. Conditions affecting children

Common paediatric conditions that are seen and presented and treated in chiropractic practices include: musculoskeletal conditions such as torticollis, growing pains, sports injuries (sprains and strains), juvenile arthritis, traumatic injuries, developmental delay, neck pain, headache and low back pain (Alcantara, 2008; Gotlib and Rupert, 2008) as well as non-musculoskeletal conditions such as asthma, enuresis, birth trauma, colic, constipation, ear infection, nursing/suckling issues, difficulties with sleeping, head or chest cold, and upper respiratory infections (Pohlman, Hondras, Long and Haan, 2010; Vallone et al. 2010; Alcantara, 2008; Lee, Li and Kemper, 2000). According to Davies and Jamison (2000), common causes of these conditions may include: the birth process, changes in the biomechanics that the paediatric patient experiences including changes from being supine to crawling to walking as well as physical trauma due to accidents experienced during sporting activities (in older children). Less common conditions seen and treated (with very little evidence supporting the

outcome), (Ferrance and Miller, 2010)) include abdominal pain, attention deficit hyperactivity disorder (ADHD/ADD), dyslexia, anxiety/stress, autism, depression, enuresis, infectious diseases, uveitis, allergies, influenza or pneumonia, parasites, bronchitis, atelectasis, seizure, Bell's palsy, dysmenorrhoea and premenstrual syndrome, respiratory allergy, sinusitis, and sore throat (Pohlman et al. 2010; Gotlib and Rupert, 2008; Pollentier and Langworthy, 2007). The advertisements of several chiropractors make bold claims about improvements in the above conditions (Ferrance and Miller, 2010). Ferrance and Miller (2010) stated that while there is some rather vague and contradictory data that suggests that chiropractic might have a beneficial effect on a few non-musculoskeletal conditions, to claim improvements or even a “cure” is being overly optimistic to the point, at times, of outright dishonesty.

All over the world, chiropractors treat a large variety of conditions in many ways; however, the core area of chiropractic practice is the musculoskeletal system, with special focus on the spine (Hestbaek and Stochkendahl, 2010). Musculoskeletal pain affects a significant number of children, these conditions carry a significant economic burden due to time lost at school, lost time from work for parents and diagnostic procedures and referrals and consultation with multiple practitioners (Miller, 2010). According to Hartvigsen and Hestbaek (2009), the loss of function in one physiological system has been shown to accelerate decline in other systems and thereby a deterioration of general health, which explains why musculoskeletal problems in children are associated with both physical and psychological consequences. Recently, according to Hestbaek, Jorgensen and Hartvigsen (2009), there has been an increase focus in musculoskeletal conditions in children because it is known that back pain in childhood is a strong predictor of back pain later in life for that individual, thus it is an important part of the chiropractors' scope of practice. According to Hartvigsen and Hestbaek (2009), musculoskeletal problems in children become barriers for participation in physical activity and sports, resulting in negative consequences for the individual's health throughout life. It has been shown that insufficient levels of physical activity may lead to muscle weakness and bone fragility, decreased oxygen throughput, decreased arterial size, increased risk for clotting and altered blood lipid levels, metabolic inefficiency, decreased glut transporters, obesity, type 2 diabetes, and immunologic decay (Hartvigsen and Hestbaek, 2009). Thus, prevention and treatment of musculoskeletal disorders may be vital in the prevention of a range of other public health problems.

Up to 50% of children will experience back pain or other musculoskeletal problems in a one-year period, and approximately one third of these will have recurrent episodes (Hartvigsen and Hestbaek, 2009). Hestbaek, Jorgensen and Hartvigsen (2009) found that children less than one year of age were the most common paediatric patients and chronic musculoskeletal pain was the most common complaint amongst older children and adolescents due to the high level of hard physical activity (sport) and contact physical activity. Research undertaken by Rubin (2009) showed that there has especially

been a rise in repetitive strain disorders that are a result of using portable electronic devices; with the significant rise in the utilization of cell phones, iPods, computers, and video games. This may be because people of all ages are spending more and more time in sedentary positions, creating forward head posture, and experiencing an alarming rate of neck, shoulder and hand pain, especially in paediatric populations (Rubin, 2009). Therefore, it is very important that chiropractors identify these problems and become well acquainted in their differential diagnosis and case presentations as well as use their best clinical judgment as they negotiate the current trend issues of today, as these conditions can eventually lead to cervical hypolordosis, thoracic kyphosis, carpal tunnel, epicondylitis, or rotator cuff tendinitis from poor biomechanics, later in life (Rubin, 2009).

According to Hestbaek, Jorgensen and Hartvigsen (2009), the rationale for treatment of various paediatric conditions, rests primarily with clinical experience of the chiropractor and descriptive case reports as there have been very few randomized controlled trials providing evidence to guide practice. Therefore, it is evident that high quality evidence for the effectiveness of the chiropractic treatment of the paediatric patient is almost completely absent. A 2009 survey of chiropractors and parents of chiropractic paediatric patients, conducted by the International Chiropractic Paediatric Association, revealed that the indicated primary reason for chiropractic care of children was 'wellness care' (Alcantara, Ohm and Kunz 2009). Chiropractic offers treatment that is different, but overlapping with mainstream medicine for paediatric patients. Health promotion through wellness and maintenance care is an important contribution to the chiropractic profession to facilitate the care, well-being and health of the paediatric patient (Davies and Jamison, 2000).

2.5.2 Method of treatment

It is imperative that before providing chiropractic treatment, the chiropractor must qualify him- or herself to the parents / patient as having mastered appropriate skills and fully evaluated the child, ruled out contraindications to chiropractic care and have made appropriate referrals (Vallone et al. 2010). Vallone et al. (2010) recommended that before treating, chiropractors should obtain a full history (including that of the chief complaint) and perform a complete, age appropriate examination (including regional examinations), based on the presenting clinical symptoms as well as the general condition of the patient, before they are allowed to treat. Vallone et al. (2010) went further to say that there should also be clear evidence that there are no red flags/contraindications prior to accepting a paediatric case; some of these include: lethargy, dehydration, tender abdomen, bulging fontanelle, stiff or rigid neck, pain and tenderness and inability to walk.

Research compiled by Lee, Li and Kemper (2000) showed that chiropractors had reported performing various diagnostic tests, such as: neurologic examination (77%), radiographic examination (59%), orthopaedic examination (22%), and laboratory tests (8%). Chiropractors employ manipulation for the

treatment of a wide variety of paediatric health conditions (Gotlib and Rupert 2008). Pohlman et al. (2010) researched the treatment procedures used by chiropractors with specific paediatric qualifications, techniques most commonly used were Diversified, Activator, and Thompson technique with the addition of cranial and extremity manipulation to their chiropractic treatments. Research by Alcantara, Ohm and Kunz (2009) and Lee, Li and Kemper (2000), also revealed the diversified technique to be the most common technique used by chiropractors, followed by the Gonstead technique, Thompson technique, Activator methods, Cranial technique and Torque release technique.

Pohlman et al. (2010) and Vallone et al. (2010) stated that chiropractic management of paediatric patients can also include advice about nutrition and corrective or therapeutic exercise, in-clinic rehabilitation procedures, soft tissue techniques, recommendations for activities of daily living and ice pack / cryotherapy.

2.5.3 Safety

According to Alcantara, Ohm and Kunz (2009), the safety of chiropractic care, in general and the treatment of children in particular, continues to generate controversy and debate. Safety is a major concern in paediatric health care but doctors of chiropractic have reported few complications due to spinal manipulation; estimates of the incidence of serious neurologic or vertebrobasilar complications in adults range from 0.3 to 50.0 adverse effects per 1 million adjustments (Lee, Li and Kemper, 2000). The area of greatest controversy regarding the safety of chiropractic care has been that of spinal manipulative therapy of the cervical spine (Alcantara, Ohm and Kunz, 2009). Alcantara, Ohm and Kunz (2009) reported that amongst the chiropractor responders in their research, only three adverse events per 5,438 practice visits had been recorded from the treatment of 577 children. Miller and Benfield (2006), reported that out of the 697 children who received a total of 5 242 chiropractic treatments, 85% of parents reported an improvement; 7 parents reported an adverse effect and there was a reaction rate of approximately 1 child in 100.

2.5.4 Evidence

There have been many conflicting views regarding evidence behind paediatric chiropractic. Gotlib and Rupert (2008) stated that the health claims made by chiropractors with respect to the application of manipulation as a health care intervention for paediatric health conditions, continues to be supported by only low levels of scientific evidence. Pohlman et al. (2010) also stated that research is lacking about the actual practices of CAM practitioners and sub-specialties within those CAM practitioners, including doctors of chiropractic, whilst Lee, Li and Kemper (2000) found that randomized controlled clinical trials of chiropractic care for paediatric conditions were rare. Gotlib and Rupert (2008) went further to say that although chiropractors continue to treat a wide variety of paediatric health

conditions, the evidence rests primarily with clinical experience, descriptive case studies and very few observational and experimental studies. Ferrance and Miller (2010) agreed that more data is needed in order to make more definitive statements in terms of the efficacy of chiropractic treatment of paediatrics, but unfortunately, the majority of the new literature continues to be still more case reports and case series rather than high quality randomized controlled studies (Gotlib and Rupert, 2005 and 2008).

The evidence for the effect of commonly used interventions aimed at improving the musculoskeletal health in children is scarce (Hartvigsen and Hestbaek, 2009). In chiropractic practice, spinal manipulative therapy is often used in the treatment of musculoskeletal disorders in paediatric patients, however, according to Harvigsen and Hestbaek (2009), apart from one observational study, the evidence-base for this seems to rely on studies of adult populations and it remains unknown 'whether the same treatment response can be expected in paediatric patients'.

However, Leboeuf-Yde and Hestbaek (2010), scrutinized the prerequisites for "more research", stating that it is not as much a question of quantity as of quality and that at present, most chiropractic paediatric research literature lacks credibility. Leboeuf-Yde and Hestbaek (2010) suggested that with more relevant and high quality research, with better and more user-friendly information to clinicians, and with more vigilance from the lecturers in undergraduate programmes, presenters at professional seminars, and professional associations, it should be possible to provide patients of all ages with relevant and effective treatment. To this end, Vallone et al. (2010), agrees that research into the effectiveness of chiropractic care for paediatric patients has lagged behind that of adult care, but they go further to state this is being addressed through educational programmes where research is now being incorporated into academic tracks to attain advanced chiropractic degrees.

What becomes apparent, according to a Myburgh and Mouton's (2007) study, is that chiropractic does not seem to be on solid ground in any of the domains in which it is active. Although patients endorse chiropractic on the grounds of beliefs and philosophical views with respect to health care as well as the model of practice encountered in the chiropractor's office, they seem confused by the lack of integration of the profession into mainstream medicine and are uncertain of the status the chiropractor can claim professionally and educationally (Myburgh and Mouton, 2007).

Although there is much debate about the lack of research and evidence regarding chiropractic care of paediatric patients, there are still many positive contributions that chiropractors can make with regards to the paediatric patient (Hartvigsen and Hestbaek, 2009), which include but may not be limited to :

- Playing an active role in monitoring children's development, motor skills, and well-being through screenings and exams.

- Being involved in prevention and treatment of musculoskeletal disorders and lifestyle diseases through evidence based clinical practice, promotion of physical activity, and injury prevention.
- Providing information and counselling about the health benefits of nutrition, such as breast-feeding and a balanced diet.
- Participating in public health campaigns and community programmes targeting obesity, which is linked to a range of musculoskeletal disorders.
- Sponsoring and participating in practice-based research programmes where practice patterns are mapped, the effect of interventions is evaluated, and barriers to success are identified.
- Promoting equal access to health care services, including chiropractic, through professional bodies and community involvement.

2.5.5 Attitudes

In terms of attitudes towards chiropractic, Carlton, Johnson and Cunliffe (2009), revealed that mothers felt they knew a little but not enough to make an informed choice about choosing chiropractic care for their children; and many mothers also did not know if chiropractic was an appropriate treatment for children in general.

According to Leboeuf- Yde and Hestbaek (2010), there has been some controversy about whether chiropractors can treat children or not. However, according to Leboeuf-Yde and Hestbaek (2010), the source of this controversy seems to be based on various claims of miracle cures of "other" (non-musculoskeletal) conditions. A great deal has been published in the chiropractic literature regarding the response, or lack thereof, of various common paediatric conditions to chiropractic care (Ferrance and Miller, 2010). However, according to Ferrance and Miller (2010) the majority of that literature is of low scientific value (that is, case reports or case series).

2.6 SOUTH AFRICAN CONTEXT

2.6.1 Chiropractic and South Africa

In South Africa, chiropractors hold the position of primary contact practitioners; with the powers of diagnosis and management in the manner associated with a medical doctors (Allied Health Professions Council of South Africa, 2008; Myburgh and Mouton, 2007). Although the legislated scope of practice tends to limit chiropractic interventions to relatively benign musculoskeletal problems, it does not preclude the group from contributing to broader health care management through appropriate referral (Myburgh and Mouton, 2007). The scope of practice that currently exists for chiropractors in South Africa puts them in a position to contribute a significant role in South African health care (Myburgh, 2005). According to Myburgh (2005), although chiropractic is a legitimate provider of manipulative therapy, it largely functions outside mainstream health care in South Africa and a narrow

research focus, poor institutional representation and inadequate professional integration all contribute to its undetermined role in health care.

The health care system in South Africa consists of the public and private sectors. The larger public sector is government funded, and over-utilised while being under-resourced whereas the smaller private sector which is run for private profit, is seen as being over-resourced and under-utilized (Heslop, 2008). According to Myburgh and Mouton (2007), chiropractic services seem absent from the formal public health setting, and therefore, may go unobserved by the broader community as well as health care legislators. Myburgh (2005) stated that although the acquisition and application of knowledge may have been instrumental in ensuring the existence of the chiropractic profession, it is not sufficient to ensure integration into mainstream health care. Therefore, a result of this incomplete integration is that the profession is not supported by the public health care and referral system (Myburgh, 2005). The profession attracts patients on a referral basis, which remains an ongoing problem, especially in South Africa where majority of the population does not have access to health care.

South Africa is a multiracial and multicultural country (Mahomed, 2007). A very important social epidemiological finding in South Africa is the unequal distribution of health and illness on the bases of ethnic group, socio-economic status or social class, gender and age (Popenoe, Cunningham and Boult, 1997). The chiropractic profession was founded on an essentially Eurocentric model and, accordingly, caters to a market able to afford complementary and alternative medicine as an out-of-pocket expense (Myburgh and Mouton, 2007). According to Tetrault (2004), during the past 50 years there has been a very slow increase in the number of permanent practices established in third world countries. Practices that start in third world countries generally price themselves similar to other specialists in the area and primarily attract the middle class who can afford these fees (Tetrault, 2004). In South Africa, the private health care sector provides health services to those who can afford it and caters to the middle to upper income earners who tend to be covered by medical aid (About South Africa>Health, 2012). Although most medical aids in South Africa do cover the costs of chiropractic care (Chiropractic Association of South Africa, 2012), chiropractic still remains unaffordable to the majority of the population, which in turn may influence the number of patients, especially paediatric patients that present to chiropractors, especially amongst those in the public sector.

According to SouthAfrica.info (2012), South Africa is a nation with over 50-million people with wide varieties of cultures, languages and religious beliefs. According to the mid-2011 statistics, black people are in the majority, making up 79.5% of the population, while white people and coloured people each make up 9.0% and the Indian/Asian population 2.5% SouthAfrica.info (2012). In a study by Pohlman et al. (2010), white individuals were more likely to seek manipulation and bodywork than non-

Hispanic black or Hispanic persons. Statistics in the USA, showed that 60% of chiropractic users were white, 15% Hispanic and 25% of another ethnicity (National Board of Chiropractic Examiners, 2010). Epidemiology with respect to user demographics indicated that CAM therapy was more popular among non-Hispanic whites compared to minorities and that more women than men use CAM; this could be due to the variety of health problems experienced by women, including chronic pain menopause, cancer and various obstetric and gynaecological problems (Mullin et al. 2010). Research conducted in South Africa by Mahomed (2007), showed that 62,8% of chiropractic patients were female, 76% of the patients were white, 16% indian, 4% black, 4% coloured and 1% were of another ethnic group. Mahomed (2007) concluded that the most common South African patient was around 42 years old; female; white; married; earned between R10 000 and R29 000; with a tertiary education, and on a medical aid. This is the reason both ethnic and socioeconomic categories should be investigated when conducting statistical research (Popenoe, Cunningham and Boult, 1997).

It is in the public setting that the medically uninsured majority of South Africans seek care and subsequently develop a view of health care professions (Myburgh and Mouton, 2007). In this regard then, the inclusion of a health care profession is somewhat dependent on the level with which it aids governmental efforts of providing health care in this context. Thus, with a relatively exclusive patient base and services that are essentially unobserved in the public sector, a strong argument can be made that the role and value of chiropractic is underappreciated, in particular amongst black South Africans (Myburgh and Mouton, 2007). This, according to Myburgh and Mouton (2007), may be an early indicator that the social closure of chiropractic in the future may rest on whether this area is effectively penetrated, and therefore strongly endorsed educationally, professionally and accepted with social legitimacy.

2.6.2 Culture

According to Tetrault (2004), the development of chiropractic is influenced by its cultural environment: the country's history, economy, value systems and other characteristics of that population; existing health care providers, both traditional medicine and Western medicine; and most importantly, the humanitarian attitudes reflected in their laws. Therefore, it would not be possible to attempt to copy the type of chiropractic that exists in the USA and other first world countries, into countries with drastically different cultural or social values, like South Africa. Research by Johnson, Saha, Arbelaez, Beach and Cooper (2004), reported that African American, Hispanics and Asians were more likely than whites to perceive that they would have received better medical care if they belonged to a different ethnic group and medical staff judged them unfairly or treated them with disrespect based on their ethnicity. According to Braithwaite, Taylor and Treadwell (2009), this is why diverse communities should be especially targeted by health care professionals, including chiropractors in an attempt to decrease

stigma and mistrust of the health care system and to encourage greater access and utilization of various treatment modalities.

There is no question that chiropractic needs to make special consideration of the existing traditional healers found in most countries. There is a larger presence of traditional healing practitioners when there is a smaller presence of medical doctors (Tetrault, 2004). Many CAM therapies have originated in the healing traditions of specific cultural or ethnic groups, typically from non-Western societies (Mackenzie, Taylor, Bloom, Hufford and Johnson, 2003). The World Health Organisation (2012) states that countries in Africa, including South Africa, use traditional medicine to meet some of the primary health care needs in the country and those adaptations of traditional medicine are termed "Complementary" and "Alternative" in industrialized countries. Western medicine is the most expensive form of health care in the world and continues to follow that trend. Since most people in developing countries have little money, they see their traditional healers who can provide health care at a reasonable fee (Tetrault, 2004).

There is very little research that examines the use of chiropractic by ethnicity in rural settings (McMurray and Mendoza, 2011). Turning to the interaction between ethnicity, Kroenenfeld (2010) stated that there are significant interactions between knowledge and cost as explanations for non-use of CAM and chiropractic and that the factors predicting lack of knowledge of CAM are low education, low income and living outside urban areas. According to Heslop (2008), factors which have been cited for the disparities that exist with respect to health care access between different population groups include: culture, traditional socioeconomic factors, income and medical aid cover differences.

Availability and accessibility plays a major role in keeping many people from visiting a chiropractor. This was seen in research by McMurray and Mendoza (2011), who stated that this was the reason for Hispanics and African Americans in the USA for not seeing a chiropractor. The results from this study showed a misconception of chiropractic and its overall benefits to health care and further demonstrated that there is a great need for increased education and communication between various communities and the chiropractic profession, as well as an increase need for accessibility of chiropractic within communities (McMurray and Mendoza, 2011). This could also be true for South Africa as 80% of the population has limited or no access to health services and a significant proportion of the population (42%), live in rural communities (About South Africa>Health, 2012).

According to the Chiropractic Association of South Africa (2012), recent research indicates that the spinal health of the public, especially children, has been worsening over a ten year period. Heslop (2008) stated that there is a vast under-service of the paediatric patient in many areas of South Africa and therefore, there is a great need for improved services. To combat this, the Chiropractic Association of South Africa has launched an initiative to educate, empower and mobilize the public to

"Straighten Up and Move" and care for their posture and spinal health daily. "Straighten Up and Move" is a worldwide health initiative which was developed in order to help improve the posture, structural development and self-esteem of the youth and all citizens (Chiropractic Association of South Africa, 2012). The Chiropractic Association of South Africa has recently formed a partnership with "Straighten Up and Move" in order to ensure that children learn great spinal health habits, by regular performance of the "Straighten Up" exercise module and adoption of its healthy lifestyle recommendations (Chiropractic Association of South Africa, 2012). This initiative serves to encourage children and all citizens to practice the exercises for better spinal health. This will hopefully yield positive results and will contribute to the expansion of the chiropractic profession in South Africa, especially with regard to paediatrics (Chiropractic Association of South Africa, 2012).

2.7 PROFESSIONAL STATUS

2.7.1 Chiropractor Demographics

Table 2.1 Chiropractor demographics

Author	Country	Year	Age (years)	Gender	Number of years in practice	Other degrees/ qualifications	Total patients seen per week
Lee, Li and Kemper	Boston, USA	2000	-	Mostly male	-	2% Paediatric qualification 88% College degree 4% Master's degree	Average of 122 patients
Mahomed	South Africa	2007	Mean age of 34.2 years	55% female	Average of 7.4 years	-	-
Pohlman et al.	USA	2010	-	74% female	1-38 years. Average of 14.6 years	66 % Bachelor's degree and 6% advanced degree.	50-99 patients (of which 31% were paediatric patients)
National Board of Chiropractic Examiners	USA	2010	-	77.6% male	1-25 years	74.8% of chiropractors held Bachelor's , Master's / PhD	50-150 patients
Ailliet, Rubinstein and de Vet	Belgium	2010	Average of 44 years of age	75% male	Average of 18 years	13% had additional degrees	-
Doyle	World-wide survey	2011	Average of 44.1 years of age	61.1% male	Average of 13.6 years		Average of 107 patients (of which 15.5 patients were paediatric patients)

Table 2.1 indicates that the average age of a South African chiropractor was 34.2 years of age whereas the average age of the chiropractors overseas was 44 years of age. Most of the responding chiropractors overseas were found to be male whereas in the South African study, majority of the respondents were female. The average time in practice of the responding chiropractors overseas ranged from 13-18 years whereas in South Africa it was 7 years. Chiropractic is a relatively new and growing profession in South Africa as compared to the rest of the world and this could explain why the figures are so different when compared to one another.

In South Africa, the gender ratio of chiropractors registered with the Allied Health Professions Council of South Africa (AHPCSA) (2008), shows that 62% are male and 38% female. According to Keyter (2010), the profession has always been male dominated, however, this ratio of men to women is gradually starting to even out due to an increasing number of women qualifying as chiropractors.

2.7.2 Type of Practice

In addition to general chiropractic practice, some chiropractors specialize in sports injuries, neurology, orthopaedics, paediatrics, nutrition, internal disorders, or diagnostic imaging (United States Department of Labor, 2010 to 2011). Further, many chiropractors are solo or group practitioners, where they also have administrative responsibilities of running a practice. In larger offices, chiropractors delegate these tasks to office managers and chiropractic assistants. Chiropractors in private practice are responsible for developing a patient base, hiring employees, and keeping records (United States Department of Labor, 2010-2011). Approximately 58% of chiropractors are self-employed. Most chiropractors are in solo practice, although some are in group practice or work for other chiropractors. A small number teach, conduct research at chiropractic institutions, or work in hospitals and clinics (Chiropractic: Jobs and Employment, 2000-2012). Like other health care practitioners, chiropractors in a group practice will sometimes be on call or treat patients of other chiropractors in the group (United States Department of Labor, 2010-2011).

Research by Pohlman et al. (2010) showed that most chiropractic respondents were employed as a single practitioner (42%) or in a multi-chiropractor office (48%). Only 13% practiced in more than one location. Some 71% of the respondents employed additional staff, which included receptionists, insurance clerks, office managers, massage therapists, radiology technicians, and acupuncturists.

It is widely believed that a solo practitioner is at a disadvantage to meet the increasing demands of accountability and competitive purchasing of health care (Mootz and Vernon, 1999). A response to this has been the appearance of new and creative alliances between health care professionals which

transcend traditional interdisciplinary barriers; these alliances serve to strive to provide efficient quality care whilst mastering the responsibilities of contemporary practice (Mootz and Vernon, 1999).

2.7.3 Practice Characteristics

Table 2.2: Practice characteristics

Author	Country	Year	Length of time with paediatric patients	Most common techniques used	Most common Non-manipulative therapies used	Referral to/ from	Other
Alcantara, Ohm and Kunz	USA	2009	-	Diversified, Gonstead, Thompson's and Activator	-	-	High rate of improvement with respect to the children's presenting complaints
Pohlman et al.	USA	2010	-	Diversified, Activator and Thompson's	Recommendations for activities of daily living, corrective or therapeutic exercise, cryotherapy and nutritional counseling.	Massage therapists, midwives, family practitioners, and other chiropractors were the most common professionals referred to or from	Cranial techniques used for patients 5 years and younger. Activator technique was used uniformly across all age groups, Diversified and Thompson techniques were more commonly used in older patients.
Ailliet, Rubinstein and de Vet	Belgium	2010	36 minutes with a new patient 15 minutes with a follow-up patient	Diversified and Activator	Ergonomic advice, exercise therapy	-	4% of respondents had paediatric training
Doyle	World-wide survey	2011	16-30 minutes with a new patient 11-15 minutes with a follow-up	Diversified, Activator and Cranial	Soft tissue therapy and dietary, postural and exercise advice	Most common referral is from family members.	86% of paediatric patients showed improvement

Table 2.2 shows that the average time chiropractors spent with a new paediatric patient was 30 minutes, whilst they spent 15 minutes with follow-up paediatric patients. The most common technique used by chiropractors in practice was the Diversified technique and the Activator technique

2.7.4 Referrals

The results of a study compiled by Carlton, Johnson and Cunliffe (2009), indicated that doctors exercise considerable influence when parents / guardians are making health care decisions for their children, which may reflect the relatively new position of chiropractors as regulated health care professionals in the health care scene. A study by Sawni and Thomas (2007), in the USA, showed that 25% of paediatricians referred their paediatric patients to chiropractors, whilst only 54% found it effective and 21% thought it to be safe. A study done in Australia by Jamison (1995), looked at the kinds of disorders for which medical professionals were willing to refer to chiropractors. In this study, 820 doctors were surveyed by mail. She found that referral for visceral conditions had little support; however, referral for musculoskeletal conditions was more frequent, with back pain the most common reason for referral among all groups tested.

Research by Miller (2010) showed that children under three months of age had the highest (83%) referral rates, because medical professionals referred paediatric patients for musculoskeletal conditions such as torticollis and other postural preferences that caused difficulty and perhaps even pain when the infant was moved out of their painful posture. Pohlman et al. (2010) found that the most common referrals came from midwives, family doctors, massage therapists and other chiropractors, whilst the least referrals came from surgeons and psychologists. Hartvigsen and Hestbaek (2009) reported that in total 26% of the children seen in Danish chiropractic practices were referred by people other than family and friends. Health visitors referred most of the infants and the general practitioners (GPs) referred the majority of the teenagers. In Scotland, research was done by Davidson, Bolton and Miller (2011) to assess the attitude of GPs towards chiropractors who treat children. The results were as follows: 433 GPs received a questionnaire; of those who responded, 48% had heard about chiropractic treatment of children, 11.8% knew of a chiropractor who treated children, 4.4% had received a paediatric referral from a chiropractor, while 2.2% had referred a child to a chiropractor, 60% would like to be more educated in the efficacy and scope of practice, nearly half of GPs surveyed (46%) believed chiropractors could treat sports injuries, scoliosis (37%), torticollis (37.9%), growing pains (31.1%), headaches (25.2%), colic (20%) and less than 1% of those GPs surveyed believed that chiropractic paediatric care is evidence based (Davidson, Bolton and Miller, 2011).

It was shown that in South Africa, 46% of GPs had referred patients to chiropractors (Louw, 2005). Mahomed (2007), reported that the most common source of referral to a chiropractor was by a relative/friend (45%), self-referral (25.7%), was the second highest source, patients referred by GPs comprised of 5.3% and patients referred by physiotherapists comprised only of 1.8%. Coaches, herbalists and personal trainers did not refer patients at all.

2.7.5 Patient demographics

Table 2.3: Patient demographics

Author	Country	Year	Age of paediatric patients	Percentage of the paediatric patients seen in practice	Gender of patients	Common conditions noted	Other
Alcantara, Ohm and Kunz	USA	2009	<1 day–18 years (average age of 7.45 years)	-	52.68% male	"wellness care"; musculoskeletal and digestive complaints.	-
Pohlman et al.	USA	2010	0-5 years	24%	63% female	Back or neck pain, asthma, birth trauma, colic, constipation, ear infection, head or chest cold and upper respiratory infections.	57% of the parents/caregivers received chiropractic care. No specified condition was treated at a frequency of more than one or two times per week.
			6-18 years	15%			
Miller	USA	2010	2 days- 15 years	20.5%	-	Musculoskeletal and excessive crying.	Most paediatric patients under 12 weeks were referred
Ailliet, Rubinstein and de Vet	Belgium	2010	1-14 years	-	-	-	4% of respondents had paediatric training
Doyle	World-wide survey	2011	1-11 years	32.4%	-	Musculoskeletal, colic/excessive crying.	
			12-18 years	45.4%			

Table 2.3 shows differences in the studies mentioned with regards to the age ranges of paediatric patients seen in practice. However there are similarities when looking at the common conditions they present with i.e. musculoskeletal complaints and excessive crying.

In a study by Hartvigsen and Hestbaek (2009), babies were the most common paediatric patients in chiropractic practice. Of the 318 patients that were younger than one year, 74% were less than four months old. More than half of the youngest patients were boys (59%), whereas there was an almost even distribution of gender among the teenagers. In an Australian case study by Davies and Jamison (2000), chiropractors were asked to record age of all patients under the age of 18 years that they treated in a one month period. Of the 627 paediatric patients, 53 were less than a year in age, 174 were between the ages of one and five years, 209 were between the ages of six and 12 and the

remaining 191 fell into the 13 to 18 age group. The youngest patient reported in the study was a week old while the rest of the infants were a few months old and presented mostly for a check-up following a “traumatic birth” (Jamison and Davies, 2005).

Other research has shown that patients younger than 20 years have constituted nearly 25% of the whole population in chiropractic practice, whilst other research has shown patients younger than 20 years constituted less than 10% (Hestbaek, Jorgensen and Hartvigsen, 2009; Sorensen, Stochkendahl, and Hartvigsen, 2006). According to Lee, Li and Kemper (2000), the number of children visiting chiropractors is substantial and is increasing: in 1993, it was reported that 8% of chiropractic patients were younger than 16 years and other research showed 10% were younger than 17 years; this totaled to approximately 20 million paediatric chiropractic visits annually (Michigan Association of Chiropractors, 2011). By 1997, it was reported that children constituted 10% of the patients in chiropractic practice (Lee, Li and Kemper, 2000).

If chiropractic is effective for this age group, it is possible that these services are under accessed (Hestbaek et al. 2009). Hestbaek et al. 2009, believe that the profession should work towards an increased public awareness about the importance of musculoskeletal health in childhood and the implications for future health.

2.7.6 Paediatric Education

Chiropractic education and training is extensive and in South Africa, a Master’s Degree in chiropractic is awarded after a five year programme (Chiropractic Association of South Africa, 2012). Presently, there is limited attention to paediatric issues in most chiropractic educational and research institutions and consequently practicing chiropractors too easily rely on individuals' personal beliefs instead of evidence based principles (Hestbaek, Jorgensen and Hartvigsen, 2009). A study by Lee, Li and Kemper (2000) showed that two- thirds of the responding chiropractors reported training in paediatric medicine and paediatric training included paediatric courses in chiropractic colleges, post graduate elective courses, or national conference workshops.

Within the chiropractic profession, paediatrics is one of the most recently established post graduate specialty programmes (Pohlman et al. 2010). Opportunities to obtain a clinical specialty in paediatrics are available and many USA chiropractic colleges, offer these programmes through either a part-time post graduate continuing education courses or full-time residency programmess (Pohlman et al. 2010). According to Vallone et al. (2010), all chiropractic colleges' under graduate courses in paediatrics recognize the unique anatomy and physiology of the paediatric patient, which allows students to understand that the modification of their evaluation and therapeutic techniques is required. Therefore

their education prepares them to assess and manage (or co-manage as appropriate) the paediatric patient with a musculoskeletal problem. Graduates can earn their paediatric qualification through 180-360 hours of weekend courses over 2 to 3 years (Pohlman et al. 2010) or they may earn certification through courses of approximately 100 to 120 hours; this one year certificate programme may serve as the first year of study of the more advanced three year programmes that confer diplomat status (Vallone et al. 2010).

According to Homola (2010), the International Chiropractic Association offers a post graduate Diplomat in Clinical Chiropractic Paediatrics (DICCP) and publishes a "peer reviewed" *Journal of Clinical Chiropractic Paediatrics.* The diplomat syllabus is a 30-module, 360+ hours classroom course during weekends over a three-year period. A post graduate certification in chiropractic paediatrics (CICCP) can be earned after 180 hours of classroom instruction. The American Chiropractic Association's (ACA) Council on Chiropractic Paediatrics and the Council on Chiropractic Paediatrics of the International Chiropractors Association (ICA) announced that the ICA's Diplomat in Clinical Chiropractic Paediatrics (DICCP) is now recognized by the ACA and its council as the official credential for specialization in chiropractic paediatrics (Homola, 2010).

2.8 Perception

Perception is a process by which people attach meaning to the world around them; their world consists of people, experiences and objects that influence them. People must become aware of the world around them through their senses: sight, hearing, touch, smell and taste (Brignall, 1999). According to Cherry (2012), perception is unique to each person, no two people view the world exactly the same. Through the perceptual process, people gain information about properties and elements of the environment that are critical to their survival, therefore perception not only creates their experience of the world around them; it allows them to act within their environment (Cherry, 2012).

Every person perceives the world in his own way and understanding and sometimes when their perception is different from the real world it creates problems and misunderstandings (The perception process, 2010). Only when conflict arises between an individual's perceptions and interpretations of a situation are realities challenged which then forces them to re-examine their interpretation and perception (Chaffe, 1997).

2.8.1 The perception process

The perception process consists of three stages: selection, organization and interpretation (Brignall, 1999; Adler, Rosenfeld and Proctor, 2001).

Table 2.4: The perception process

Selection	The first stage of the perception process. In this stage people select stimuli through their senses to which they attend. This determines which data gains their attention.
Organization	The second stage of the perception process. In this stage, people mentally arrange the stimuli (organization) so that they can understand or make sense out of the stimuli.
Interpretation	The third stage of the perception process. In this stage, people attach meaning of what they have selected and organized.

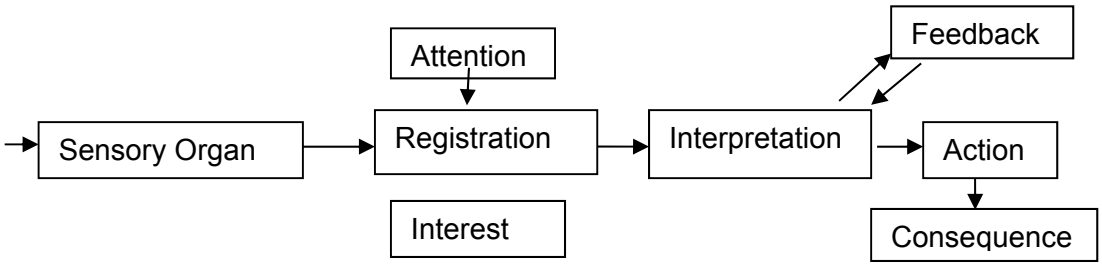


Figure 2.1 : The perception process (Mukherjeee, 2009)

The model of perception helps one to understand the basic processes involved in human perception in a rather simplistic way. At a point of time, people are flooded with a host of stimuli impinging on their sense organs, what happens is that they only selectively choose from among a host of stimuli and process only those. On examination of the model above, it is found that only those stimuli are given entry to the process of 'registration' which have got adequate attention or have aroused their interest (Mukherjeee, 2009).

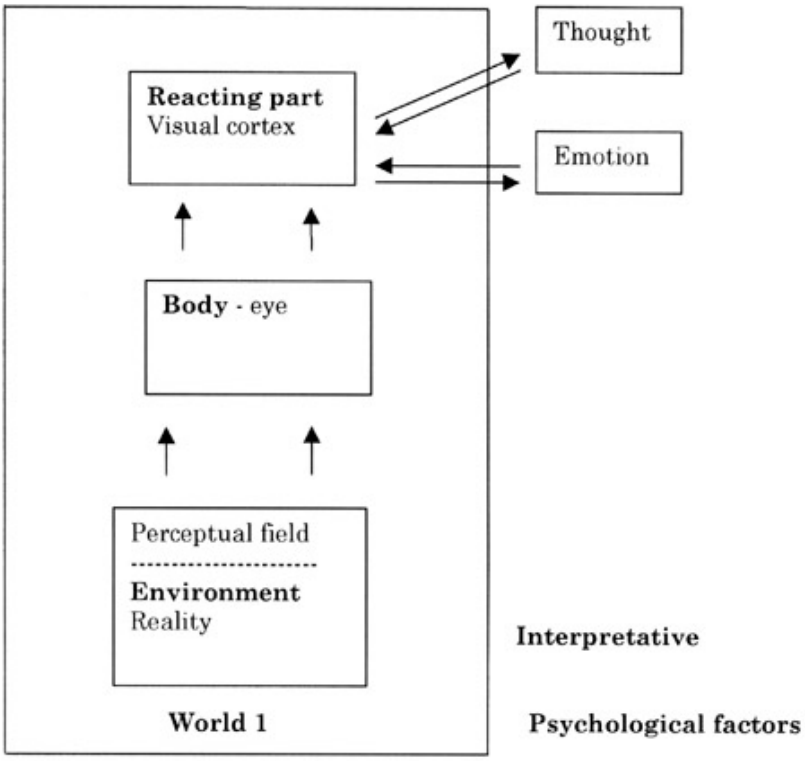


Figure 2.2 : Conceptual schematic of the process of immediate perception (Little, 1999).

According to Little (1999), immediate perception of an event may trigger a habituated response. This may have been due to the person being repeatedly subjected to such events, and therefore the person develops a response enabling him/her to survive. As such it cannot be said that 'knowledge' is involved. Such responses involve no judgement. The response may also be genetic, such as the fight or flight response (Tortora and Derrickson, 2006). A response to an event can be learned as a habit (Little, 1999).

2.8.2 Perceptual Set

According to Hardy and Heyes (1999), perceptual set is the temporary or permanent lowering of the threshold for perceiving a certain type of stimulus. Threshold means the intensity of the stimulus which is required for it to be perceived. Intensity may refer to loudness, brightness, length of time it is shown and the amount of the total object necessary for you to recognize it correctly. Perceptual sets may be produced by previous experience, leading to familiarity and expectation and also by motivational or emotional states (Hardy and Heyes, 1999). Maund (1999), defines perceptual set as individual experiences, which includes both internal and external stimuli, have “set an individual to perceive the world around them in a particular way.

The perceptual set theory stresses the idea of perception as an active process involving selection, inference and interpretation (McLeod, 2007). The concept of perceptual set is important to the active process of perception. Allport (1995) believed a perceptual set was the tendency of an individual to perceive only certain aspects of what they see and ignore all others.

The perceptual set has been found to be influenced by a number of variables, or factors, and the perceptual set in turn influences perception. The factors include (Mcleod, 2007):

- Expectations
- Emotion
- Motivation
- Culture.

2.8.3 The perception of others

Perceptions of people differ from the perceptions of inanimate objects like chairs, cars and flowers, mainly because people are prone to make inferences regarding the intentions of people and thus form judgment about them (Mukherjeee, 2009). There are often some errors or biases in the judgment about others. People tend to make various types of errors while judging others (Mukherjee, 2009). A few of the frequently committed mistakes include (Mukherjeee, 2009):

- Selective Perception: People have a tendency to selectively interpret what they see on the basis of their interests, background, experiences and attitudes. We hardly have either time or inclination to process all the relevant inputs and we automatically select a few. This causes some important cues to be missed in the process.
- Halo Effect: It refers to the tendency of forming a general impression about an individual on the basis of a single characteristic.
- Contrast Effect: It refers to the process of rating individuals in the light of other people's performance which are close in time frame.
- Stereotyping: It is the process of judging someone on the basis of one's perception of the group to which that perception belongs to.

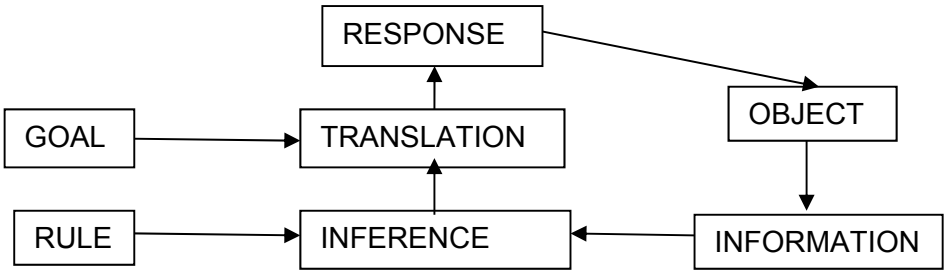


Figure 2.3 : Expansion on Argyle and Kendon's social skill model (Cook ,1979)

There are 4 basic processes operating during interaction. The individual perceives the other person, decides what to do (translation), in order to achieve their goal, does it (response) and then examines the result (Cook, 1979).

With regards to this study, the goal was for the chiropractors to fill out the questionnaire, their decisions (translation) were influenced by information and rules (gained through courses / studies / seminars / experience) regarding paediatric chiropractic (object), the chiropractors drew general conclusions (inference) from their knowledge to formulate a response, which was a completed questionnaire.

2.8.4 Factors affecting perception

One of the problems with perception is which of the stimuli to attend to. 'Attention' involves selecting some of the many stimuli which reach you and concentrating on them (Hardy and Heyes, 1999). According to Eysenck and Keane (1996) mistakes can often be made in the process of perceiving and remembering information, information can be mis-interpreted leading to incorrect conclusions about an object and/or event. People are able to select a specific stimulus or a few stimuli at a given time. This is known as the principles of perceptual selectivity. This allows people to deal with numerous stimuli (The perception process, 2010).

Many external factors affect perceptual selectivity. These factors are (The perception process, 2010):

- Intensity: The more intense the external stimulus, the more likely it is to be perceived.
- Size: The larger the object, the more likely it will be perceived.
- Contrast: A stimulus which stands out against the background gets more attention.
- Repetition: A repeated object is more attention getting than a single one
- Motion: A moving object gets more and more attention than a stationary one.
- Novelty and Familiarity:
  New objects in familiar settings and familiar objects in new settings get more attention.

The internal factors that affect perceptual selectivity are (The perception process, 2010):

- Learning and perception: Learning affects selectivity of perception because people read and see what they expect to see and hear.
- Motivation and perception: A person who has a relatively high need for power, affiliation, or achievement will be more attentive to the relevant situation.
- Personality and perception: Personality of the perceiver also affects what is attended to in confronting situations.

Other influences on Perception: (Adler, Rosenfeld and Proctor, 2001)

- Physiological influences: Senses, age, health, fatigue, hunger and biological cycle.
- Psychological influences: Mood, and self-concept.
- Cultural influences
- Social influences: Gender roles, occupational roles, shared narratives.

According to Adler, Rosenfeld and Proctor (2001), there are common tendencies in perception. These are:

- Judging ourselves more charitably than we do others.
- Influenced by the obvious.
- Clinging to first impressions.
- Assuming others are like us.
- Favouring negative impressions.

2.9 Conclusion

Most research on the use of CAM has focused on the patient perspective, patient characteristics and reasons why CAM practitioners are sought have been identified; research is lacking about the actual practices of CAM practitioners and sub-specialties within those CAM practitioners, including doctors of

chiropractic (Pohlman et al. 2010). There is also very little evidence with regard to chiropractic treatment of children and adolescents (Hestbaek, Jorgensen and Hartvigsen, 2009).

A review of the literature revealed a number of studies exploring the relationship between chiropractic, the South African public, and other health care professions. However few studies have been done in the field of paediatrics and no studies have assessed paediatric care in chiropractic practices in KwaZulu-Natal. From the above discussion of the literature, it can be seen that various factors compound the knowledge and perception one person/professional may have of another. These factors need to be investigated so that the relationship between paediatric and chiropractic can be understood. Therefore this research aims to determine the status of paediatric care in chiropractic practices in KwaZulu-Natal.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The aim of this chapter is to describe the research methodology as well as the collection and analysis of the data.

3.2 Study Design

The design of this study was quantitative, descriptive and cross-sectional, utilising a questionnaire. Based on this structure, the study was approved by the Faculty of Health Sciences Research and Ethics committee (see Appendix A : ethics clearance certificate), indicating that the study complied with the requirements of the Declaration of Helsinki (Finnish Medical Association, 2005).

3.3 Advertising

No advertising was necessary as all participants were invited to participate.

3.4 Sampling Procedure

- Population size: The entire population of chiropractors (practicing at the time of the study) in KwaZulu-Natal were utilised for the study. According to email correspondence with Terry (2012), as at the 31st of January, 2012, there were 138 registered chiropractors (from KwaZulu-Natal) with the Allied Health Professions Council of South Africa. The participants were required to fit the inclusion criteria in order to be included in the study. It was noted that the total sample size excluded any registered chiropractors that were outside the borders of KwaZulu-Natal, not practicing or were employed in another field that did not include chiropractic clinical practice or had participated in the development of the questionnaire for this study.
- Allocation: Participants were allocated to one group as this study was an assessment of an entire population group rather than a comparison between groups.
- Method: It was a self-selection (Holah, 2009) process based on participant response to the request to complete the questionnaire. All participants who met the inclusion criteria were invited to participate.

3.5 Sample Characteristics

In order to participate in the study, chiropractors had to comply with the following criteria:

3.5.1 Inclusion criteria

Chiropractors:

- Had to be registered with the Allied Health Professions Council of South Africa (AHPCSA).
- Had to be practicing in KwaZulu-Natal, at the time of the study.
- Had to have given their informed consent (Appendix J).
- Had to be English literate. The medium of teaching the chiropractic curriculum is in English, which is to a Master's level, therefore all students are assumed to be English literate (DUT, 2011; UJ, 2011).

With regard to the questionnaires, the following inclusion criteria were utilised:

- The questionnaires had to be returned within the specified time period (i.e. within 12 weeks or until the minimum response rate was met). All data was then captured; missing data was recorded as such.
- Data from incomplete questionnaires was utilised for statistical analysis and recorded in this context as "missing" or "unknown".

With regards to the expert group, the following inclusion criteria were utilised:
Expert group members had to be either:

- A chiropractor,
- A chiropractor who had qualification(s) in chiropractic paediatrics,
- A parent,
- A health care professional who frequently dealt with/had consultations with/treated paediatric patients,
- A member of the chiropractic department,
- A chiropractic/homeopathic student who was in the process of conducting a questionnaire study,
- A chiropractic student,
- A chiropractor who had conducted a similar questionnaire study.

With regards to the pilot study, the inclusion criteria were the same as for chiropractors in the main study.

3.5.2 Exclusion Criteria

- South African qualified / registered chiropractors living abroad.
- The pilot study group and expert group members were excluded from the main study.
- Those who did not comply with the above inclusion criteria.
- Chiropractors not practicing.
- Chiropractors employed in another field that does not include chiropractic clinical practice.

3.6 Research Procedure

The postal and email addresses of the entire population of chiropractors in KwaZulu-Natal was obtained from the AHPCSA (Terry, 2012) in an email format. The questionnaires were either posted to the chiropractors via the DUT postage system or hand delivered by the researcher to their practices. Once delivered the researcher left the practice in order to not influence the practitioner completing the questionnaire. The questionnaires were also be emailed in the form of an attachment (to those who had access to email).

Therefore,

- A Letter of Information (Appendix F) and Informed Consent Form (Appendix J) and post-pilot (final) questionnaire (Appendix N) were emailed or posted to participants who met the inclusion criteria.
- The Letter of Information, Informed Consent Form and questionnaires were posted to the chiropractors (those who only had postal addresses and no access to email) via the Durban University of Technology postage system.
- The Letter of Information and Informed Consent Form and questionnaires were also emailed in the form of an attachment (to those who had access to email via the DUT email system).
- Informed consent was given by the participants completing the questionnaire and / or returning the Letter of Information (Appendix F) and Informed Consent Form (Appendix J).
- An initial 8 week period was given for a response; if the response rate had not been met, then the participants (non-respondents as identified by the research administrator) were contacted telephonically or via email until the minimum requirements had been met. A maximum of 12 weeks was given for the minimum response rate (33%, according to Hammond (2011), (Appendix K)) to be reached. If

this was not met within 12 weeks, sufficient time was given until the minimum response rate was reached.

- Questionnaires were returned via email, fax or post. The reason for these different return methods was to accommodate those chiropractors who did not have access to the internet or to email or fax, in addition to making it more convenient for those who did have access. Posted questionnaires were returned via the postal service in the provided self-addressed envelope, which was addressed to Miss Kirsten Evans c/o The Research Administrator (Appendix D), Department of Chiropractic, DUT, P.O. Box 1334, Durban 4000.
- Each questionnaire was coded to ensure anonymity. The research administrator then ticked off the codes from the returned questionnaires against a list of names so that the response rate could be determined.
- The researcher then collected the unmarked questionnaires from the departmental research administrator.
- All questionnaires were stored in a locked filing cabinet to ensure confidentiality.
- Data capturing and analysis then took place. To ensure confidentiality, only the researcher and her supervisor had access to the returned questionnaires.

3.7 Research Tools

Permission was given to use and modify the questionnaires utilized by Lee, Li and Kemper (2000) (Appendix B) and Pollentier and Langworthy (2007) (Appendix C), to a South African context. Recognition has been been given to the above individuals for assistance in the questionnaire design for this study.

3.7.1 Expert Group

Expert groups are used in the beginning stages of research to obtain the perspectives of experts/participants and it allows the research to reflect the concerns and issues of those being studied (Kruegar and Casey, 2002). The reason for using a expert group in this study was to enable the researcher to be guided by the experts in the field to ensure that all issues were looked at and represented in the questionnaire (Brink, 2006). The advantages of using an expert group for this study was to gather a large amount of information in the shortest possible time and it also allowed more creativity and greater range of thoughts, ideas, and experiences (Nassar-McMillan and Borders, 2002).

Construct validity was achieved by ensuring that the experts/participants in the expert group were representatives of the specific area of expertise related to the research to be conducted (Mouton, 1996; Bernard, 2000).

The expert group of this study consisted of the following people:

- The researcher,
- The research supervisor,
- A clinic sister (nurse),
- A parent,
- Two chiropractors that specialize in chiropractic paediatrics,
- A chiropractor who had previously conducted a questionnaire study,
- A visiting chiropractor / research fellow,
- A homeopathic student who was conducting a questionnaire study,
- A chiropractic student who was conducting a questionnaire study and
- Two chiropractic students.

The expert group meeting was video-recorded, as suggested by Silverman and Wilkinson (2004), once permission was received by the participants. The researcher also took notes on the discussion. A copy of the proceedings was copied onto a USB memory stick then saved on a computer. A DVD was made to be available as evidence of the individuals involved and the content of the discussion (the DVD (Appendix P) will be available to ONLY the examiners of this study, as the participants in the expert group all signed confidentiality statements (Appendix H). The DVD and all the records were stored in a locked filing cabinet in which only the researcher had access in order to comply with the confidentially of the expert group process.

Before commencing the expert group meeting, each participant was required to read a Letter of Information-Expert Group (Appendix E), and sign a Code of Conduct (Appendix G), a Statement of Confidentiality (Appendix H) as well as an Informed Consent Form (Appendix I). Each participant in the expert group was also given a copy of the Pre-Expert Group Questionnaire (Appendix L). The participants of the expert group were requested to suggest modifications in order for the questionnaire to be used to accurately assess the perceived status of paediatric care in chiropractic practices in KwaZulu-Natal.

The questions were discussed in sequential order. If inconsistencies were found or changes proposed, a unanimous decision was made to institute the change.

3.7.2 Expert Group changes to the questionnaire

DEMOGRAPHICS

Question 1: The question ‘What is your Gender?’ was replaced with ‘Gender?’.

Question 2: The question ‘How old are you?’ was replaced with ‘Age?’.

Question 3: The question ‘Do you have any children?’ was added.

Question 4: The answer option ‘LACCSCUHS’ was removed.

Question 7: The answer ‘years’ was removed to allow chiropractors to write in their own answer.

Question 8: Question 11, ‘Do you have any specific training/qualification(s) in paediatrics?’ was moved here.

Question 9: Question 12, ‘What specific training/qualification(s) do you have?’ was replaced with ‘If yes, name your paediatric qualification(s)?’ and was moved here.

Question 10: Question 13, ‘What was the length of the training?’ was replaced with ‘What was the duration of you paediatric training/qualification(s)?’ and it was moved here.

Question 11: The question ‘How do you spend your professional time?’ was added and the following answer options were given, ‘Full-time practice, Part-time practice, Education, Research, Other (please specify)’.

Question 12: ‘What type of practice do you work in was replaced with ‘If in practice, what type of practice do you work in?’ and the same answer options were given.

Question 13: The question ‘If in a multidisciplinary practice, what other health care professionals are you in practice with?’ was replaced with ‘If in a multidisciplinary health care facility, what other health care professionals do you practice with?’ and the following options were given, ‘Biokineticist, Dentist, G.P, Physiotherapist, Homeopath, Other (please specify)’.

Question 14: Question 7, ‘What is your main area of chiropractic work?’ was moved here and the answer options ‘Full-time practice, Part-time practice, Education, Research, Other (please specify)’ were replaced with, ‘Animals, Sports, Community service, Geriatrics, Lecturer, Mixed population, Paediatrics, Other (please specify)’.

Question 15: The question ‘To which council do you belong?’ was added and the following answer options were given, ‘CASA, AHPCSA’.

Question 16: Question 10, ‘To which of the following association(s) do you belong?’ was

moved here and the following answer options were given, ‘CASA, AHPCSA, HSA, IPA, SAPA, SASMA, Other (please specify)’.

PRACTICE CHARACTERISTICS

Question 17: The question ‘What is the average number of patients you see in your practice per week?’ was replaced with ‘On average, what is the total number of patients you see in your practice per week?’.

Question 18: The statement ‘If less than 40% proceed to question 41’ was removed.

Question 19: The following answer options to the question ‘How long have you been treating paediatric patients?’ were added, ‘< 1 year, < 3 years, < 5 years, < 8 years, < 10 years, > 10 years’.

Question 20: The question ‘What percentage of your paediatric patients are male/female?’ was replaced with ‘Are your paediatric patients predominantly female or male?’ and answer options ‘Female, Male, No dominance’ were given.

Question 21: The question ‘What is the most common age/age range of your paediatric patients?’ was replaced with ‘What is the most common age range of your paediatric patients?’ and the following answer options were given, ‘0-6 weeks, 6weeks-3months, 3-6months, 6-12months, 12-18 months, 18-24 months, 2-7 years, 7-14 years’.

Question 22: The question ‘What are the most common presenting complaints? (Can name up to 5)’ was replaced with ‘Why do parents bring their children to you? (tick the most common reasons)’ and the following answer options were given, ‘Advice, Back/neck pain, Bed wetting, Birth Trauma, Check-ups and /or Wellness, Crying, Ear infection, Fever, Vomiting, Growing pains, Irritable, Postural problems, Sleeping problems, Respiratory challenges, Sports injuries, Spinal and/ or extremity pain, Stomach-related issues, Growth and development, Other(please specify)’.

Question 23: The following answer options were given to the question ‘What common paediatric conditions do you treat in your practice?’, ‘ADHD, Asthma, Autism, Cerebral Palsy, Congenital anomalies of the spine/extremities, Epilepsy, Gastrointestinal disorders, Headaches, Irritable baby syndrome(colic), Musculoskeletal conditions(e.g. LBP, neck pain), Muscular conditions (e.g. sprains and strains), Nocturnal enuresis, Otitis media, Reflux, Scoliosis, Skin conditions’.

Question 24: The question ‘What is the average length you spend with a new paediatric patient?’ was replaced with ‘What is the average length of time you spend with a new paediatric patient?’ and an answer option in ‘minute(s)’ was given.

Question 25: The question ‘What is the average length of your follow-up with a paediatric patient?’ was replaced with ‘What is the average length of time you spend with a follow-up paediatric patient?’ and an answer option in ‘minute(s)’ was given.

Question 27: Answer options for the question ‘From whom do most of your referrals come from?’ were given and were as follows, ‘Biokineticists, G.P’s, Homeopaths, Other chiropractors, Orthopaedic Surgeons, Paediatricians, Physiotherapists, Other (please specify)’.

Question 28: The question ‘How many of your paediatric patients come from word of mouth?’ was added.

Question 29: The question ‘Do you do co-management care with other appropriate health care providers?’ was replaced with ‘Do you co-manage your paediatric patients with other appropriate health care providers?’.

Question 30: The question ‘If yes to the above, what are the most common health care providers you deal with?’ was moved here and the answer options from Question 27 were given.

Question 31: The following answer options were added, ‘ADHD, Asthma, Autism, Cerebral palsy, Congenital anomalies of the spine/extremities, Epilepsy, Gastrointestinal disorders, Headaches, Irritable baby syndrome (colic), Musculoskeletal conditions (e.g. sprains and strains), Nocturnal Enuresis, Otitis media, Reflux, Scoliosis, Skin conditions, Other (please specify)’.

Question 32: The question ‘What condition(s) do you commonly refer out to other healthcare providers?’ was replaced with ‘What condition(s) do you commonly refer to other healthcare providers?’ and the answer options from question 31 were given.

Question 33: The question ‘On what basis would you refer this/these condition(s)?’ was added.

Question 34: The question ‘On average, how many consultations would you see a paediatric patient for a certain condition?’ was added and the following answer options were given, ‘1 consultation, 2 consultations, 3 consultations, 4-5 consultations, 6-7 consultations, >7 consultations, Other (please specify)’.

Question 35: The answer options from question 33 were given.

Question 36: The question ‘Do you recommend childhood immunizations?’ was replaced with ‘Do you advise parents on childhood immunizations?’.

Question 37: The question ‘What is your personal preference regarding childhood immunizations?’ was added.

Question 38: The following answer options were given, ‘Perform a spinal adjustment, Refer

to a G.P, Refer to a Homeopath, Refer to a Paediatrician, Take a case history and then refer, Take a case history and perform further physical examinations before deciding whether to refer or not, Other (please specify)'.

Question 39: The question 'How confident are you with treating paediatric patients?' was added and the following answer options were given, 'Very confident, Quite confident, Confident, Not very confident, Unconfident, Decline to answer'.

Question 40: The question 'How would you rate your clinical competence in the treatment of paediatric patients? (Rate out of 10, with 1 being extremely incompetent)' was added and answer options of 1-10 were given.

SCOPE OF PRACTICE

Question 41: The question 'What diagnostic tests do you perform when seeing a new paediatric patient?' was replaced with 'What assessments do you routinely perform when seeing a new paediatric patient?' and the following answer options were given, 'Abdominal examination, Cardiovascular examination, Case History, Dermatological examination, Full physical examination (incl. eyes, nose throat, ears), Growth parameters, Laboratory tests, Neurological examination, Orthopaedic examination, Radiographic examination, Respiratory examination, Vitals'. Columns were also added and contained the following 'Neonate (1 month of life), Infant (1 year of life), Toddler (12-24 months), Pre-Schooler (2-5 years), Schooler (from 6 years until the child leaves school)'.

Question 42: The question What diagnostic tests do you perform when seeing a follow-up paediatric patient?' was replaced with 'What assessments do you routinely perform when seeing a follow-up paediatric patient?' and the answer options from Question 41 were given.

Question 43: The following answer options, 'Assessment of scoliosis, Clinically suspected orthopaedic conditions, Done with every new patient, History of trauma, Malignancies, To determine if there are contraindications to manipulation, Suspicion of a serious pathology, Trauma-induced injury(fractures, dislocations), Unexplained bone pain, Other(please specify)', were given to the question 'In your practice, when would you send for a radiographic examination of the paediatric patient?'.

Question 44: The following answer options were given, 'Flexibility of joints, History of Trauma, Patient preferences, Patient size, Red flags, Structural development, Other (please specify)' to the question 'What are some of your considerations before treating a paediatric patient with manual procedures?'.

Question 45: The question ‘What chiropractic techniques do you utilize in your practice?’ was replaced with ‘What chiropractic techniques do you utilize in your practice when treating paediatric patients?’ and the following answer options were given, ‘Activator methods, Applies kinesiology, Bio-energetic synchronization (BEST), Cox flexion distraction, Cranial, Diversified, Gonstead, Logan Basic, Mobilization, NIP adjustment techniques, Sacro-occipital, Thompson’s, Toggle recoil, Torque release and Other’.

Question 46: The question ‘Which is the most common technique used in your practice?’ was replace with ‘Which is the most common technique used in your practice when treating paediatric patients?’.

Question 47: The question ‘Do you use any form of complementary alternative therapies/non manipulative therapies when treating?’ was replaced with ‘Do you use any form of non-manipulative therapies when treating paediatric patients?’.

Question 48: The question ‘If yes to the above, what non-manipulative therapies do you use?’ was added and the following answer options were given, ‘Acupuncture, Cryotherapy, Dry needling, Electrotherapy, Exercise programs(including stretching, strengthening and proprioception), Hydrotherapy, Soft tissue therapy(including massage, myofascial release/ischaemic compression), Taping, Traction and Other (please specify)’.

Question 49: The question ‘Do you recommend any form of complementary and alternative therapy (CAM) when treating paediatric patients?’ was added.

Question 50: The question ‘If yes to the above, which complementary and alternative therapies do you recommend when treating your paediatric patients?’ was added and the following answer options were given, ‘Acupuncture, Allopathic medicine, Ayurvedic medicine, Biofeedback, Dietary Supplements, Herbalism, Homeopathy, Hypnosis, Magnetic Therapy, Massage, Meditation, Naturopathy, Osteopathy, Traditional Chinese medicine, Yoga, Other’.

Question 51: The following answer options were added, ‘Acid reflux (GERD), Allergies, Autism, Brachial plexus injuries, Common cold, Developmental delays, Dysmenorrhea, Eczema, Endocrine problems, Gait abnormalities, Headache, Immune function, Irritable baby syndrome (colic), Learning problems, Sinusitis, Sleep problems, Torticollis, Tourette’s syndrome, Upper respiratory conditions, Vision problems’.

As a result of the above proceedings, the pre-pilot questionnaire (Appendix M) was then developed.

3.8 Pilot study

The refined questionnaire was then reviewed in a pilot study. A pilot study was done to test logistics and gather information prior to the main study, so to improve its quality and efficiency. Therefore, the pilot study would reveal deficiencies in the design of the questionnaire and these could then be addressed before time and resources were expended needlessly (Lancaster, Dodd and Williamson, 2004). The pilot study was submitted to the Departmental Research Committee (as all members of this committee are chiropractors) for their analysis of the questionnaire; this resulted in changes to the format of certain questions. This process established face validity (Mouton, 1996; Bernard, 2000).

3. 8.1 Pilot study changes to the questionnaire

DEMOGRAPHICS

Question 1: ‘Gender?’ and Question 2, ‘Age?’ were switched.

Question 4: The answer options were removed.
The question ‘How do you spend your professional time?’ was removed.

Question 11: ‘If in practice, what type of practice do you work in?’ was replaced with ‘What type of practice do you work in?’ and the following answer options were given, ‘Chiropractic group practice, Solo practice, Multidisciplinary practice’.

Question 12: The answer option ‘N/A’ was added.
The questions ‘To which council do you belong?’ and ‘To which of the following association(s) do you belong?’ were removed.

PRACTICE CHARACTERISTICS

Question 31 and Question 32 were moved and became Question 21 and Question 22 respectively and the answer options for Question 20 were given for both.

Question 25: The question ‘How many of your paediatric patients come from word of mouth?’ was moved here.
The question, ‘On what basis would you refer this/these condition(s)?’ was removed.
The question, ‘On average, how many consultations would you see a paediatric patient for a certain condition?’ was removed.

Question 32: The following answer options ‘Beneficial, Not beneficial, Decline to answer’

were added to the question, ‘What is your personal preference regarding childhood immunizations?’.

Question 35: The answer option of numbers was changed to a numeric scale of 1-10, for the question, ‘How would you rate your clinical competence in the treatment of paediatric patients? (Rate out of 10, with 1 being extremely incompetent)’.

SCOPE OF PRACTICE

Question 36 and 37: The answer columns, ‘Neonate, Infant, Toddler, Pre-Schooler, Schooler’ from previous questions 41 and 42 were removed and question 41 and 42 were moved here and the same answer options were given.

Question 44: The answer options from question 50 were removed and question 50 was moved here.

3.8.2 The final questionnaire as utilised in this study

The final questionnaire was divided into 3 sections. (Appendix N)

- Demographics: Questions 1- 13, regarding the respondent’s demographic details and personal data.
- Practice characteristics: Questions 14-35, regarding the respondent’s activities and personal experience in practice.
- Scope of practice: Questions 36-45, regarding the respondent’s examination and treatment methods.

3.9 Statistical Methodology

Statistical analysis was completed under the guidance of a statistician (Appendix K). The data was analysed using frequency tables, averages and measures of dispersion. These were best visualised using graphical representations such as bar graphs, pie charts and tables. Descriptive statistics entailed frequency tables and bar charts for categorical, variable and summary statistics such as mean, standard deviation and range for quantitative variables. Data was then entered and analysed using data analysis tools from Microsoft Office Excel. ANOVA was used to assess the various comparisons between scores (Hammond, 2011).

CHAPTER 4

RESULTS

4.1 Introduction

Chapter Four will cover the results of the study. A more detailed discussion of the results will follow in Chapter Five.

4.2 Data

Data sources utilized for this chapter was compiled from both primary and secondary sources of information.

4.2.1 Primary Data

The primary data utilized comprised of information collected directly from the respondents of the study in the form of a completed questionnaire (Appendix N).

4.2.2 Secondary Data

Secondary data included data acquired from personal communications with the statistician (Hammond, 2011), as well as the literature, journals, books and Internet which were used to construct arguments with which to compare results of the study.

4.2.3 Abbreviations

DIP	=	Diploma
EMA	=	European Medicines Agency
MMEDSC	=	Master of Medical Science
NCC	=	National Chiropractic Council
NSA	=	Network Spinal Analysis
“n”	=	Sample size
“%”	=	Percentage
“Sig”	=	Significance
“SD”	=	Standard Deviation
“Q”	=	specific “Questions” as pertaining to the post-pilot questionnaire (Appendix N)

4.3 Consort

The questionnaires were originally sent (emailed or posted) to the 598 AHPCSA chiropractors (Kotze, 2011) who reside in South Africa. After the initial eight week time frame, the required response rate had not been met, so the questionnaire was then resent. After the maximum time frame of 12 weeks, the minimum response rate had still not been reached. Eventually after a period of 4 months, as only 76 questionnaires had been returned, and almost half of these coming from the KwaZulu-Natal (KZN) region, a decision was then made to change the sample group to the KZN region (as per IREC approval, please refer Section 3.4 in Chapter Three). Communication with the AHPCSA (Terry, 2012), revealed that as of the 31st of January 2012 there were 138 registered chiropractors in KZN. Further communication with Dr Korporaal (2012) revealed that 19 chiropractors had been left off this list. Questionnaires were then resent to this entire sample group as well as to the extra 19 chiropractors.

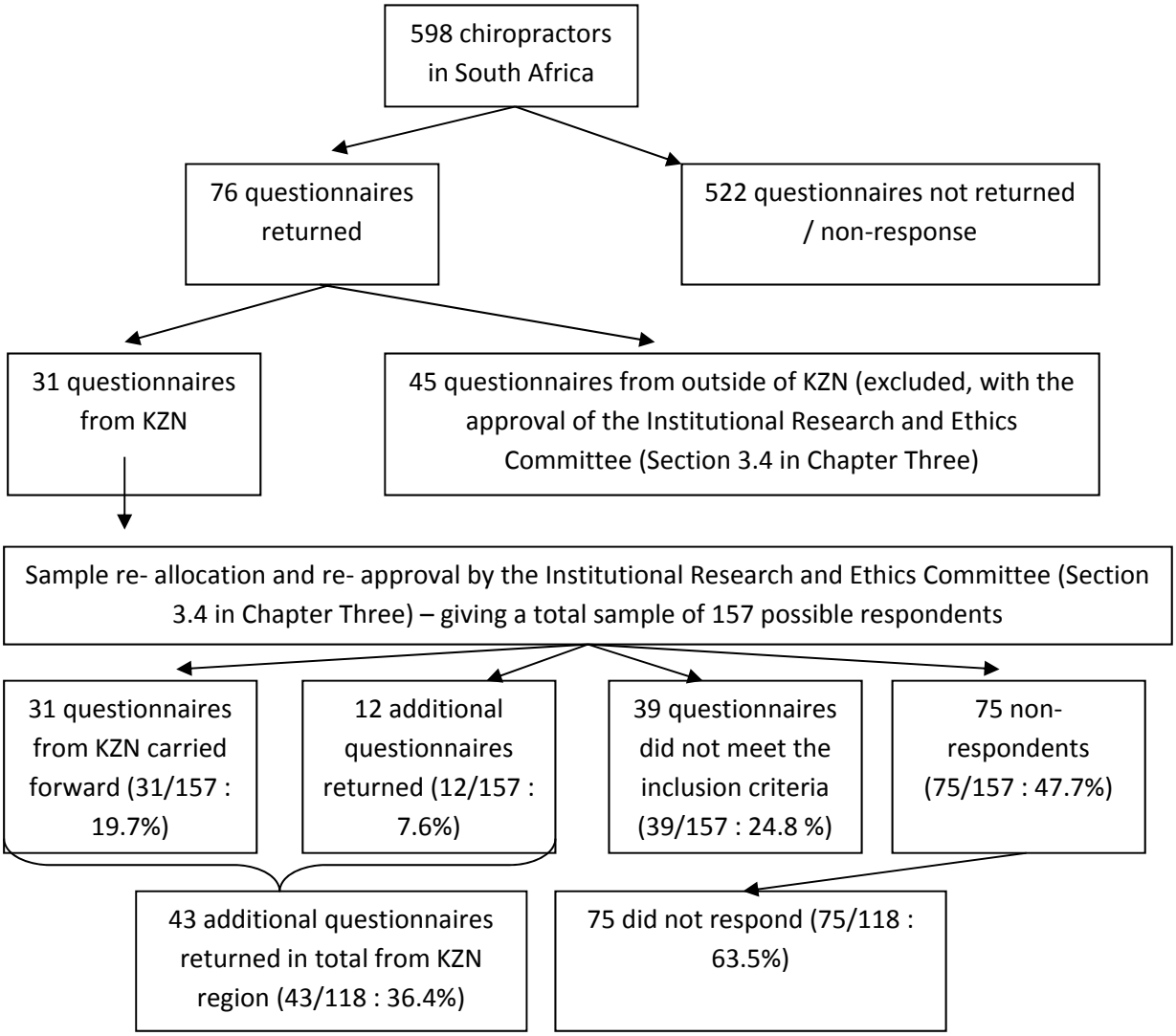
After a 6 month period (including the previously mentioned 4 month period) 43 questionnaires were returned completed, one was returned incomplete, two responded (via email) indicating that they had emigrated, three respondents had moved out of the KZN region, two respondents replied indicating their unwillingness to take part in the study and one was returned after the data had been sent to the statistician.

The researcher then used certain resources to ascertain the practice status of all KZN chiropractors registered with the AHPCSA. This was done with the help of Korporaal (2012), this revealed that 34 chiropractors had retired, emigrated, had incorrect contact details

(n=4), formed part of the focus group and pilot study (n=7) or were no longer practicing in KZN.

This left a total sample group of 118 chiropractors who fitted the inclusion criteria of this study and the response rate achieved was 36.4%.

Consort diagram as per the guidelines adapted from Moher, Schulz and Altman (2001):



CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter represents the discussion of the results. The data will be discussed according to the research objectives:

- **Objective One:** To determine the practice characteristics amongst chiropractors in KwaZulu-Natal, with regards to paediatrics.
- **Objective Two:** To correlate the assessment, management and treatment procedures utilized in chiropractic practices to various paediatric conditions in KwaZulu-Natal.

5.2 Response rate

According to the AHPCSA register, there were 138 registered chiropractors in KwaZulu-Natal at the date of proposal approval (AHPCSA, 2008). However, after further investigation it was revealed that 19 chiropractors had been left off this list and 39 registered practitioners were not eligible for this study due to:

- Incorrect contact details being recorded on the AHPCSA register. This has also previously been recorded as a factor affecting response rates (Coppa, Caldwell, Atwal, Brett-Richards and Coleman, 2007) and it is suggested in the literature that when such scenarios arise, that the results need to be interpreted with caution as the representativeness of the results cannot be accurately determined (Coppa et al. 2006).
- Emigration resulting in the practitioners not being in South Africa / KwaZulu-Natal at the time of the study (see Inclusion Criteria, Section 3.5.1).
- Retirement, implying that they were no longer in active practice (see Inclusion Criteria, Section 3.5.1).
- Chiropractors being involved in the study (either the focus group, pilot study or through proposal approval for this study (see Inclusion Criteria, Section 3.5.1)),
- Unwillingness to take part in the study, and therefore, not willing to sign the Letter of Information (Appendix F) and Informed Consent Form (Appendix J) (see Inclusion Criteria, Section 3.5.1).

- Questionnaires being sent back too late, which for pragmatic reasons resulted in the exclusion of the response from the analysis.

This left a total sample group of 118 chiropractors and questionnaires were distributed to these chiropractors. The results show that 43 questionnaires were returned and used for analysis, giving a response rate of 36.4%. This is in keeping with the required minimum of 30% (Hammond, 2011).

The outcomes of this study may, therefore, not be generalized to the greater chiropractic profession in South Africa or indeed globally (Coppa et al. 2006; Symon, McStea and Murphy-Black (2005); Watson, Hewitson, Brett, Bukach and Evans, 2006; Lapane, Quilliam and Hughes, 2007). Factors that have influenced this low response rate seem to have included amongst others the practitioners time constraints in practice, a lack of familiarity with the questionnaire design, and possibly form-filling fatigue (Symon et al. 2005) as several questionnaire studies have been completed within this population group over the preceeding years (Ford, 2012; Gordon, 2012; Slabbert, 2012). This may have resulted in the lack of participation from the majority of the chiropractors which prohibited a higher response rate. These reported reasons for the low response rate concur with those suggested by Dyer (1997).

The relatively low overall response rate may have biased the findings (Watson et al. 2006) as chiropractors with positive perceptions of research and the chiropractic specialty of paediatrics may have been more likely to respond. Thus, the results may not necessarily reflect the overall prevailing attitude of chiropractors towards paediatrics (Watson et al. 2006). Also, if it were assumed that non-responders had a less favorable perception of this pediatric research and research in general (Lapane et al. 2007), it may be based on the lack of participation in and skills related to research generally.

5.3 Objective 1: To determine the practice characteristics amongst chiropractors in KwaZulu-Natal, with regards to paediatrics.

5.3.1 Demographics

5.3.1.1. Age, Gender and Children

Most of the respondents (44.19%) fell between the ages of 31-40 years of age, with the age ranging from 26 to 67 years of age. This correlates with research done in South Africa, by Mahomed (2007), in which 89 chiropractors were questioned about the demographics of their patients. This research showed the mean age of chiropractic respondents to be 34.2 years. Research done by Keyter (2010), on 120 South African chiropractors, showed that most chiropractic respondents fell between the ages of 30 and 39 years. Research by Ailliet, Rubinstein and de Vet (2010) as well as Doyle (2011), showed the mean age of responding chiropractors to be 44 years of age. The reason for the difference or slightly lower age mean in the South African context may be as a result of the fact that the Durban University of Technology and the University of Johannesburg only started graduating student chiropractors in 1994 and 1999 respectively (Till and Till, 2000; Brantingham and Snyder, 1999). When this is considered, the oldest graduate from either of these programmes, would only now be in their early to mid 40's (making the assumption that the majority of graduates started the chiropractic programme directly after completing their schooling career), with the exception of the mature age student / graduate which is not the norm (Korporaal, 2012).

There were more female (60.47%) then male (37.21%) respondents in this study which follows on with research done by Mahomed (2007), in which 55% of the respondents were female and research done by Pohlman et al. 2010 in which 74% (of the 135 chiropractic respondents) were female. However, in South Africa, the gender ratio of chiropractors registered with the AHPCSA (2008), shows that there were 62% male and 38% female registered chiropractors. This correlates with research done by Keyter (2010), which showed 60.8% of the respondents to be male and research done by Doyle (2011), on 1498 chiropractors, showed 61.1% of the respondents to be male. Historically, the chiropractic profession was male dominated. However, it would seem that the ratio of men to women is gradually starting to even out due to an increasing number of women qualifying as chiropractors. It may, however, also reflect the trend in other CAM literature where the users of CAM are generally predominantly females, with tertiary education, a higher than average

income and a career for one or more children (Tatalias, 2006). The results may also be due to the fact that this study is focused on paediatrics, which has a smaller significance to all the practitioners and therefore is of special interest to only a small group, which in this case was the female population of chiropractors.

This suggestion however would seem to contradict the findings in this study as the majority of the respondents in this study (53.49%), did not have children. This may however be related to the relatively low age of the majority of the respondents. It is thus suggested that in the unique South African context that further research looks at profiling the unique demographic make-up of the profession in order to allow future research of a similar nature to this study to better contextualize their findings.

5.3.1.2 University, Graduation, Qualifications

More than three quarters (79.07%) of the respondents went to the DUT, whilst 6.98% came from UJ and very few of the respondents studied abroad (2.33%). Possible reasons that more respondents graduated from DUT include:

- The research being done in KwaZulu-Natal, the province within which the DUT resides.
- The DUT has been opened for chiropractic training since 1989, whereas UJ only opened its doors in 1993 (DUT, 2011; UJ, 2011), thus resulting in more graduates from DUT being available to respond to the questionnaire.
- A further consideration to be noted is that the researcher was also based in the region of questionnaire distribution and therefore was also familiar to the potential pool of respondents, where this would not have been possible for the UJ graduates who would not have been previously exposed to the researcher.

In line with the fact that the training institutions are relatively young, more than half of the respondents (55.81%) graduated between the years of 2001 - 2010. Additionally, the younger practitioners also tend to have more time in practice, whilst they are building their practice than established chiropractors. Also, it needs to be considered that newly qualified chiropractors are also closer to having graduated and more familiar with the research process than those who had graduated overseas or had graduated many years before. This latter possibility is confirmed by the work of Symon et al. (2005), who indicated that research familiarity is a common factor that enables an increase in questionnaire response. Therefore,

it is possible that the age, years in practice and date of graduation may all reflect a predominantly young chiropractic populace that responded to this questionnaire.

Thus, it is not surprising that 88.37% of the respondents did not hold other health care qualifications, outside of the M.Tech: Chiropractic, which is required to obtain a legal license to practice in South Africa (Allied Health Professions Act 63 of 1982 (as amended)) and therefore one of the inclusion criteria in this study (Section 3.5.1). This is somewhat similar to the research done by Keyter (2010), who showed that only 37.5% of the respondents held additional qualifications. The reason for the difference in the responses may well be related to the two distinct fields of enquiry in the respective studies: Keyter (2010) addressed the perception of practitioners with regards to their professional identity, which would have affected all practitioners to an equal level of interest, as opposed to this study which focused on paediatrics, which has a much smaller level of significance to all practitioners and is of special interest to only a small group. Therefore, Keyter (2010) may have been able to persuade practitioner involvement in her study as compared to this study (Section 5.2 Response rate).

This, therefore, concurs with the reporting by very few of the respondents (18.60%) that they had had further training/qualification(s) in paediatrics. Additionally, the qualifications that were obtained by the respondents varied from certificates in paediatrics to short courses which varied in length from 2 days to 1 year. Within the chiropractic profession, paediatrics is one of the most recently established post-graduate specialty programmes (Pohlman et al. 2010), which could explain why very few of the respondents held paediatric specific qualifications. It is also thought that the specific and detailed attention to paediatric training at the South African chiropractic institutions (DUT, 2011; UJ, 2011) may inhibit practitioners from seeking further training. This would agree with Hestbaek, Jorgensen and Hartvigsen (2009) who reported that chiropractors too easily rely on what they are taught in these institutions instead of using recent and updated evidence-based principles in their practice.

5.3.1.3 Years in practice, practice setting and main area of work

More than one third of the respondents (37.21%) had been practicing between 1 to 5 years, whilst almost 14% of the respondents had been practicing for more than 16 years. Research done in South Africa by Mahomed (2007), showed that chiropractors had been in practice for an average of 7.4 years and Keyter (2010) showed that majority of respondents (46.7%) had been in active practice for less than 5 years. Research done overseas by Pohlman et al. (2010), Ailliet, Rubinstein and de Vet (2010) and Doyle (2011) showed that chiropractors had

been in practice for an average of 14.6, 18 and 13.6 years respectively. It is suggested that the reasons for the commonality between the South African studies and their differences when compared to the international studies are similar to those suggested in Section 5.3.1.2. This would also concur with the findings of this study, where the main area of work in almost 90% of the respondents was on a mixed population of patients whilst very few of them worked with paediatrics and geriatrics specifically (4.65%). This work profile also supports the type of practice settings that this study found, where more than half of the respondents (51.16%) worked in a multidisciplinary practice, 39.53% of them worked in a solo practice and very few of them (11.63%) in a chiropractic group practice. Of those that worked in a multidisciplinary practice 53.49% did not identify which practitioner types were involved in the multidisciplinary practice, whereas of the 46.51% that did respond and identify the practitioner types; 32.56% practiced with a range of professionals, the most common being a biokineticist (16.28%) followed by Homeopaths, G.P's and Physiotherapists. By contrast, the other two thirds of the respondents only had one other practitioner type that was associated with their practice.

This compares favourably with Keyter (2010) who showed that 58.3% of the respondents were in private practice and 37.5% were involved with a multidisciplinary practice. Research by Pohlman et al. (2010) showed that most chiropractic respondents worked in a multidisciplinary practice (48%). This, however, contrasts with the United States Department of Labor (2010 to 2011), which showed that the majority of chiropractors were solo or group practitioners. Thus, it would seem that at least in the KwaZulu-Natal region, that the majority of practitioners are forming alliances between health care professionals in order to provide efficient quality care (Mootz and Vernon, 1999) within an unstable health care system (Hupkes, 1990; Campbell and Mzaidume, 2002; Dixon, McDonald and Roberts, 2002).

5.3.2 Practice Characteristics

5.3.2.1. Patients seen in practice per week

In the context of the practice setting discussed above, the majority of the respondents saw over 30 new and follow-up patients per week, the highest number being 125. The most new patients seen per week was 50 and the most repeat patients seen per week was 120. Generally, respondents saw more non-paediatric patients and the most paediatric patients seen per week was 34 whilst 26.83% (11) of the respondents did not see any paediatric patients.

Research by Lee, Li and Kemper (2000), on 90 chiropractors in the USA, showed that the average amount of patients seen in practice per week was 122, which compares favourably with research done by Doyle (2011), who showed that respondents saw an average of 107 patients per week (of which 15.5% of the patients were paediatric patients) and contrasts research by Pohlman et al. (2009), who showed that respondents saw between 50-99 patients per week (of which 31% were paediatric patients). These findings seem to compare favourably with the outcomes of this particular research. Hestbaek and Stochkendahl (2010), in their review of 3 different studies in Denmark, Sweden and the USA, found that 5%-10% of chiropractic patients were children whilst also in their review of studies, Vallone et al. (2010), revealed that approximately 14% of chiropractic patients were children under the age of 18. These findings seem to be somewhat smaller by percentage as compared to the outcomes of this research. This may be as a result of the fact that numbers of chiropractors in countries outside of South Africa have forced them to specialize in a particular area as compared to chiropractors in South Africa who tend to be more orientated toward family practice / general practice. This, however, requires further research in order to confirm this assertion.

Additionally, the respondents not seeing paediatric patients could be influenced by the attitudes of mothers towards chiropractic. Carlton, Johnson and Cunliffe (2009), revealed that mothers felt they knew a little but not enough to make an informed choice about choosing chiropractic care for their children (Tatalias, 2006); and many mothers also did not know if chiropractic was an appropriate treatment for children in general. This assertion is, however, not validated by any research and it is suggested that a future study look at surveying parents (particularly mothers) views on and utilization of chiropractic.

Results may also be influenced by simple practitioner related reasons e.g. It could be out of choice that chiropractors do/ don't see paediatric patients.

5.3.2.2. Time treating paediatric patients

Of the respondents, 32.56% had been treating paediatric patients for more than 10 years, whilst 27.91% of the respondents had been treating paediatric patients for less than 1 year.

This statistic is not comparable to any literature and it is suggested that these statistics may be related to the either the practitioner age or graduation date (practice years).

5.3.2.3. Gender and age of paediatric patients

Almost three quarters of respondents (74.42%) indicated that their paediatric population had an equal male and female ratio which compares favorably with the equal distribution of male and female patients generally. This correlates with Alcantara, Ohm and Kunz's (2009) research that showed 52.68% of the 577 paediatric patients to be male and 47.28% female and Hartvigsen and Hestbaek's research (2009) which showed an even distribution amongst teenagers, with 49% being male patients. Whilst Pohlman et al. 2010 showed that 63% of the paediatric patients were female. Thus there seems to be congruence in the literature with regards to the gender of paediatric patients seen.

The most common age range seen in practice was 7-14 years of age, which correlates with Doyle (2011), who showed the most common age range seen in practice to be between 12-18 years. It also compares favourably with Alcantara, Ohm and Kunz (2009) who showed that the average age of a paediatric patient seen in practice was 7.45 years. It, however, contrasts with Pohlman et al. (2009) who revealed the common age range to be between 0-5 years of age, Miller (2010) showed the range to be between 2 days-15 years and Ailliet, Rubinstein and de Vet (2010), reported the age range to be between 1-14 years. The reason for South African chiropractors not seeing many younger paediatric patients could again be linked to the fact there is little knowledge of the profession with paediatric specialty professions (such as peadiatricians) (Heslop, 2008).

5.3.2.4 Parents reasons

The most common reason parents sought chiropractic care for their child/children, was crying (53.5%) followed by back/neck pain (39.53%). This correlates with Miller (2010) and Doyle (2001), who also reported excessive crying and musculoskeletal complaints to be the most common paediatric complaint. Children over the age of 3 months were most commonly consulted by the respondents for check-ups/wellness, which correlates with Alcantara, Ohm and Kunz (2009), who reported that most patients came in for "wellness care" whilst children under the age of 3 months were consulted for back/neck-pain. These complaints may be related to the birth process, changes in biomechanics that the paediatric patient experiences

(including changes from being supine to crawling to walking and physical trauma due to handling errors and sports and games) (Davies and Jamison, 2000).

5.3.2.5 Common paediatric conditions treated

The most common paediatric condition(s) treated in practice were musculoskeletal conditions (76.7%) followed by muscular conditions (69.8%). This correlates with reports made by Hartvigsen and Hestbaek (2009), who stated that up to 50% of children will experience back pain or other musculoskeletal problems in a one-year period, and approximately one third of these will have recurrent episodes. This concurs with the core area of chiropractic practice is the musculoskeletal system and this explains why the most common paediatric conditions treated in practice are musculoskeletal (Keyter, 2010).

None of the respondents treated autism. This may be related to Ferrance and Miller (2010), who stated that while there is some rather vague and contradictory data that suggests that chiropractic might have a beneficial effect on a few non-musculoskeletal conditions, to claim improvements or even “cure” is being overly optimistic to the point, at times, of outright dishonesty.

Between the majority musculoskeletally directed treatment and the lack of treatment for autism, there is a wide range of conditions that are treated to variable degrees, with the largest proportion requiring co-management.

5.3.2.6 Conditions warranting co-management and conditions referred

Majority of the respondents sought co-management for conditions such as asthma (44.19%), ADHD (41.86%), congenital anomalies of the spine (41.86%), cerebral palsy, gastrointestinal disorders, nocturnal enuresis (all three 39.53%) and skin conditions (37.21%).

This agrees with the reporting that the most common conditions referred by the respondents were asthma (34.88%), epilepsy (34.88%) and autism (32.56%) and the conditions least referred were muscular (2.33%) and musculoskeletal conditions (4.65%) followed by headaches (4.65%) and irritable baby syndrome (colic) which were never referred. The reason for co-management could be related to the statement made in 5.3.2.5 by Ferrance and Miller (2010). Another reason could be that there have been very few randomized controlled trials providing evidence to guide practice and therefore the rationale for treatment

of various paediatric conditions, rests primarily with clinical experience of the chiropractor and descriptive case reports (Hestbaek, Jorgensen and Hartvigsen, 2009).

5.3.2.7 Time with paediatric patients

Majority of the respondents (34.88%), spent 21 – 30 minutes with their new paediatric patients and 44.19% of the respondents, spent 11 – 20 minutes with their follow-up paediatric patients. This relates to research by Ailliet, Rubinstein and de Vet (2010), in which information was provided from 517 chiropractic patients. They reported that respondents (80 chiropractors) spent on average 35 minutes with a new patient and 15 minutes with a follow-up patient whilst Doyle (2011) reported that respondents spent on average 16-30 minutes with a new patient and 11-15 minutes with a follow-up patient.

5.3.2.8 Word of mouth and referral

Most of the respondents had 100% of their paediatric patients come to them from word of mouth, more patients were seen by respondents from word of mouth then referral. However, one of the respondents saw 75% of their patients from referral, whilst another saw 40% of their patients from referral. This may be related to the length of time that the particular practitioner has been in practice and rely on that practitioner having built up relationships for referral with paediatric specialty professions, as the results more closely reflect the findings of Heslop's study that indicated that paediatric specialty professions had little or no knowledge of the chiropractic profession, which would mitigate against referral. Another reason could be that these few chiropractors may be known by their peers or neighbouring GP's and other health professionals, for their additional qualifications in paediatrics. Additionally, the work of Tatalias (2006) indicates that mothers are more likely to utilize CAM professions if they are educated, have a stable income that is above average and have tertiary education. Therefore, it would not be usual to expect that the patients are more likely to come from a word of mouth ("moms-referral") system. This would further be supported by the work of Mahomed (2007).

5.3.2.9 Referrals from other professionals

Most of the respondents (n=14) received referrals from G.P's, whilst six of the respondents received referrals from homeopaths and five from other chiropractors. This is similar to

research conducted by Louw (2005), which showed that 46% of the 77 GP's had referred patients to chiropractors. However, it contrasts with Mahomed (2007) who reported that the most common source of referral to a chiropractor was by a relative/friend (45%), self-referral (25.7%) and patients referred by GP's (5.3%), this was indicated by the 89 chiropractic respondents. Additionally, Pohlman et al. (2010) found that the most common referrals came from midwives, family physicians, massage therapists and other chiropractors, whilst the least referrals came from surgeons and psychologists. In this context, Miller (2010) showed that children under three months of age had the highest (83%) referral rates from medical professionals, who referred paediatric patients for musculoskeletal conditions such as torticollis and other postural deviances.

With most of the referrals in this study coming from GP's, this may suggest that in South Africa, chiropractors have a better working relationship with allopathic medicine or this may be related to the quality of our qualification, cultural authority and status of our profession (Chapman-Smith, 2000).

5.3.2.10 Co-management

Of the total population, 72.09% of the respondents reported co-managing their patients. It was shown that respondents dealt with a range of health care providers, most of the respondents (44.19%) dealt with paediatricians whilst the least common health care provider dealt with was a midwife (2.33%). This result is favourable according to Vallone et al. 2010, whose research showed that when chiropractic treatment is provided in collaboration with other health care professionals e.g. nutritionists, occupational therapists, physical therapists, many children demonstrate improved development or a more consistent maintenance of their quality of life.

However, the results go against Heslop's (2008) findings, which indicated that there were relatively low levels of knowledge and poor perceptions of chiropractors amongst paediatricians, and that paediatricians did not have enough knowledge to discuss chiropractic with their patients. The above results from this study show an improvement from Heslop's (2008) research, which may indicate that the relationship between chiropractors and paediatricians is improving and that chiropractors are now becoming accepted amongst other health professionals. It also seems at odds with the results obtained in this study which suggested that the greatest amount of referrals came from word of mouth (Section 5.3.2.8) or this implies that the referral pattern between chiropractors and paediatricians is lopsided

with the chiropractors referring to the paediatricians more often than the paediatricians referring to the chiropractors.

5.3.2.11 Number of times seeing a paediatric patient

The majority of the respondents (60.47%) stated that they would see a paediatric patient for about three visits before deciding that chiropractic treatment was not helping and would not improve the outcomes for the peadiatric patient. This goes against research done by Lee, Li and Kemper (2000), which showed that respondents had reported an average of seven visits before deciding that chiropractic was not benefiting their paediatric patient.

This may be related to a number of factors, the most notable of which would be the fact that in the South African context, chiropractors contend not only with first world diseases but also communicable and other diseases related to third world countries (Hupkes, 1990; Campbell and Mzaidume, 2002; Dixon, McDonald and Roberts, 2002). The implication being that the chiropractor is less able to delay referral for appropriate care (Dixon, McDonald and Roberts, 2002) in order that the best outcomes are obtained for the paediatric patient.

5.3.2.12: Immunizations

More than half of the respondents (55.81%) did not advise parents on childhood immunizations. This correlates with research done by Lee, Li and Kemper (2000) which showed that 63% of the 90 respondents did not make any recommendations regarding childhood immunizations. This raises an issue of concern as the ICA “supports each individual’s right to select his or her own health care and to be made aware of the possible adverse effects of vaccines upon a human body” (ICA policy statements, 2012). Another concern is that as more children and families seek chiropractic care (particularly if the care is not coordinated with a paediatrician), there will be more questions raised about immunizations. Therefore, in accordance with the results of this research, chiropractors should become aware that parents should be advised on childhood immunizations.

In this context, 39.53% of the respondents reported that in their personal preference they believed immunizations to be beneficial in the South African health care milieu, with 34.88% declining to answer the question (possibly as a result of the contentious issue that the immunization debate has been and continues to be for the profession) (Tatalias, 2006). Additionally, research done by Colley and Haas (1994), found that one third of the responding chiropractors reported that “there is no scientific proof that immunization

prevents disease, that vaccinations cause more disease than they prevent, and that contracting an infectious disease is safer than immunizations". Therefore, it is still unknown whether childhood immunizations are beneficial or not, and therefore, there can be no right or wrong answer by the respondents.

5.3.2.13 Neonate vignette

With regards to this vignette, 37.21% of the respondents reported that they would refer their neonate patient to a paediatrician whilst 30.23% of the respondents reported that they would do a case history, assess the appropriateness of the scope of practice and then decide on referral. These results proved favourable in comparison with Lee, Li and Kemper (2000), who asked the same question in their study; with 17% of the respondent group and 38% of the peer-recommended pediatric chiropractors stating that they would treat the child themselves rather than immediately referring the child to a doctor of medicine, doctor of osteopathy, or an emergency facility. The outcomes of the Lee, Li and Kemper (2000) study raised concerns amongst pediatricians when considering the adverse consequences of delayed medical care. The results of this study and the results in Section 5.3.2.11, would counter the results of Lee, Li and Kemper (2000) in that the respondents of this sample are more conservative in applying scope of practice interventions as well as conservative in the number of interventions, preferring early referral to achieve the best outcomes for the paediatric patients.

5.3.2.14. Confidence

In terms of confidence, 15 of the 43 respondents felt confident in treating paediatric patients; whilst 8 felt very confident and 7 felt quite confident (therefore 30/43 felt that they were very able, effective and efficient in dealing with paediatric patients). There is a paucity of literature regarding the confidence and competence of chiropractors when treating paediatric patients. From looking at the above results it can be suggested that with the graduate level training (even without specific training), chiropractors still feel confident in themselves when dealing with paediatric patients. However, when looking at competence levels it can be seen that chiropractors do not rate themselves very highly and many of them even refused to rate themselves. This may be due to the lack of knowledge and specializations in the field of paediatrics as seen in sections 5.3.1.2 and because of this, very few chiropractors focus their main area of work around paediatrics as seen in section 5.3.1.3.

5.3.3 Scope of Practice

5.3.3.1 Assessments with a paediatric patient

Respondents performed a range of assessments in practice when dealing with paediatric patients. The most common assessments performed in practice by the majority of the respondents (81.40%) on their new patients, were the Case History and Orthopaedic Examination followed by the Neurologic Examination (65.12%). The least common examination was the radiographic examination and none of the respondents sent their new paediatric patients for laboratory tests. The most common assessment performed in practice by the majority of the respondents (62.79%) on their follow-up paediatric patients was the Orthopaedic Examination, followed by the Neurologic Examination and the repeat Case History.

When comparing the results between a new and follow-up paediatric patient, the top three examinations stay consistent, however in different orders. The Case History being the most commonly used assessment for a new patient relates well with a statement made by Vallone et al. (2010), who recommended that before treating, chiropractors should obtain a full history (including that of the chief complaint). This is very important as the treating chiropractor should fully evaluate the child before treatment, ruling out contraindications to chiropractic care as well as being able to make appropriate referrals if something serious is picked up (Vallone et al. 2010). This also fits well with the conservative approach that is reflected in Sections 4.4.2.1 (patient visits); Section 4.4.2.9 (patient referrals).

The Orthopaedic and Neurologic Examination are commonly used together as chiropractic is concerned with the diagnosis, treatment and prevention of disorders of the neuromusculoskeletal system and the effects of these disorders on general health (Haldeman, 2005; Vallone et al. 2010), therefore, the nervous system, muscular system and skeletal system are often tested together. These examinations are also very important to chiropractors as often the loss of function in one system has been shown to accelerate decline in other systems, and thereby, a deterioration of general health, which explains why musculoskeletal problems in children are associated with both physical and psychological consequences (Hartvigsen and Hestbaek, 2009).

In comparison with Lee, Li and Kemper (2000), the most common examination performed by the 90 chiropractic respondents in their research was the neurologic examination (77%),

radiographic examination (59%), orthopedic examination (22%) and laboratory tests (8%). The reason for the radiographic examination being so common in this study could be due to the fact that many chiropractic practices in first world countries have radiographic facilities, making this examination easily accessible. In South Africa, most chiropractors have to refer for a radiographic examination which may become very timely and in turn delay treatment of the paediatric patient (Hupkes, 1990; Campbell and Mzaidume, 2002; Dixon, McDonald and Roberts, 2002).

5.3.3.2 Radiographic Examination

Respondents indicated that they would send their paediatric patients for radiographic examination for many different reasons. However, the most common reason(s) the majority of the respondents (just over 70%) would send their paediatric patient for a radiographic examination were for trauma induced injury (fractures, dislocations) and for unexplained bone pain. These results are positive for the profession, in that the practitioners show discretion when applying modalities that are potentially harmful to the patient (Yochum and Rowe, 1996).

5.3.3.3 Chiropractic techniques

Majority of the respondents (76.74%) in this study, used the Diversified technique in practice generally. This together with mobilization and Activator methods were the most common techniques used in the paediatric population in practice. Research by Alcantara, Ohm and Kunz (2009), showed that the Diversified technique was the most common technique used in practice, followed by Gonstead, Thompson's and Activator Methods. This also relates to research done by Pohlman et al. (2010); Ailliet, Rubinstein and de Vet (2010) and Doyle (2011) which showed the Diversified technique and Activator methods to be most the common techniques used in practice. Therefore, the outcomes of this research not only suggest that the practitioners show remarkable congruency in practice, but it also reflects that the practitioners do not deviate that much from that which they were taught in the undergraduate training.

5.3.3.4 Non-manipulative therapies and CAM

Of all the practitioners, 72.09% of the respondents used non-manipulative therapies in practice when treating paediatric patients. The respondents reported using a variety of non-manipulative therapies of which soft tissue techniques was the most common non-manipulative therapy used by 65.12% of the respondents, followed by exercise programmes, dry needling and taping. Hydrotherapy and acupuncture were the least common non-manipulative therapies used. Research by Doyle (2011), shows similar findings, with soft tissue therapy, dietary, postural and exercise advice being the most common non-manipulative therapies used by respondents in practice. Research by Pohlman et al. (2010) revealed that recommendations for activities of daily living, corrective or therapeutic exercise, cryotherapy and nutritional counseling were the most common non-manipulative therapies used for paediatric patients. This is similar to Vallone et al. (2010) who stated that chiropractic management of paediatric patients can include advice about nutrition and corrective or therapeutic exercise, in-clinic rehabilitation procedures, soft tissue techniques, recommendations for activities of daily living and ice pack / cryotherapy.

The reason for soft tissue techniques being the most commonly used non-manipulative therapy in practice could be because it provides relief to muscles and is also easy and inexpensive to perform. Exercise programmes are also easy to explain and parents can be taught the exercises at the chiropractors practice and then they can be sent home to do these exercises with their children.

More than half of the respondents (58.14%) recommended other CAM therapies when treating paediatric patients. The most common CAM therapy recommended by 46.51% of the respondents in practice was Homeopathy, which may be as a result of the fact that chiropractors and homeopaths study together at the same institutions and do many of their lectures together, therefore creating a general understanding between the two professions (DUT, 1012; UJ, 2012). This could explain why in this research, Homeopathy is the most common CAM therapy recommended by chiropractors for their paediatric patients.

5.3.3.5 Paediatric conditions

Over 65% of the respondents strongly agreed that musculoskeletal conditions are effectively treatable by chiropractic methods and 62.79% of the respondents also strongly agreed that muscular conditions were effectively treatable by chiropractic methods. In the peadiatric

context, headache, irritable baby syndrome (colic) and torticollis were other paediatric conditions that were perceived to benefit from chiropractic treatment. Research by Pollentier and Langworthy (2007) showed similar results in that childhood musculoskeletal and muscular conditions, infantile colic, otitis media and asthma were perceived to benefit from chiropractic intervention by more than 50% of the 263 respondents

This musculoskeletal focus supports the fact that 18.60% of the respondents strongly disagreed that vision and endocrine problems were effectively treatable by chiropractic methods. Many of the respondents also strongly disagreed that chiropractic could be effective for conditions such as autism, ADHD, eczema and upper respiratory conditions. This could be due to the vague and contradictory data that suggests that chiropractic might have a beneficial effect on a few of these non-musculoskeletal conditions (Ferrance and Miller, 2010), therefore to claim improvements or even “cure” for these conditions can be seen as is being dishonest, optimistic and even bold (Ferrance and Miller, 2010).

5.4 Objective Two: To correlate the assessment, management and treatment procedures utilized in chiropractic practices to various paediatric conditions, amongst chiropractors in KwaZulu-Natal.

5.4.1 Assessment procedures for conditions

When reviewing the different assessment techniques utilized for the assessment of the paediatric patient, the most common were noted as follows:

- Case history: used by 100% of the respondents for scoliosis, gastrointestinal disorders and reflux. It was also used by 100 % of the respondents for all the less common conditions (asthma, skin conditions, ADHD, otitis media, congenital anomalies and epilepsy).
- Vitals: used commonly for scoliosis, reflux, asthma and otitis media.
- Full physical examination: used commonly for muscular conditions, scoliosis, skin conditions and ADHD.
- Growth parameters: used commonly for gastrointestinal disorders, skin conditions and ADHD.
- Dermatological examination: used commonly for reflux and otitis media.

- Cardiovascular examination: used commonly for scoliosis, gastrointestinal disorders and otitis media.
- Respiratory examination: used more commonly for scoliosis, nocturnal enuresis and otitis media.
- Abdominal examination: used commonly for gastrointestinal disorders. 100% of the respondents reported using this examination for asthma, ADHD, skin conditions and epilepsy.
- Neurological examination: used commonly for scoliosis, nocturnal enuresis and gastrointestinal disorders. Used by 100% of the respondents for the less common conditions.
- Orthopaedic examination: used by 100% of the respondents for scoliosis, gastrointestinal disorders and reflux. Used by 100% of the respondents for the less common conditions.
- Radiographic examination: used by very few of the respondents. Used mostly for scoliosis and congenital anomalies.
- Laboratory tests: not used by any of the respondents.

From the above, it can be seen that the respondents seemed to prefer a more conservative approach when dealing with their paediatric patients. This is evident by the number of assessments which were reportedly performed for each condition in new and follow-up paediatric patients. This shows that chiropractors would rather take extra precaution and do more of the assessments than required as opposed to immediate referral for potentially costly special tests which are often unnecessary.

5.4.2 Assessments on new vs. follow-up patients

There was a significant positive correlation between assessments on new and follow-up paediatric patients. The common three assessments done with a new and follow-up paediatric patient are the Case history, Orthopaedic examination and Neurologic examination. This correlates with the findings in Section 5.3.3.1, which explains why these three assessments are so important in practice. See the above Section 5.4.1 and refer to the discussion.

5.4.3 Treatment procedures for conditions

The most common chiropractic techniques used for these conditions was the Diversified technique. This correlates with the statement made in Section 5.3.3.3. which explains why the diversified technique is the most common technique used in practice with paediatric patients.

The most common treatment procedures used for the various conditions are explained below:

- Activator methods: irritable baby syndrome (colic), asthma, skin conditions, congenital anomalies and epilepsy. According to Alcantara, Ohm and Kunz (2009), this method involves a hand-held, spring-loaded instrument that delivers a site-specific, low-force type thrust.
- Applied Kinesiology: nocturnal enuresis, ADHD and otiis media.
- Bio-energetic synchronization: not used by the respondents.
- Cox flexion distraction: scoliosis, congenital anomalies and asthma.
- Cranial methods: nocturnal enuresis, asthma, skin conditions, otitis media and ADHD. Not a chiropractic technique per se, but a manual therapy that applies a sustained and prolonged force to correct cranial segmental dysfunction (Alcantara, Ohm and Kunz, 2009).
- Diversified: gastrointestinal, headaches, scoliosis, reflux and used by 100% of the respondents for congenital anomalies.
- Gonstead: reflux and congenital anomalies.
- Logan Basic: nocturnal enuresis, ADHD and otitis media.
- Mobilization: scoliosis, reflux, asthma, epilepsy and congenital anomalies.
- NIP: reflux, otitis media and ADHD.
- Sacro-occipital: scoliosis.
- Thompson's: reflux. According to Alcantara, Ohm and Kunz (2009), this is a variation of the diversified technique that utilizes a special table with several "drop-piece" segments; when the thrust is delivered, the table will drop a small distance; the drop pieces assist the thrust while minimizing the force used for the delivery of the manipulation.
- Toggle recoil: nocturnal enuresis.
- Torque release: reflux. Uses the Integrator, a torque and recoil release adjusting instrument to deliver the manipulation (Alcantara, Ohm and Kunz, 2009).
- Other methods (NSA, traction): gastrointestinal.

From the above, it can again be seen that the respondents seemed to prefer a more conservative approach when dealing with their paediatric patients. This is evident by the variation of techniques used in practice with each condition. This shows that chiropractors take into consideration each condition before deciding which technique to use.

5.4.4 Analysis of management and referral patterns for paediatric conditions

Reflecting on the conservative nature of the practitioners seen in this study, the results showed that ADHD, congenital anomalies, cerebral palsy, gastrointestinal disorders and nocturnal enuresis were all commonly co-managed with other health care providers, with asthma being the most commonly co-managed condition (44.19% of the respondents). Asthma is also one of the most common referred conditions together with skin conditions (referred by 34.88% of the respondents) and epilepsy (referred by 32.56% of the respondents).

According to Ferrance and Miller (2010), asthma is the most common chronic disease of childhood, affecting more than six million children in the United States, 13% of children in the United Kingdom, and 20% of children in Australia. In comparison to the above results and with regards to asthma, research by Bronfort (2001) showed that after 3 months of spinal manipulative therapy by chiropractors, together with optimal medical management, asthma in children improved significantly and was maintained at a 1 year follow-up. However, there was no change in lung function or hyper-responsiveness. It was stated that these improvements were unlikely to be from chiropractic manipulation alone. Similar findings by Balon et al. (1998) showed that children had small improvements in peak expiratory outflow as well as other indicators, however there no significant differences with chiropractic manipulation alone.

Even though there is no evidence that chiropractic manipulation improves lung function itself, Ferrance and Miller (2010) reported that other important clinical outcomes include improvements in patients' quality of life as well as other subjective symptoms. This explains why many chiropractors in this study reported co-managing and referring their asthmatic paediatric patients as manipulation should be used as an adjunct to, rather than a replacement of, traditional medical management (Ferrance and Miller, 2010).

Headaches, muscular and musculoskeletal conditions were the least common conditions co-managed and referred. This agrees with research by Hestbaek and Stochkendahl (2010), which stated that the core area of chiropractic practice is the musculoskeletal system, with special focus on the spine. Therefore, paediatric patients presenting with musculoskeletal conditions are treated primarily by chiropractors instead of being co-managed and referred.

5.5 Conclusion

Therefore, in terms of Objective One, it can be said that the majority of the respondents were middle-aged, female practitioners, without children. They did not have specific paediatric qualifications and worked with a mixed population in multidisciplinary practices. Paediatric patients formed a small percentage of the total patients seen in practice and the most common age range of paediatric patients seen in practice was between 7 and 14 years of age. The most common reasons for parents seeking chiropractic care of their children was for “wellness” care in the younger paediatric age groups and for back/neck pain in the older paediatric age groups. In terms of Objective Two, conservative care was evident as seen by the number of assessment, management and treatment procedures used in practice as well as the referral rates to other health care professionals.

Thus, Chapter Six will now present the conclusion of the study along with the recommendations arising from the study.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The following chapter serves to conclude the study by determining the status of paediatric care in chiropractic practices in KwaZulu-Natal. Conclusions will be drawn from the results and discussion of those results from Chapters Four and Five, and recommendations will be made regarding both possible methodological changes and for the profession of chiropractic based on the outcomes of the study.

6.2 Conclusions

This study revealed that, in general, paediatric patients form a very small percentage of patients in KwaZulu-Natal chiropractic practices. When compared to international studies, it was shown that chiropractors in KwaZulu-Natal had not been in practice for as long as chiropractors in other countries and that the reason for this could be due to the fact that chiropractic is a relatively new profession in this country. However, it was shown that the respondents were still confident in treating paediatric patients and many of them rated themselves highly on the competence scale indicating that those that treat paediatric patients see themselves as effective and efficient when dealing with these patients. This reflects that chiropractors in this study used many of the same assessment and treatment procedures and hence manage their paediatric patients in much of the same way as stated in international literature (Pohlman et al. 2010; Vallone et al. 2010; Alcantara, Ohm and Kunz, 2009; Lee, Li and Kemper, 2000). This is positive for the chiropractic profession, especially seeing that chiropractic is relatively new in the country, which shows the profession is growing and keeping up to international standards.

When looking at the various conditions considered effectively treatable by chiropractic methods, it has been suggested that chiropractors in KwaZulu-Natal are fairly conservative and responsible when dealing with their patients as many of them strongly agreed that chiropractic could help with musculoskeletal conditions as well as the most common non-musculoskeletal condition seen in paediatric patients such as colic. Some of these conditions have been supported through research as being effectively treatable by chiropractic methods, yet there are others which have a paucity of literature. The results of

this study reflect that that practitioners show responsible use of scientifically validated literature.

The study showed that most of the respondents received their paediatric patients from word of mouth and not many came from referral. This suggests that there may be a paucity of knowledge regarding chiropractic care of paediatrics amongst other healthcare professionals. Therefore, more awareness needs to be created amongst other healthcare professionals in South Africa in order to improve the referral rates to chiropractors.

This study provided useful and necessary information which could influence other chiropractors, the public and other healthcare professionals' views of paediatric chiropractic in the future. The results of this study were very similar to those carried out internationally and more specifically to the research undertaken by Pollentier and Langworthy (2007) and Lee, Li and Kemper (2000). It demonstrates that international views and opinions had been reflected locally, which is positive for the profession. Parents and other health care professionals need to be further educated about paediatric chiropractic to facilitate further future interaction between chiropractors and paediatric patients, which would enable further growth of the profession.

6.3 Recommendations

6.3.1 Methodological recommendations

- The questionnaire was lengthy in order to obtain greater insight into the status of paediatric care amongst chiropractors. However, chiropractors are busy professionals and their time is highly in demand, and a slightly shorter questionnaire might have yielded a better response. The questionnaire, and hence this study, could have been made smaller by either focusing on only demographics, or only practice characteristics and / or scope of practice alone instead of including all three in the study.
- The response rate to this mailed survey was relatively low and in order to achieve a higher response rate, it may be useful to slightly change the design as the design was condensed and clustered, with many questions appearing on each page. Mailed questionnaires should also be as short as possible, obviously focusing on the most pertinent topics. More chiropractors could have been approached directly when administering questionnaires and a better response rate may have been achieved if questionnaires were to have been faxed.

- There was confusion with regard to the definition of a paediatric patient in this study. This study included patients from birth up until the age of 14 years of age. Future studies should consider this and maybe increase the age to 18 years of age as this will include a bigger population and hence may improve response rates by chiropractors.
- There were minor grammatical errors in the questionnaire. There was confusion with the American spelling of “practice” and South African spelling of “practice” as well as the American spelling of “paediatric” and South African spelling of “paediatric”. There was an error in the answer options of Questions 36 and 37. “Orthopaedic examination, Radiographic examination, Respiratory examination and Vitals” were all repeated. There was also a numbering error in the questionnaire (Question 29 was numbered 39 and question 39 was numbered 49).

6.3.2 Recommendations for the Profession

- The South African chiropractic profession must focus on the production of more scientifically validated literature on chiropractic care of paediatric patients as well as the safety and efficacy of chiropractic treatment for paediatric conditions.
- From this research it can be seen that there is a greater need for post graduate paediatric courses for chiropractors in South Africa. Courses are made available through institutions overseas but greater and more readily available access to theses paediatric courses needs to be made through the various chiropractic associations in this country.
- Chiropractic as a profession needs to establish a clear identity and purpose in the treatment of paediatric conditions. This can be achieved through intervention schemes which should aim to educate and increase awareness of chiropractic amongst parents/guardians as well as other health care professionals.
- More chiropractors need to become more open to treating paediatric patients. Many just refer their paediatric patients before even attempting to treat. The paediatric course that forms part of the chiropractic student syllabus should be revised in order to assess whether chiropractors are being equipped with the relevant tools to treat paediatric patients in practice and whether they are confident and competent enough when leaving these institutions.
- Most of the paediatric patients in this research came from word of mouth. A better working relationship should be made with other healthcare professionals in order to

increase referral rates and hence increase the amount of paediatric patients being seen by chiropractors.

6.3.3 Future studies

- Research similar to this study needs to be done, but needs to include the entire population of South Africa.
- Research of a similar nature needs to be done but in the context of an adult population, with comparison to paediatric patients.
- Extensive research needs to be done in order to evaluate paediatric education specifically in South Africa, but also globally to evaluate the availability and accessibility of post graduate paediatric programmes and their effect on paediatric care.
- Further research to evaluate the non-musculoskeletal conditions being seen in chiropractic practices in South Africa, particularly in paediatrics also needs to be carried out.
- To determine the factors influencing parents/guardians decisions in sending their children to chiropractors.
- To determine parents and chiropractors views regarding the safety and effectiveness of chiropractic for paediatric patients.
- Further research of a similar nature needs to be undertaken to profile the unique demographic make-up of the chiropractic profession to enable future researchers to, improve on their method of contextualising their findings.
- To evaluate the assessment and treatment methods of chiropractors in South Africa, with regards to the various paediatric conditions seen in practice.

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APPENDIX A

ETHICS CLEARANCE CERTIFICATES

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

1 December 2011

IREC Reference Number: **REC 11/11**

Ms K L Evans
52 Beachway
Durban North

Dear Ms Evans

The status of paediatric care in chiropractic practices in South Africa

I am pleased to inform you that Full Approval has been granted to your proposal REC 11/11.

The Proposal has been allocated the following Ethical Clearance number IREC 005/11. 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 amendments in the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely

[redacted]

Prof T Puckree
Chairperson: IREC

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

20 June 2012

Ms K L Evans
52 Beachway
Durban North

Dear Ms Evans

Application for Amendment of Approved Research Proposal

The status of paediatric care in chiropractic practices in South Africa (IREC 005/11)

I am pleased to inform you that your application for amendment to the methodology of your research proposal has been approved.

Yours Sincerely

Dr D. F. Naude
Chairperson: IREC

APPENDIX B

PERMISSION FROM DR. K. KEMPER

From: Kirsten Evans kirstevans52@gmail.com

To: kkemper@wfubmc.edu

Date: Wed, May 18, 2011 at 6:11 PM

Subject: Research

Hi Dr. Kemper,

My name is Kirsten and I am a final year chiropractic intern at the Durban University of Technology, in South Africa.

I am busy with my research proposal, titled "Pediatric care in chiropractic clinics in South Africa". It is a quantitative, cross-sectional study and I will be collecting data in the form of a questionnaire.

I have read through the paper written by yourself, Dr. Lee and Dr. Li, titled "Chiropractic Care for Children".

I found your paper very interesting and it sparked much enthusiasm in me. I would like to conduct a similar study to yours but in a South African context.

I am writing this email to request your permission to use some of the ideas used in the survey that you constructed for your research. I must inform you that I will not be copying your research directly; instead I will be using your research as a template, to help formulate my own questionnaire for chiropractors in South Africa. Therefore it will be done in my own words and constructed in a different manner.

If you would like to know more about my research, I will be more then willing to share it with you or I will forward my proposal and/or questionnaire to you.

Thank you for your time!

Regards,

Kirsten Evans

6th year chiropractic intern at the Durban University of Technology

Reply Forward

From: Kathi Kemper kkemper@wfubmc.edu

To: Kirsten Evans <kirstevans52@gmail.com>

Date: Wed, May 18, 2011 at 8:53 PM

Subject: RE: Research

Kirsten,

Please feel free to use whatever is useful, and do let me know how it turns out!

Thanks,

Kathi Kemper, MD, MPH, FAAP

www.wakehealth.edu/cim

APPENDIX C

PERMISSION FROM DR. J. LANGWORTHY

From: Kirsten Evans kirstevans52@gmail.com

To: jlangworthy@aecc.ac.uk

Date: Tue, May 10, 2011 at 11:40 AM

Subject: Pediatric Research

Hi Dr. Langworthy,

My name is Kirsten and I am a final year chiropractic intern at the Durban University of Technology, in South Africa.

I am busy with my research proposal, titled "Pediatric care in chiropractic clinics in South Africa". I have read through yours and Dr. Pollentier's paper, titled "The scope of chiropractic practise: A survey of chiropractors in the UK". I found this paper very interesting; it sparked much enthusiasm in me. I would like to conduct something similar in South Africa but more specific to pediatrics.

I am writing this email to request your permission to use certain parts of the questionnaire that you constructed for your research. I would like to use the section you had specific to children and I would also like to construct a similar demographics section to yours. I will not be copying these directly; instead I will word it in my own words and construct it in a different manner.

If you would like to know more about my research, I will be more then willing to share it with you or forward my proposal or questionnaire to you.

Thank you for your time!

Kirsten Evans

6th year chiropractic intern at the Durban University of Technology

From: JLangworthy JLangworthy@aecc.ac.uk

To: Kirsten Evans <kirstevans52@gmail.com>

Date: Thu, May 12, 2011 at 4:45 PM

Subject: RE: Pediatric Research

Dear Kirsten, Many thanks for your email. I am pleased to hear that our paper was of interest and has encouraged you to think about some of the issues in relation to your own project. As such, I would be very happy for you to base parts of your questionnaire on the one that Dr. Pollentier and I constructed. I wish you every success with the project and would indeed very much like to see the questionnaire and proposal when available. Good luck. Kind regards. Jennifer Langworthy I wish you every success with the project and would indeed very much like to see the questionnaire and proposal when available.

Good luck.

Kind regards.

Jennifer Langworthy

APPENDIX D

LETTER FROM 3rd PARTY

From: Kirsten Evans kirstevans52@gmail.com

To: lindat@dut.ac.za

Date: Wed, Aug 10, 2011 at 3:23 PM

Subject: Research

Hi Linda,

Just want to confirm that you are still willing to help me out with my research i.e. collecting my returned questionnaires (which will be addressed as follows: Miss Kirsten Evans c/o The Research Administrator, Department of Chiropractic, DUT, P.O. Box 1334, Durban 4000) and ticking them off against a list of names, which will remain anonymous to me.

Thank you so much!

A reply to this email is enough for the confirmation and I will add it to my research documents.

Thanks again!

Kirsten Evans

From: Linda Twiggs lindat@dut.ac.za

To: Kirsten Evans <kirstevans52@gmail.com>

Date: Wed, Aug 10, 2011 at 3:47 PM

Subject: RE: Research

Hi Kirsten

Not a problem, I don't mind doing this for you but please bear in mind as I mentioned earlier that if I am away from the clinic for any duration, the envelopes may have to wait until I return

Many thanks

Linda

APPENDIX F

LETTER OF INFORMATION-CHIROPRACTORS

Letter of Information

Dear Participant,
I would like to welcome you into my study and thank you for your interest. I am a student pursuing a Masters Degree at the Durban University of Technology.

Study Title:
The status of paediatric care in chiropractic practices in KwaZulu-Natal.

Name of Supervisor:	Dr C.M. Korporaal M.Tech: Chiropractic, CCFC, CCSP, ICSSD
Name of Research Student:	Kirsten Evans
Name of Institution:	Durban University of South Africa

Purpose of the study:
This study will determine chiropractors' practice characteristics with particular reference to paediatric patients. In addition this study seeks to determine whether any correlations exist in the assessment, management and treatment procedures chiropractors use in addressing various paediatric conditions.

The data obtained by means of this questionnaire will allow further assessment of the role of chiropractic in KwaZulu-Natal with respect to the paediatric patient. The questions are concerned with the demographics of your practice, your practice characteristics with regards to paediatric patients and your perception on the scope of paediatric care. The questionnaire will only take a few minutes to complete, as most of the questions require you to tick the appropriate answer. There are only a few short written responses required.

Benefits:
Once the study has been completed you will have access to the results. You may also choose the option of receiving information on the chiropractic profession which may be useful to both you and your patients.

Risks/Discomforts and costs:
There are no risks/discomforts or cost involved from your participation in the study.

Confidentiality:
As with all questionnaires, the information which you will furnish will be treated in the utmost confidence. The questionnaires will be delivered to the Durban University of Technology and the researcher will then receive the questionnaires. The questionnaires will be separated from the letters of informed consent by the researcher thereby the identities of the recipients will not be known. You are free to withdraw from the study at any time. Please return the questionnaire in the provided envelope.

If you have any problems or complaints please contact myself (031 373 2205), my supervisor (031 372 2611) or The Health Research Ethics Committee (031 373 2900).
Your time, opinion and assistance in this project is invaluable and greatly appreciated.

Yours sincerely,

Kirsten Evans	Dr. C.M. Korporaal M.Tech:Chiropractic, CCFC, CCSP, ICSSD
Researcher	Supervisor

Statement of Agreement to Participate in this Research Study: (I,.....(full name), have read this document in its entirety and understand its content. 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. I, therefore, voluntarily agree to participate in this study.

Name(print):.....Signature:.....Date:.....
Researcher:.....Signature:.....Date:.....
Supervisor:.....Signature:.....Date:.....

APPENDIX G

CODE OF CONDUCT

Code of Conduct

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 H

CONFIDENTIALITY STATEMENT

<u>IMPORTANT NOTICE:</u> THIS FORM IS TO BE READ AND FILLED IN BY EVERY MEMBER PARTICIPATING IN THE FOCUS GROUP, BEFORE THE FOCUS GROUP MEETING CONVENES.

CONFIDENTIALITY STATEMENT – FOCUS GROUP 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 organisation 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:

Focus Group Member: _____ Signature:_____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature:_____

APPENDIX I

INFORMED CONSET-EXPERT GROUP

INFORMED CONSENT FORM

(TO BE COMPLETED BY THE PARTICIPANTS OF THE FOCUS GROUP)

DATE:

TITLE OF RESEARCH PROJECT :

Pediatric care in chiropractic clinics in South Africa

NAME OF SUPERVISOR : Dr C.M Korporaal M.Tech:Chiropractic, CCFC, CCSP, ICSSD

NAME OF RESEARCH STUDENT : Kirsten Evans

Please circle the appropriate answer

	YES/NO
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 Durban University 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 J

INFORMED CONSENT-CHIROPRACTORS

INFORMED CONSENT FORM

DATE:

TITLE OF RESEARCH PROJECT :
The perceived status of paediatric care in chiropractic practices in South Africa

NAME OF SUPERVISOR : Dr C.M Korporaal
M.Tech: Chiropractic, CCFC, CCSP, ICSSD
(031 3732611)

NAME OF RESEARCH STUDENT : Kirsten Evans
(0827703695)

Please circle the appropriate answer

	YES/NO
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 Durban University 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:

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

APPENDIX K

COMMUNICATION WITH STATISTICIAN

From: Kirsten Evans kirstevans52@gmail.com

To: hammondmg@telkomsa.net

Date: Thu, Jul 21, 2011 at 2:50 PM

Subject: Research

Hi Dr Hammond,

My name is Kirsten Evans, I am a 6th year chiropractic student at D.U.T and I am busy with the proposal for my research. Dr. Korporaal advised me to get hold of you.

My topic is : "The status of paediatric care in chiropractic clinics in South Africa."

It is a quantitative, cross-sectional study, utilizing a questionnaire. The questionnaire will be given to chiropractors practising in South Africa.

I have attached my methodology so that you can get a better idea of my research.

I need a return response for the questionnaires, my sample population is 598. Please could you help me out where possible.

I hope I have provided you with enough information!

Many thanks for your time and effort.

Kirsten Evans

0827703695

From: Dr MG Hammond hammondmg@telkomsa.net

To: Kirsten Evans <kirstevans52@gmail.com>

Cc: Korporaal Charmaine <charmak@dut.ac.za>

Date:Tue, Jul 26, 2011 at 3:50 PM

Dear Kirsten

The sample size should be satisfactory (depending on response).

The data can be analysed using frequency tables, averages and measures of dispersion. These are best visualised using graphical representations such as histograms or pie charts. Depending on the size of each category, it may be preferable to use class intervals.

It may be informative to do comparisons eg between provinces or urban / rural.

I will have a better idea when I have seen the questionnaire that you ear going to use.

Dr MG Hammond

From: Kirsten Evans kirstevans52@gmail.com

To: Dr MG Hammond <hammondmg@telkomsa.net>

Cc : Charmaine Maria Korporaal <charmak@dut.ac.za>

Date: Wed, Jul 27, 2011 at 1:15 PM

Subject: Re:

Hi Dr. Hammond,

Thank you for your reply and advice.

I have attached a copy of my questionnaire.

I also just needed to find out what my return rate must be in order to make my research viable. What percentage of the sample group must have replied by 2 months, before I can continue?

Many thanks,

Kirsten Evans

From: Dr MG Hammond hammondmg@telkomsa.net

To: Kirsten Evans <kirstevans52@gmail.com>

Date: Thu, Jul 28, 2011 at 10:29 PM

Dear Kirsten

I was going to suggest 20% (about 120) but your questionnaire is very detailed with many variables so that analyses may be inconclusive for some variables.

Therefore 33% (200) will be more meaningful.

Dr MG Hammond

From: Kirsten Evans kirstevans52@gmail.com

To: Michael Graham Hammond <drmghammond@gmail.com>

Date: Wed, Aug 31, 2011 at 4:48 PM

Subject: research

Hi Dr. Hammond,

I am busy with the proposal for my research and need to get a quote

from you so that I can work it into my budget, would this be okay?

I also wanted to find out if it would be easier to meet with you to

discuss my research and the questionnaire?

I have changed a few things in my questionnaire and have attached it.

My topic is now : The perceived status of paediatric care in

chiropractic practices in South Africa.

Many thanks,

Kirsten

From: Michael Graham Hammond drmghammond@gmail.com

To: kirstevans52@gmail.com

Date: Sun, Sep 4, 2011 at 5:52 PM

Dear Kirsten

The rate for biostatistical analysis is R450 per hour. Most projects budget for about 8 hours but each project may vary.

Your questionnaire is very detailed. Nearly all categorical data which can be presented graphically. If anything interesting emerges then we can consider further analysis.

I will be in touch later to arrange a time to meet.

Regards

Dr MG Hammond

APPENDIX L
PRE-EXPERT GROUP QUESTIONNAIRE

Questionnaire

DEMOGRAPHICS								
1	What is your Gender	MALE			FEMALE			
2	How old are you ?	Years						
3	From which University did you graduate as a chiropractor?	DUT	CMCC	Cleveland	RMIT	AECC	LACC-SCUHS	Palmer
		UQTR	NWHSU	Life College	Murdoch	NUHS	WIOC	Odense
		UJ	Macquarie	Other :				
4	In which year did you graduate as a chiropractor?							
5	Do you have a qualification in a field of healthcare other than chiropractic?	No	Yes	If yes (please specify):				
6	How long have you been practising as a chiropractor?	years						
7	What is your main area of chiropractic work?	Full-time practise	Part-time practise	Education	Research			
		Other (please specify):						
8	What type of practise do you work in?	Chiropractic Group Practice	Solo practice	Multidisciplinary practice				
9	If in a multidisciplinary practice, what other health care professionals are you in practise with?							
10	To which of the following association(s) do you belong?	CASA	AHPCSA	HPCSA	HSA	SAMA		
		Other (please specify):						
PRACTISE CHARACTERISTICS								
11	Do you have any specific training/qualification(s) in pediatrics? (if yes, proceed with the questionnaire. If no, proceed to question 14).	No	Yes					
12	What specific training/ qualification(s) do you have?							
13	What was the length of the training?							
14	What is the average number of patients you see in your practise per week?	New patients	Repeat/ follow-up patients					
15	What percentage of this number are pediatric patients? (If less than 10 % proceed to question 41).	%						
16	How long have you been treating pediatric patients?							
17	What percentage of your pediatric patients are male/female?	Male %	Female %					
18	What is the most common age/ age range of your pediatric patients?							
19	What are the most common presenting complaints? (Can name up to 5).							
20	What common pediatric conditions do you treat in your practise? (Can name up to 5).							
21	What is the average length you spend with a new pediatric patient?	Hour(s)						
22	What is the average length of your follow-up with a pediatric patient?	Hour(s)						

23	How many of your pediatric patients come from referral? (%)					
24	From whom do most of the referrals come from?					
25	Do you do co-management care with other appropriate health care providers?.				No	Yes
26	If yes to the above, name the most common health care providers you deal with.					
27	What condition(s), in your opinion, warrants co-management with other health care providers?					
28	What condition(s) do you commonly refer out to other healthcare providers?					
29	How many times would you see a pediatric patient before deciding chiropractic treatment is not helping?					
30	Do you recommend childhood immunizations?	No. Why ?			Yes. Why?	
31	What actions would you immediately take if presented with a 2-week-old neonate with a temperature of 38.4°C.					
SCOPE OF PRACTISE						
32	What diagnostic tests do you perform when seeing a new paediatric patient?	Vitals	Neurologic examination	Orthopaedic examination	Respiratory examination	
		Radiographic examination	Laboratory tests	Cardiovascular examination	Other:	
33	What diagnostic tests do you perform when seeing a follow-up pediatric patient?	Vitals	Neurologic examination	Orthopaedic examination	Respiratory examination	
		Radiographic examination	Laboratory tests	Cardiovascular examination	Other:	
34	In your practise, when would you send for a radiographic examination of the pediatric patient?					
35	What are some of your considerations before treating a pediatric patient with manual procedures?					
36	What chiropractic techniques do you utilize in your practise?	SMT	Diversified	NIP	Gonstead	Thompson's Technique
		Cranial technique	Activator methods	Torque release technique	Sacro-occipital technique	
		Other				

37	Which is the most common technique used in your practise?					
38	Do you use any form of complementary alternative therapies / non manipulative therapies when treating?	No	Yes	If yes (please specify):		
39	Do you dispense any herbal remedies/ supplements in your practise?	No	Yes	If yes (please specify):		
40	Have your pediatric patients experienced any adverse effects during consultation?	No	Yes	If yes (please specify):		
41	Pediatric conditions considered effectively treatable by chiropractic methods (Please tick appropriate boxes).	STRONGLY DISAGREE	DISAGREE	NOT SURE	AGREE	STRONGLY AGREE
	Infantile colic					
	Gastrointestinal disorders					
	Childhood asthma					
	Childhood(nocturnal) enuresis					
	Otitis					
	Childhood epilepsy and/or seizure disorders					
	Childhood attention deficit / hyperactivity disorder (ADHD)					
	Childhood cerebral palsy					
	Musculoskeletal conditions (e.g. acute LBP, scoliosis, neck pain, headache)					
	Muscular conditions(e.g. sprains and strains)					

APPENDIX M
PRE-PILOT QUESTIONNAIRE

Appendix 12
Pre-pilot questionnaire

Please fill in the following questionnaire accordingly:

DEMOGRAPHICS											
1	Gender?	Male			Female						
2	Age?	years									
3	Do you have any children?				No			Yes			
4	From which University did you graduate as a chiropractor?	DUT	CMCC	Cleveland	Macquarie	RMIT	AECC	Palmer	UQTR	NWHSU	SCUHS
		UJ	Odense	Murdoch	Life College	NUHS	WIOC	Other :			
5	In which year did you graduate as a chiropractor?										
6	Do you have a qualification in a field of healthcare other than chiropractic?				No			Yes			
					If yes (please specify):						
7	How long have you been practicing as a chiropractor?										
8	Do you have any specific training/qualification(s) in paediatrics?				No			Yes			
9	If yes, name your paediatric qualification(s)?										
10	What was the duration of your paediatric training/ qualification(s)?										
11	How do you spend your professional time? (can tick more than one option)	Full-time practice			Part-time practice			Education			Research
		Other (please specify):									

12	If in practice, what type of practice do you work in?	Chiropractic group practice			Solo practice			Multidisciplinary practice
13	If in a multidisciplinary health care facility, what other health care professionals do you- practice with? (can tick more than one option)	Biokineticist		Dentist	G.P			Physiotherapist
		Homeopath		Other (please specify):				
14	What is your main area of chiropractic work?	Animals	Sports	Community service	Geriatrics	Lecturer	Mixed population	Paediatrics
		Other (please specify):						
15	To which council do you belong? (can tick more than one)	AHPCSA			HPCSA			
16	To which of the following association (s) do you belong?	CASA	HPCSA	HSA	IPA	SAPA	SASMA	
		Other (please specify):						
PRACTICE CHARACTERISTICS								
17	On average, what is the total number of patients you see in your practice per week?	New patients			Repeat / follow-up patients			
18	What percentage of this number are paediatric patients?	%						
19	How long have you been treating paediatric patients?	< 1 year	< 3 years	< 5 years	< 8 years	< 10 years	>10 years	
20	Are your paediatric patients predominantly female or male?	Female	Male	No dominance				
21	What is the most common age range of your paediatric	0-6 weeks	6 weeks-3 months	3-6 months	6-12 months			

	patients?	12-18 months	18-24 months	2–7 years	7-14 years		
22	Why do parents bring their children to you? (tick the most common reasons)	Advice	Back/neck pain	Bed wetting	Birth trauma	Check-ups and/or Wellness	Crying
		Ear infection	Fever	Growth and development	Growing pains	Irritable	Postural problems
		Sleeping problems	Respiratory challenges	Sports injuries	Spinal and / or extremity pain	Stomach-related issues	Vomiting
		Other (please specify):					
23	What common paediatric conditions do you treat in your practice? (can tick more than one option)	ADHD	Asthma	Autism	Cerebral palsy		
		Congenital anomalies of the spine/extremities	Epilepsy	Gastrointestinal disorders	Headaches		
		Irritable baby syndrome(colic)	Musculoskeletal conditions(e.g. LBP, neck pain)	Muscular conditions(e.g. sprains and strains)	Nocturnal enuresis		
		Otitis media	Reflux	Scoliosis	Skin conditions		
		Other (please specify):					
24	What is the average length of time you spend with a new paediatric patient?	Minute(s)					
25	What is the average length of time you spend with a follow-up paediatric patient?	Minute(s)					
26	How many of your paediatric patients come from referral? (%)	%					
27	From whom do most of your referrals come from?	Biokineticists	G.P's	Homeopaths	Other chiropractors	Orthopaedic Surgeons	Paediatricians	Physiotherapists
		Other (please specify):					
28	How many of your paediatric patients come from word of mouth?	%					

29	Do you co-manage your paediatric patients with other appropriate health care providers?					No		Yes
30	If yes to the above, what are the most common health care providers you deal with. (can tick more than one option)	Biokineticists	G.P's	Homeopaths	Other chiropractors	Orthopaedic Surgeons	Paediatricians	Physiotherapists
		Other (please specify):						
31	What condition(s), in your opinion, warrant co-management with other health care providers?	ADHD		Asthma		Autism		Cerebral palsy
		Congenital anomalies of the spine/ extremities		Epilepsy		Gastrointestinal disorders		Headaches
		Irritable baby syndrome(colic)		Musculoskeletal conditions(e.g. LBP, neck pain)		Muscular conditions(e.g. sprains and strains)		Nocturnal enuresis
		Otitis media		Reflux		Scoliosis		Skin conditions
		Other (please specify):						
32	What condition(s) do you commonly refer to other healthcare providers? (can tick more than one option)	ADHD		Asthma		Autism		Cerebral palsy
		Congenital anomalies of the spine/ extremities		Epilepsy		Gastrointestinal disorders		Headaches
		Irritable baby syndrome(colic)		Musculoskeletal conditions(e.g. LBP, neck pain)		Muscular conditions(e.g. sprains and strains)		Nocturnal enuresis
		Otitis media		Reflux		Scoliosis		Skin conditions
		Other (please specify):						
33	On what basis would you refer this/these condition(s)?							
34	On average, how many	1 consultation	2 consultations	3 consultations	4-5 consultations	6-7 consultations	>7 consultations	

	consultations would see a paediatric patient for a certain condition?	Other (please specify):					
35	How many times would you see a paediatric patient before deciding chiropractic treatment is not helping?	1 consultation	2 consultations	3 consultations	4-5 consultations	6-7 consultations	>7 consultations
		Other (please specify):					
36	Do you advise parents on childhood immunizations?	No	Yes				
37	What is your personal preference regarding childhood immunizations?						
38	What actions would you immediately take if presented with a 2-week-old neonate with a temperature of 38.4°C.	Perform a spinal adjustment	Refer to a G.P	Refer to a Homeopath			
		Refer to a Paediatrician	Take a case history and then refer	Take a case history and perform further physical examinations before deciding whether to refer or not			
		Other (please specify):					
39	How confident are you with treating paediatric patients?	Very confident	Quite confident	Confident	Not very confident	Unconfident	Decline to answer
40	How would you rate your clinical competence in the treatment of paediatric patients? (Rate out of 10, with 1 being extremely incompetent)	1	2	3	4	5	6	7	8	9	10

SCOPE OF PRACTISE						
41	What assessments do you routinely perform when seeing a new paediatric patient? (can tick more than one option)	Neonate (1 month of life)	Infant (1 year of life)	Toddler (12-24 months)	Pre-Schooler (2-5 years)	Schooler (from 6 years until the child leaves school)
	Abdominal examination					
	Cardiovascular examination					
	Case History					
	Dermatological examination					
	Full physical examination (incl. eyes, nose, throat, ears)					
	Growth parameters					
	Laboratory tests					
	Neurologic examination					
	Orthopaedic examination					
	Radiographic examination					
	Respiratory examination					
	Vitals					
42	What assessments do you routinely perform when seeing a follow-up paediatric patient? (can tick more than one option)	Neonate (1 month of life)	Infant (1 year of life)	Toddler (12-24 months)	Pre-Schooler (2-5 years)	Schooler (from 6 years until the child leaves school)

	Abdominal examination					
	Cardiovascular examination					
	Case History					
	Dermatological examination					
	Full physical examination (incl. eyes, nose, throat, ears)					
	Growth parameters					
	Laboratory tests					
	Neurologic examination					
	Orthopaedic examination					
	Radiographic examination					
	Respiratory examination					
	Vitals					

43	In your practice, when would you send for a radiographic examination of the paediatric patient? (can tick more than one option)	Assessment of scoliosis	Clinically suspected orthopaedic conditions	Done with every new patient	History of trauma
		Malignancies	Suspicion of a serious pathology	To determine if there are contraindications to manipulation	Trauma-induced injury (fractures, dislocations)
		Unexplained bone pain	Other (please specify):		

44	What are some of your considerations before treating a paediatric patient with manual procedures? (can tick more than one option)	Flexibility of joints	History of trauma	Patient preferences	Patient size
		Red flags	Structural development	Other (please specify):	

45	What chiropractic techniques do you utilize in your practice when treating paediatric patients? (can tick more than one option)	Activator methods	Applied kinesiology	Bio-energetic synchronization (BEST)	Cox flexion distraction	Cranial	Diversified	Gonstead
		Logan Basic	Mobilization	NIP adjustment techniques	Sacro-occipital		Toggle recoil	Torque release
		Other:						
46	Which is the most common technique used in your practice when treating paediatric patients?							
47	Do you use any form of non-manipulative therapies when treating paediatric patients?	No	Yes					
48	If yes to the above, what non-manipulative therapies do you use? (can tick more than one option)	Acupuncture	Cryotherapy	Dry needling	Electrotherapy			
		Hydrotherapy	Soft tissue therapy(including massage, myofascial release and ischaemic compression)	Taping	Traction	Exercise programs (including stretching,strengthening and proprioception)		
		Other (please specify):						
49	Do you recommend any form of complementary and alternative therapy (CAM) when treating paediatric patients?	No	Yes					
50	If yes to the above, which of the complementary and alternative therapies do you recommend when treating your paediatric patients? (can tick more than one option)	Acupuncture	Allopathic medicine	Ayurvedic medicine	Biofeedback	Dietary supplements	Herbalism	
		Homeopathy	Hypnosis	Magnetic therapy	Massage	Meditation	Naturopathy	
		Osteopathy	Pilates	Traditional Chinese medicine	Yoga	Other:		

51	Paediatric conditions considered effectively treatable by chiropractic methods (Please tick appropriate boxes).	STRONGLY DISAGREE	DISAGREE	NOT SURE	AGREE	STRONGLY AGREE
	Acid reflux (GERD)					
	Allergies					
	Autism					
	Brachial plexus injuries					
	Childhood asthma					
	Childhood epilepsy and/or seizure disorders					
	Childhood attention deficit / hyperactivity disorder (ADHD)					
	Childhood cerebral palsy					
	Childhood(nocturnal) enuresis					
	Common cold					
	Developmental delays					
	Dysmennorrhea					
	Eczema					
	Endocrine problems					
	Gait abnormalities					
	Headache					
	Immune function					
	Irritable baby syndrome (colic)					
	Learning problems					

	Musculoskeletal conditions (e.g. acute LBP, scoliosis, neck pain)					
	Muscular conditions(e.g. sprains and strains)					
	Otitis					
	Sinusitis					
	Sleep problems					
	Torticollis					
	Tourette’s syndrome					
	Upper respiratory conditions					
	Vision problems					

APPENDIX N
POST-PILOT QUESTIONNAIRE

Please fill in the following questionnaire accordingly:

DEMOGRAPHICS							
1	Age?	years	2	Gender?	Female	Male	
3	Do you have any children?			No	Yes		
4	From which University did you graduate as a chiropractor?						
5	In which year did you graduate as a chiropractor?						
6	Do you have a qualification in a field of healthcare other than chiropractic?			No	Yes		
				If yes (please specify):			
7	How long have you been practicing as a chiropractor?						
8	Do you have any specific training/qualification(s) in paediatrics?			No	Yes		
9	If yes, name your paediatric qualification(s)?						
10	What was the duration of your paediatric training/ qualification(s)?						
11	What type of practice do you work in?	Chiropractic group practice		Solo practice		Multidisciplinary practice	
12	If in a multidisciplinary health care facility, what other health care professionals do you practice with? (can tick more than one option)	Biokineticist	Dentist	G.P		Physiotherapist	
		Homeopath	N/A	Other (please specify):			
13	What is your main area of chiropractic work?	Animals	Sports	Community service	Geriatrics	Lecturer	Mixed population	Paediatrics
		Other (please specify):						
PRACTICE CHARACTERISTICS							
14	On average, what is the total number of patients you see in your practice per week?	New patients		Repeat / follow-up patients			
15	What percentage of this number are paediatric patients?	%					
16	How long have you been treating paediatric patients?	< 1 year	< 3 years	< 5 years	< 8 years	< 10 years	>10 years
17	Are your paediatric patients predominantly female or male?	Female	Male	No dominance			
18	What is the most common age range of your paediatric patients?	0-6 weeks	6 weeks-3 months	3-6 months	6-12 months		
		12-18 months	18-24 months	2–7 years	7-14 years		
19	Why do parents bring their children to you? (tick the most common reasons)	Advice	Back/neck pain	Bed wetting	Birth trauma	Check-ups and/or Wellness	Crying
		Ear infection	Fever	Vomiting	Growing pains	Irritable	Postural problems
		Sleeping problems	Respiratory challenges	Sports injuries	Spinal and / or extremity pain	Stomach-related issues	Growth and development
		Other (please specify):					

		20. What common paediatric condition(s) do you treat in your practice?	21. What condition(s), in your opinion, warrant co-management with other health care providers?	22. What condition(s) do you commonly refer to other healthcare providers?
	ADHD			
	Asthma			
	Autism			
	Cerebral palsy			
	Congenital anomalies of the spine/extremities			
	Epilepsy			
	Gastrointestinal disorders			
	Headaches			
	Irritable baby syndrome(colic)			
	Musculoskeletal conditions(e.g. LBP, neck pain)			
	Muscular conditions(e.g. sprains and strains)			
	Nocturnal enuresis			
	Otitis media			
	Reflux			
	Scoliosis			
	Skin conditions			

23	What is the average length of time you spend with a new paediatric patient?							Minute(s)
24	What is the average length of time you spend with a follow-up paediatric patient?							Minute(s)
25	How many of your paediatric patients come from word of mouth?							%
26	How many of your paediatric patients come from referral? (%)							%
27	From whom do most of your referrals come from?	Biokineticists	G.P's	Homeopaths	Other chiropractors	Orthopaedic Surgeons	Paediatricians	Physiotherapists
		Other (please specify):						
28	Do you co-manage your paediatric patients with other appropriate health care providers?					No	Yes	
29	If yes to the above, what are the most common health care providers you deal with. (can tick more than one option)	Biokineticists	G.P's	Homeopaths	Other chiropractors	Orthopaedic Surgeons	Paediatricians	Physiotherapists
		Other (please specify):						
30	How many times would you see a paediatric patient before deciding chiropractic treatment is not helping?	1 consultation	2 consultations	3 consultations	4-5 consultations	6-7 consultations	>7 consultations	
		Other (please specify):						
31	Do you advise parents on childhood immunizations?					No	Yes	
32	What is your personal preference regarding childhood immunizations?					Beneficial	Not beneficial	Decline to answer

33	What actions would you immediately take if presented with a 2-week-old neonate with a temperature of 38.4°C.	Perform a spinal adjustment	Refer to a G.P	Refer to a Homeopath
		Refer to a Paediatrician	Take a case history and then refer	Take a case history and perform further physical examinations before deciding whether to refer or not
		Other (please specify):		

34	How confident are you with treating paediatric patients?	Very confident	Quite confident	Confident	Not very confident	Unconfident	Decline to answer
35	How would you rate your clinical competence in the treatment of paediatric patients? (Rate out of 10, with 1 being extremely incompetent)	1 ---------- 10					

SCOPE OF PRACTISE

	36. What assessments do you routinely perform when seeing a new paediatric patient?	37. What assessments do you routinely perform when seeing a follow-up paediatric patient?
Abdominal examination		
Cardiovascular examination		
Case History		
Dermatological examination		
Full physical examination (incl. eyes, nose, throat, ears)		
Growth parameters		
Laboratory tests		
Neurologic examination		
Orthopaedic examination		
Radiographic examination		
Respiratory examination		
Vitals		
Orthopaedic examination		
Radiographic examination		
Respiratory examination		
Vitals		

38	In your practice, when would you send for a radiographic examination of the paediatric patient? (can tick more than one option)	Assessment of scoliosis	Clinically suspected orthopaedic conditions	Done with every new patient	History of trauma
		Malignancies	To determine if there are contraindications to manipulation	Suspicion of a serious pathology	Trauma-induced injury (fractures, dislocations)
		Unexplained bone pain	Other (please specify):		

39	What chiropractic techniques do you utilize in your practice when treating paediatric patients? (can tick more than one option)	Activator methods	Applied kinesiology	Bio-energetic synchronization (BEST)	Cox flexion distraction	Cranial	Diversified	Gonstead
		Logan Basic	Mobilization	NIP adjustment techniques	Sacro-occipital	Thompson's	Toggle recoil	Torque release
		Other:						

40	Which is the most common technique used in your practice when treating paediatric patients?				
41	Do you use any form of non-manipulative therapies when treating paediatric patients?			No	Yes
42	If yes to the above, what	Acupuncture	Cryotherapy	Dry needling	Electrotherapy	Exercise programs (including

	non-manipulative therapies do you use? (can tick more than one option)	Hydrotherapy	Soft tissue therapy (including massage, myofascial release / ischaemic compression)	Taping	Traction	stretching, strengthening and proprioception)
		Other (please specify):				
43	Do you recommend any form of complementary and alternative therapy (CAM) when treating paediatric patients?				No	Yes
44	If yes to the above, which complementary and alternative therapies do you recommend when treating your paediatric patients? (list)					

45	Paediatric conditions considered effectively treatable by chiropractic methods (Please tick appropriate boxes).	STRONGLY DISAGREE	DISAGREE	NOT SURE	AGREE	STRONGLY AGREE
	Acid reflux (GERD)					
	Allergies					
	Autism					
	Brachial plexus injuries					
	Childhood asthma					
	Childhood epilepsy and/or seizure disorders					
	Childhood attention deficit / hyperactivity disorder (ADHD)					
	Childhood cerebral palsy					
	Childhood(nocturnal) enuresis					
	Common cold					
	Developmental delays					
	Dysmennorrhea					
	Eczema					
	Endocrine problems					
	Gait abnormalities					
	Headache					
	Immune function					
	Irritable baby syndrome (colic)					
	Learning problems					
	Musculoskeletal conditions (e.g. acute LBP, scoliosis, neck pain)					
	Muscular conditions(e.g. sprains and strains)					
	Otitis					
	Sinusitis					
	Sleep problems					
	Torticollis					
	Tourette’s syndrome					
	Upper respiratory conditions					
	Vision problems					

APPENDIX O

South African Statistics

(Available on DVD)

APPENDIX P

Expert Group Meeting

(Available on DVD)