THE PERCEPTION OF VETERINARIANS TOWARDS CHIROPRACTIC AND THE CHIROPRACTIC TREATMENT OF ANIMALS IN SOUTH AFRICA.

CHARLES BRYCE TAVERNER

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By

Charles Bryce Taverner

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Durban University of Technology

I, **Charles Bryce Taverner**, do declare that this dissertation is representative of my own work in both conception and execution (except where acknowledgements indicate to the contrary)

Signed:_____. _____.

Date

Approved for Final Submission

Signed:_____. _____.

Supervisor: Dr. G. Matkovich; M Tech: Chiropractic **Date**

Signed:_____. _____.

Co- Supervisor: Dr. C. Korporaal; M Tech: Chiropractic **Date**

CCFC, CCSP, ICSSD

DEDICATION

To my parents, Rod and Ady Taverner, sister Chloe, and Granny Gor-Gor for their endless love, support and understanding.

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ABSTRACT

Introduction: The chiropractic treatment of animals has been integrated into the veterinary health care systems of various countries outside of South Africa. While South Africa has seen the integration of the chiropractic treatment of humans into its health care system, the chiropractic treatment of animals has been slow to develop in this country. This is evident in the lack of a professional association or education system concerning the chiropractic treatment of animals in South Africa. Veterinarians represent the primary contact for animals to receive chiropractic care through referral in South Africa. It is therefore important to ascertain the knowledge and perception that veterinarians have towards chiropractic and the chiropractic treatment of animals as their views and participation could influence the future integration of chiropractic into the veterinary health care system of South Africa.

Primary Objective: To determine the perception of veterinarians towards chiropractic and the chiropractic treatment of animals in South Africa.

Methods: A questionnaire was set up on an Internet based website. An electronic mail (e-mail) was then sent to all the South African veterinarians with a functional e-mail address registered with the South African Veterinary Council (SAVC), requesting participation in this research. This amounted to 1841 veterinarians. The veterinarians who met the inclusion criteria were then able to access and complete the questionnaire electronically.

Results: A response rate of 13.8% was achieved. The respondents were predominantly white (87.1%) with an average age of 41.5 years and a nearly even split between male and female. The veterinary respondents expressed a poor level of confidence relating to their knowledge of chiropractic and its application to the health care of animals. The objective knowledge scores for chiropractic and the chiropractic treatment of animals were 65% and 63%, respectively, giving a reasonably high overall knowledge score of 64%. It was found that the knowledge scores were stronger in the respondents who had

personally utilized a chiropractor as well as being stronger regarding human chiropractic and overall chiropractic knowledge in those who had referred an animal to a chiropractor.

The average score for perceptions of the respondents was relatively low (48%), but positive correlations were found between the knowledge and perceptions of the respondents regarding chiropractic and \ or the chiropractic treatment of animals.

It was found that the majority of the veterinarian respondents (79.9%) felt that chiropractors should only be allowed to practice on animals in South Africa under referral from a veterinarian. The majority of respondents (62.4%) further believed that the chiropractic treatment of animals should be governed by the South African Veterinary Council (SAVC) and 57.7 % of the respondents indicated that they would be in favour of the chiropractic treatment of animals being affiliated to the South African Veterinary Association (SAVA).

It was determined that 84.4% of the respondents were in support of the formation of a course concerning the chiropractic treatment of animals in South Africa, with 49.1% further stating they would be interested in attending such a course. The majority of respondents indicated that they believed both veterinarians and chiropractors should administer (77.2%) and be able to attend (75.1%) such a course.

Conclusion: This study has established a knowledge base that will facilitate greater understanding of the perceptions that South African veterinarians have towards chiropractic and the chiropractic treatment of animals as well as the part they perceive chiropractic to play in the South African veterinary health care system. The various outcomes should be noted when considering the future education of South African veterinarians regarding chiropractic, as well as the development of the chiropractic treatment of animals in South Africa.

GLOSSARY

Animal/Veterinary Chiropractic: The examination, diagnosis, and treatment of non-human animals through manipulation and \ or adjustments of specific joints and cranial sutures (American Veterinary Medical Association, 1996).

The science, art and philosophy concerned with good health of animals through restoration and maintenance of a properly functioning neuromusculoskeletal system, without the use of drugs or surgery. Veterinary chiropractic care is a manual therapy, used for many health and performance problems in animals. It focuses on the biomechanical dysfunction of the spine and its effect on the entire nervous system throughout the body (International Veterinary Chiropractic Association, 2008).

Chiropractic: The health care profession which includes the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system, and the effect of these disorders on the nervous system and general health. Manual treatment is emphasized and includes spinal adjustment and other joint and soft tissue manipulation (World Federation of Chiropractic, 2001).

Complementary and Alternative Medicine (CAM): Refers to a broad set of health care practices that are not part of a countries own tradition, or not integrated into its dominant health care system (World Health Organisation, 2005).

Complementary and Alternative Veterinary Medicine (CAVM) / Holistic Veterinary Medicine: The comprehensive approach to veterinary health care employing, but not limited to, alternative diagnostic and therapeutic modalities, including the principles and practice of acupuncture and acutherapy, botanical

medicine, chiropractic, homoeopathy, massage therapy, neutroceuticals and physical therapy (American Veterinary Medical Association, 1996).

Knowledge: The result or product of knowing; information or understanding acquired through experience; practical ability or skill (Crowther, 1997).

Manipulation: Often referred to as adjustments, which are performed by hand and consist of a high velocity; low amplitude thrust being applied to specific vertebrae in the spine or peripheral joints (Bergmann and Petersen, 2002).

Perception: The way in which things are seen, understood to be like, and interpreted as (Crowther, 1997).

Respondents: The veterinarians who answered the research questionnaire related to this research and subsequently contributed data to the analysis of the objectives related to this research.

Technikon Natal / Durban Institute of Technology: Previous names for what is now the Durban University of Technology (DUT).

ABBREVIATIONS UTILIZED IN THIS DISSERTATION

ACA	**:**	American Chiropractic Association
AHPCSA	**:**	Allied Health Professions Council of South Africa
AVCA	**:**	American Veterinary Chiropractic Association
AuVCA	**:**	Australian Veterinary Chiropractic Association
AVMA	**:**	American Veterinary Medical Association
CAM	**:**	Complementary and Alternative Medicine
CASA	**:**	Chiropractic Association of South Africa
CAVM	**:**	Complementary and Alternative Veterinary Medicine
DUT	**:**	Durban University of Technology
E-mail	**:**	Electronic mail
HSRC	**:**	Human Sciences Research Council
IVCA	**:**	International Veterinary Chiropractic Association
NCCAM	**:**	National Centre for Complementary and Alternative Medicine
NSAIDs	**:**	Non Steroidal Anti-Inflammatories
PACA	**:**	Pan African Chiropractic Association

SACA : South African Chiropractic Association

SAVA : South African Veterinary Association

SAVC : South African Veterinary Council

WFC : World Federation of Chiropractic

WHO : World Health Organization

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

As the use of complementary and alternative medicine (CAM) therapies has become more common in human medicine (Barnes *et al*., 2007; Hughes and Wingard, 2006; Wojcicowski *et al.,* 2006; Bodeker and Kronenberg, 2002; McFarland *et al*., 2002; Bodeker, 2001; Ernst and White, 2000), so too has this trend appeared in veterinary medicine (Shoen and Wynn, 1998). Alternative therapies, such as chiropractic, have gradually increased the diagnostic and treatment options available to veterinarians and their clients (Shoen and Wynn, 1998). Although alternative therapies have become more popular, they have yet to gain widespread acceptance by the public and mainstream medical establishment, including veterinary medicine (Shoen and Wynn, 1998 and American Veterinary Medical Association [AVMA], 1996).

In the human context, chiropractic has been integrated into South Africa's health care system as a recognised primary health care profession which deals with the diagnosis, treatment and prevention of disorders of the musculoskeletal system; and is recognised by the World Health Organisation (WHO) as a complementary and alternative medicine (CAM) (CASA, 2010; WHO, 2005). Chiropractic started in the United States of America in 1895; however, the first recognized course concerning the chiropractic treatment of animals was only developed in 1986, nearly a century later (Willoughby, 2002). This led to the establishment of the American Veterinary Chiropractic Association (AVCA), the first professional association purely concerning the chiropractic treatment of animals (AVCA, 2010).

Following this, the chiropractic treatment of animals was integrated into the veterinary health care systems of a number of other countries, including Australia, Germany, Britain and Canada (Australian Veterinary Chiropractic Association [AuVCA], 2010 and International Veterinary Chiropractic Association [IVCA], 2010), though has yet to be established as a recognised option for the health care of animals in South Africa. This is

evident in the lack of a recognised education system or professional association concerning the chiropractic treatment of animals in South Africa (Wimberely, 2010).

Furthermore, the current veterinary environment is such that for an animal to receive chiropractic care in South Africa, it is required that the animal has an initial consultation with a veterinarian with subsequent referral to a chiropractor (SAVC Act no. 40, 1995; SAVC Act 19, 1982). Veterinarians, therefore, represent the link between animals and chiropractic care in South Africa and can consequently have an influence on the integration of chiropractic into the South African veterinary health care system.

According to Langworthy and Smink (2000), the acceptance of chiropractic into a health care system, such as veterinary health care, is largely based on the knowledge and perception of the health care practitioners involved in this system. Thus, for chiropractic to integrate into the veterinary health care system of South Africa, the perception of South African veterinarians towards chiropractic and its perceived place in the field of animal health care needs assessment.

With this in mind, the concept of perception as well as the factors involved in forming a particular perception needs to be analyzed in understanding individual as well as group perceptions. This is principally related to the fact that a person's perception is the picture or interpretation that they acquire of the world that is personally meaningful to them. It is explained by Chaffe (1997) as the process of organising sensory information gathered by the five different senses in the body (taste, smell, sight, hearing and touch), processing this received information in the context of their personality and experience, to thereby add meaning to it to form a perception.

As a result, the subjectivity of perception is linked to, and influenced by, many factors which according to Berg and Theron (1999); Robbins (1996) and Hayes (1994), may be attributed to the perceiver (e.g. South African veterinarian), the environment / situation in which the object is being perceived (e.g. South African veterinary health care environment), or the characteristics of the object being portrayed (e.g. chiropractic

profession and the chiropractic treatment of animals). These are discussed further in the Literature Review (Chapter Two).

South Africa is a country greatly varying in culture, health care delivery schemes, education of health care professionals and inter-professional relations, differentiating it from more developed countries (Hupkes, 1990). As a result, South Africa has a unique environment and a distinctive set of circumstances that would have a different influence on an individual's perception when compared to individuals from other countries.

Therefore, this study aimed to document the perception of veterinarians towards chiropractic and the chiropractic treatment of animals in South Africa, as well as to document the factors that influence these perceptions.

1.2 Study Aim:

This study aimed to investigate the perception of veterinarians towards chiropractic and the chiropractic treatment of animals in South Africa.

1.3 Study Objectives:

Objective One: To document the following demographic data of the respondents:

- Personal demographic data;
- Educational background;
- Association membership information and
- Veterinary experience.

Objective Two: To determine the respondents' level of knowledge of chiropractic and the chiropractic treatment of animals.

- **Null Hypothesis 1:** The respondents were expected to demonstrate a low level of knowledge regarding chiropractic and the chiropractic treatment of animals.

Objective Three: To determine the respondents' perceptions towards chiropractic and the chiropractic treatment of animals as well as their usage, referral and interaction with chiropractors.

- **Null Hypothesis 2:** The respondents were expected to demonstrate a poor perception of chiropractic and the chiropractic treatment of animals, as well as indicate a low level of usage, referral and interaction with chiropractors.

Objective Four: To determine the respondents' knowledge and perception of the legislation and education of the chiropractic treatment of animals in South Africa.

- **Null Hypothesis 3:** The respondents were expected to demonstrate a low level of knowledge and poor perception regarding the legislation and education of the chiropractic treatment of animals in South Africa.

Objective Five: To determine any associations between knowledge, perceptions and factors influencing these.

- **Null Hypothesis 4:** It was expected that there would be no associations found between knowledge, perceptions and factors influencing these.

1.4 Context and Rationale of Research:

1) Veterinarians represent the primary contact to the South African veterinary health care system for alternative health care practitioners (SAVC Act no. 40, 1995; SAVC Act 19, 1982). Their views on chiropractic and its application to the treatment of animals are therefore important to the integration of chiropractic into this system.

2) This research allowed for the evaluation of factors influencing the current perceptions of South African veterinarians towards chiropractic and its application to the health care of animals, assessing the positive and negative factors involved in forming these perceptions.

3) This research aimed to demonstrate the level of knowledge that South African veterinarians have regarding chiropractic and the chiropractic care of animals, observing any link between levels of knowledge, utilization and perception. These links are important in assessing the factors that influence the veterinarians' perceptions so they can be addressed in order to effect a positive change in their future perceptions of chiropractic and the chiropractic treatment of animals.

4) This research endeavoured to indicate the level of current communication, interaction and referral taking place between veterinarians and chiropractors in South Africa, as well as to demonstrate the veterinarians' views on future inter-professional collaboration and referral with chiropractic practitioners regarding the health care of animals.

5) This research aimed to demonstrate the veterinarians' views toward the possible education and legislation options for the chiropractic treatment of animals in South Africa. This is important as their views and participation could influence the

future education and legislation of the chiropractic treatment of animals in South Africa.

6) The growth in the popularity of the chiropractic treatment of animals outside of South Africa has led to a number of countries supporting its integration into their veterinary health care systems (AuVCA, 2010; AVCA, 2010; IVCA, 2010; Willoughby, 2002). This research ultimately endeavoured to provide a knowledge base that may facilitate a better understanding of factors that could influence the integration of chiropractic into the South African veterinary health care system.

1.5 Limitations of this study

For the purpose of this study, the researcher requested and assumed that all the data given by the veterinary respondents when completing the research questionnaire (Appendix B3) were open and honest and thus reflected their current knowledge and perceptions accurately at the time of questionnaire completion.

Due to the potential respondents being approached to participate in this research by way of electronic mail (e-mail), a number of veterinarians were not approached due to not having an e-mail address registered with the South African Veterinary Council (SAVC) (Kruger, 2010). This may have influenced the research outcomes as a number of the veterinarians who were not contacted may not have had access to Internet. This may indicate that they were situated in a geographically isolated region with decreased access to information (internet, library, media) and \ or possibly experiencing poorer socio-economic conditions in comparison to the sample population of veterinarians. These factors have been linked to a decreased level of knowledge and perception relating to chiropractic (Tatalias, 2006; Astin, 1998; MacLennan and Wilson, 1996).

This may have been exacerbated by the relatively low response rate obtained relevant to this study, leading to results that cannot be considered generalisable to the entire South African veterinary population (Mearnes and Reader, 2007).

1.6 Conclusion

The preceding chapter has highlighted the areas of interest in this study; presented the aim, objectives, hypotheses and context / rationale of this study. It also points out the inherent limitations of this study. Chapter Two will discuss the literature related to this study. This will be followed by Chapter Three, which will outline the materials and methods utilized to structure the design of the research study. Chapter Four presents the results and discussion of the results, with Chapter Five highlighting the conclusions and suggesting recommendations based on the results of this study. The references and relevant appendices are attached at the end of this dissertation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction: Complementary and Alternative Veterinary Medicine

Veterinary medicine, like many professions, is rapidly changing (American Veterinary Medical Association [AVMA], 1996). Complementary and alternative medicine (CAM) therapies such as chiropractic, acupuncture, homoeopathy, herbalism and others have gradually increased the diagnostic and treatment options available to veterinarians and their clients (Shoen and Wynn, 1998). As these additional diagnostic and therapeutic modalities emerge, the veterinary profession is faced with the challenge of incorporating these new therapies into a new, integrated medical approach to health and disease of animals. If the true goal of veterinarians is to maintain animal health without doing harm, the integration of CAM (complementary and alternative veterinary medicine [CAVM] in the veterinary context) into conventional therapies may represent the next logical step in the evolution of veterinary medicine (Shoen and Wynn, 1998).

Although the AMVA has in the past stated the practice of alternative and holistic practice to be “unconventional”, it has reviewed the guidelines pertaining to these therapies and the part they can play in veterinary medicine, stating that: “Holistic veterinary medicine is a comprehensive approach to veterinary health care employing alternative and conventional diagnostic and therapeutic techniques” (AVMA, 1996). The major limitation to CAVM currently expressed by the veterinary community is the perceived lack of double-blind controlled studies, clinical efficacy trials and the practice of evidence based animal health care (Shoen and Wynn, 1998). However, studies such as those by Alvarez-Gomez, *et al.* (2008); Sullivan (2008) and Haussler *et al*. (1999) have started building evidence based data demonstrating the relative effectiveness of chiropractic for the health care of animals, particularly related to musculoskeletal ailments.

This perceived lack of evidence and quality research is not unique to CAM and CAVM therapies as the recognition of deficiencies in the quality of conventional medical

research is currently under discussion in many teaching institutions (Shoen and Wynn, 1998). The recent call for evidence based medicine indicates the lack of research support for many popular techniques used worldwide by doctors in conventional practices (Shoen and Wynn, 1998). Eddy (1993), of Duke University, claims that only 15% of medical interventions are actually supported by strong scientific evidence, further stating that only 1% of published articles are scientifically sound.

In a veterinary context, McCance (1995) evaluated all articles with numerical data (133 articles) published in the *Australian Veterinary Journal* between January 1992 and December 1993 for statistical flaws. He found that had a statistician been included in the review process, only 29% would have been acceptable without revision. Therefore, without claiming that CAM or CAVM research is in any way superior, it could be suggested that true comparisons in data quality might soften the criticism that CAM and CAVM research is often without value.

Furthermore, the acceptance of CAM and CAVM into mainstream medical care may be influenced by the potential for alternative medicine journals to publish only positive studies, and conversely, conventional journals to publish primarily negative reports (Richmond, 1992); or even reports that betray a clear misunderstanding of the tenants of the treatment involved (Barry, 1995). Klein (1995) states that this is especially true when reports / studies contest existing realities, leading to increased scrutiny and resistance to paradigm change. This may well be further compounded by research not being undertaken in collaboration between CAM / CAVM therapists and mainstream practitioners, collaboration that is hindered by resistance to the integration of CAM / CAVM with mainstream medicine (Korporaal, 2010).

Shoen and Wynn (1998) affirm that no one form of medicine has all the answers. If the primary concern of any veterinary health care system is the welfare of animals, all reasonable forms of treatment should be researched and incorporated into an approach that can offer as much as possible to help the animals under the system's care. Thus, it is evident that the future requires the various diagnostic and therapeutic modalities to be

sufficiently researched and valid therapies integrated into a new paradigm of veterinary medicine

2.2 The Chiropractic Treatment of Animals

Chiropractic has seen the emergence of various specializations including the application of chiropractic to the care of animals (AuVCA, 2010; AVCA, 2010; IVCA, 2010; Willoughby, 2002). In correspondence with the application of chiropractic to the health care of humans, the chiropractic treatment of animals is stated by the International Veterinary Chiropractic Association (IVCA) (2010) to be: "…the science, art and philosophy concerned with good health of animals through restoration and maintenance of a properly functioning neuromusculoskeletal system, without the use of drugs or surgery".

In the human context, chiropractic is categorised by the World Health Organisation (WHO) (2005) as a CAM therapy and is recognised as a primary health care option for humans in South Africa. This is evident in the establishment of an internationally recognised education system and professional association to represent the chiropractic treatment of humans in South Africa (CASA, 2010 and Korporaal, 2010). Conversely, the chiropractic treatment of animals has been slow to develop in this country, with no education system or professional association presently established to represent this chiropractic specialisation (Wimberely, 2009).

Recently, CAM therapies, such as chiropractic, that have formally only been recognised as health care therapies for humans are becoming increasingly accessible for use in the veterinary health care system of South Africa (Rogl, 2010). Haussler *et al*., (1999) states that this is partly due to CAM therapies, such as chiropractic, offering additional diagnostic and therapeutic techniques above what is taught in the allopathic veterinary curriculum, which may aid in the diagnosis and treatment of disease in animals.

Furthermore, Kauffman (2005) states that chiropractic can contribute to veterinary health care by providing a natural, drug-free adjunct to an animal's total health care. This is important given that pharmacological agents such as non-steroidal anti-inflammatories (NSAIDs), which are commonly used by veterinarians in treating a number of veterinary conditions, are reported to have side effects of gastrointestinal bleeding, kidney damage and weakening of cartilage in canines (Lambrechs, 1999). A more modern, holistic approach could minimize or prevent the number of dangerous drug interactions that result when veterinarians or specialists prescribe drugs without considering an animal's entire health situation (Shoen and Wynn, 1998).

At present, South African veterinary legislation states that any person diagnosing / treating an animal for financial gain in South Africa must be registered with the South African Veterinary Council (SAVC) (SAVC Act 19, 1982). Considering that chiropractors are unable to register with this council, SAVC Act 40 (1995) was passed. This was termed the Chiropractors, Homoeopaths and Allied Health Professionals Act, and states that treatment of animals by these practitioners can only be undertaken after referral from a supervising veterinarian. Therefore, veterinarians represent the link between animals and chiropractic care in South Africa, suggesting that the perception veterinarians have towards chiropractic and the chiropractic treatment of animals is important as their participation and collaboration could influence the integration of chiropractic into South Africa's veterinary health care system.

With this in mind, Sanchez (1991) suggests that studies are always required to explore the inter-professional relationships between chiropractic and other relevant health care practitioners in order to document the level of collaboration taking place, as well as to document the possibilities for future collaboration in their respective medical fields. Such studies are relevant as the legitimacy and status of chiropractic is greatly dependent upon its acceptance by, and collaboration with, other health care professions (Sanchez, 1991). Furthermore, this acceptance of chiropractic by other health care professionals, such as veterinarians, is largely based on their knowledge and perception of

chiropractic and their views on the part chiropractic can play in their relevant health care systems (Langworthy and Smink, 2000).

Therefore, it is evident that for chiropractic to integrate into the veterinary health care system of South Africa, the perception of the South African veterinarians towards chiropractic and its perceived role in veterinary health care needs assessment.

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2.3 The Concept of Perception

According to Chaffe (1997), a person's perception is the "picture" or interpretation that they acquire of the world that is meaningful to them personally. It is explained as the process of organizing sensory information gathered by the five different senses in the body (taste, smell, sight, hearing and touch), processing this received information in the context of their personality and experience, thereby adding meaning to it to form a perception. A person's reality is then based on this perception and so each person's reality can vary with their perception of the same environment or event.

However, Eysenck and Keane (1996) assert that this created perception may differ from the reality used to create the perception because information may be misinterpreted, leading to premature or incorrect conclusions about objects and / or events. It is then only when a person finds that his / her perception of the same object differs from the perceptions of others, that they are forced to examine the manner in which they select, organize and interpret the events in the world around them (Chaffe, 1997).

Thus, the subjectivity of perception can be linked to, and influenced by, many factors which according to Berg and Theron (1999), Robbins (1996) and Hayes (1994) may be attributed to the perceiver, the environment / situation in which the object is being perceived, or the object being portrayed. The factors involved with perception are further split into those which are internal to the perceiver (factors within the perceiver), and those which are external to the perceiver (factors in the environment and factors in

the perceived / portrayed object) (Berg and Theron, 1999; Robbins, 1996 and Hayes, 1994). These are outlined in Table 2.1.

For the purposes of this study, the "perceiver" is the South African veterinarian, the "perceived object" is the chiropractic profession and the chiropractic treatment of animals; and the "environment" is South Africa and the South African veterinary health care environment.

Table 2.1: Factors influencing perception

Factors in the perceiver: e.g. South African veterinarian Personal Demographics Values and Attitudes Exposure and Experience Expectations Culture Motivation	**Factors in the environment:** e.g. South Africa and the South African veterinary health care environment Time Work setting Social setting
Factors in the perceived object: e.g. Chiropractic profession and the chiropractic treatment of animals History Education Proximity Background Motion Novelty	

(Adapted from Berg and Theron, 1999; Robbins, 1996; Hayes, 1994)

2.3.1 Internal Factors: Factors in the perceiver (South African veterinarian) affecting perception

2.3.1.1 Personal Demographics
- 2.3.1.1.1 Age
- 2.3.1.1.2 Gender
- 2.3.1.1.3 Ethnicity
- 2.3.1.1.4 Education (in relation to the perceiver: the South African veterinarian respondent)

2.3.1.2 Values and Attitudes

2.3.1.3 Exposure and Experience

2.3.1.4 Expectation

2.3.1.5 Culture

2.3.1.6 Motivation

2.3.1.1 Personal Demographics

2.3.1.1.1 Age

Age has been shown to be an influencing factor in perception with the literature showing that older patients are generally more likely to use CAM therapies, such as chiropractic, than younger patients (Tatalias, 2006; Reid, 2002; Kayne, Beattie and Reeves, 1999). In the United States, approximately 38 percent of adults as compared to approximately 12 percent of children are using some form of CAM, with the 50-59 year age group showing the highest use of CAM (44.1% of respondents) (Barnes *et al.*, 2007). Likely reasons for this may include increased exposure to CAM therapies, disappointment with previously received mainstream medical care and having to live and deal with chronic illness and impairment related to increased age (Tatalias, 2006; Reid, 2002; Kayne, Beattie and Reeves; 1999). It has yet to be established if age is a factor that could influence the perception of the veterinarian participant with regard to chiropractic and the chiropractic treatment of animals, though it could be postulated that the extended

study time of veterinarians would lead to them having a higher average age than the general population, thus favouring a more positive perception.

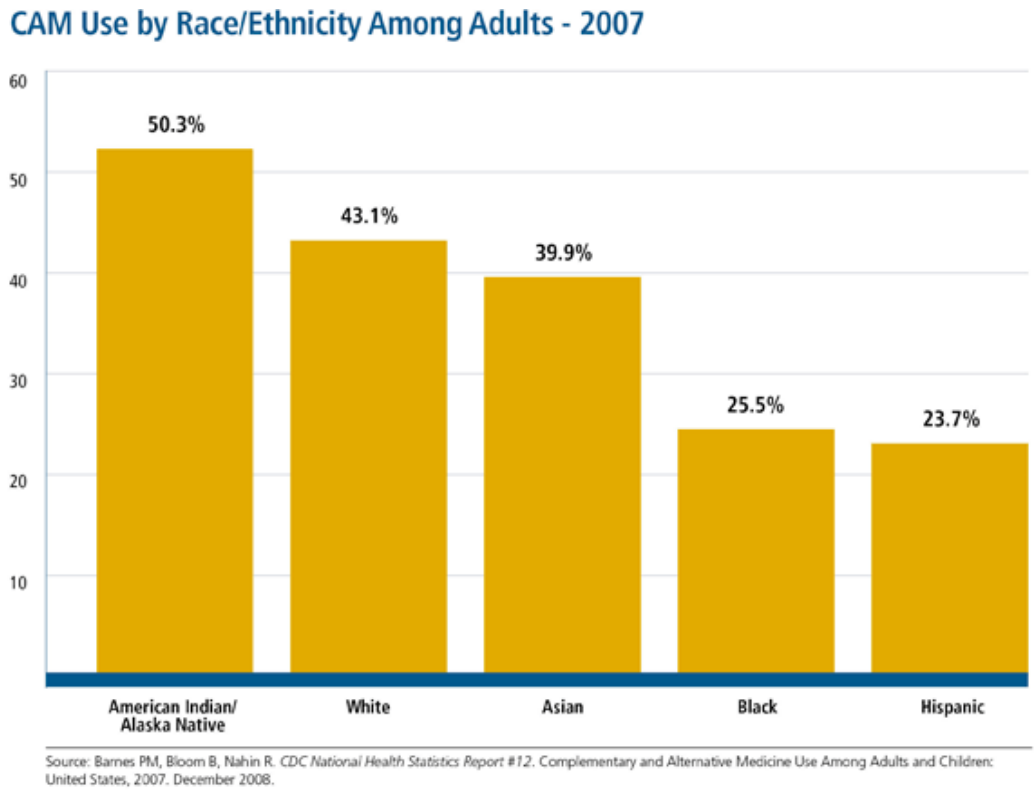
2.3.1.1.2 Gender

The gender of the perceiver has been shown to have an influence on their perception with Tatalias (2006) and Reid (2002) stating that women are more likely to utilize CAM therapies in general and thus are expected to have a more positive perception of them than men. This is supported by the National Centre for Complementary and Alternative Medicine (NCCAM) national survey findings that woman made more use of CAM therapies in the United States than men (Barnes *et al*., 2007). This may be due to women generally being the care givers for children in the family environment, which has been linked to increased utilization of CAM due to these therapies being less invasive and being perceived as having fewer side effects that drug based therapies (Low *et al.,* 2008; Wilson *et al.,* 2007; Crawford *et al.,* 2006). Therefore, the gender composition of the respondent group could possibly influence the outcome of data obtained with respect to the perception of South African veterinarians towards chiropractic and the chiropractic treatment of animals.

2.3.1.1.3 Ethnicity

According to Philbin *et al*., (2008), ethnicity has been found to be a factor in perception. This is primarily related to the influence of ethnicity related culture, and the associated socio-economic and political environment on the way a particular group reacts to different constructs. In a study of 183 Caucasian Americans and African Americans by Alcock, *et al.,* (2003), there was found to be a significantly greater usage of CAM by Caucasian Americans, though satisfaction with received CAM treatment was reported to be the same by both groups. A wider study undertaken by the NCCAM demonstrated the marked difference between the utilization of CAM by the different ethnic groups found in America, illustrated in Figure 2.2.

Figure 2.2: <u>CAM usage by ethnicity among adults in America</u>



(Barnes, *et al.*, 2007)

Locally, a South African study undertaken by Myburgh and Mouton (2007) found chiropractic to be underappreciated by the Black South African population. These studies demonstrate that the ethnic composition of the South African veterinarian respondents may well have an influence on the perception they have of chiropractic and its application to the health care of animals. It could be anticipated that the ethnic composition of the veterinary respondents would be predominantly White due to the historical socio-economic environment unique to South Africa that would have hindered other ethnicities from access to tertiary education (Hupkes, 1990). This would likely play an enabling role towards a more positive perception.

2.3.1.1.4 Education (in relation to the perceiver: the South African veterinarian respondent)

A positive association has been shown by Tatalias (2006), Astin (1998) and MacLennan and Wilson (1996) to exist between tertiary education and higher use of CAM therapies. In support of this, the NCCAM national survey found that higher levels of education and income were characteristic among CAM users in America and also led to a higher use of CAM among their children (Barnes *et al.,* 2007). Reasons for this include a greater understanding of disease processes, health care options and treatment procedures due to increased accessibility to information (e.g. libraries, internet, media), as well as the ability to finance health care that falls outside of public health care services (Tatalias, 2006; Astin, 1998; MacLennan and Wilson, 1996) The same reasons are cited for increased utilization of CAM associated with increased income and employment status, possibly due to there being a higher likelihood of tertiary education amongst these individuals. Due to the fact that the veterinarian respondents would all have completed at least one tertiary level degree (veterinary science), as defined by the research inclusion criteria, and are employed in medical health care, a greater awareness and better perception of chiropractic and the chiropractic treatment of animals could be expected. This perception would most likely be positively enabled if the respondents had further studied any CAM or CAVM related therapies.

While the education and employment status of the target population may be positive perception enablers, the medical training of veterinarians in South Africa may be a disabler. This is because the University of Pretoria (Onderstepoort) which offers the only South African Veterinary Council (SAVC) recognised veterinary science degree in South Africa does not currently have any chiropractic or other CAVM subjects in their qualification curriculum (Wimberley, 2009). This would possibly affect the knowledge and perception of South African trained veterinarians towards chiropractic and the chiropractic treatment of animals as their exposure to chiropractic or manipulation theory and practice would be limited during their training. A questionnaire based study done by Schoen (2000), gauging the opinions of the deans, curriculum committees and

faculty of all 27 veterinary schools in the United States on educational and research programs in CAVM revealed that 61% of the valid responses indicated that they believed a chiropractic course should be included in the curriculum. Only seven of these veterinary schools had some form of CAVM education running at that time. This may thus ameliorate the degree to which education is a positive enabler to the perception of veterinarians towards chiropractic and the chiropractic treatment of animals.

2.3.1.2 Values and Attitudes

Studies compiled by Worthington (1969) and Postman *et al*., (1948) demonstrated how the participants' values and attitudes towards different subject matter influenced their response to them. This is mostly attributed to the cultural framework within which they grew up and to which they are adapted and accustomed. In this context, the cultural framework within which the veterinarian respondents had been brought up may well influence their values and attitudes towards CAM and CAVM in general. This may extend to the values and attitudes they have towards possible financial and professional competition in the field of veterinary medicine versus the availability of CAVM treatments for the optimal health care of animals.

2.3.1.3 Exposure and Experience

It has been found that exposure to a profession either personally or through someone else's exposure may influence a person's knowledge and perception towards it (Louw, 2007; Rattan, 2007; Talmage 2007; Brussee *et al*., 2001). According to Rattan (2007) and Talmage (2007), knowledge and perception of chiropractic can be positively influenced by previous consultation with a chiropractor as well as by the level of satisfaction experienced from the received treatment. Additionally, Brussee *et al*. (2001) found in their study that a GP's perception of chiropractic was influenced by his \ her patients' experiences at chiropractic practices. Furthermore, Louw (2007) found in a study of general practitioners that there was a significantly greater difference in referral rate between those who had a higher degree of knowledge on, and exposure to,

chiropractic compared with those who did not. Dreyer (2004) and Jamison (1995) further state that the limited interaction between chiropractic and other health care practitioners is in turn a major limiting factor in the referral of the general public to chiropractors. This is especially pertinent to the veterinary setting in South Africa where referral is the only means by which chiropractors are able to treat animals, indicating the importance of exposure and interaction between chiropractic and veterinarians so as to positively affect the referral of animals for chiropractic care.

CASA (2008) state that the general public may have reduced exposure to chiropractic treatment since chiropractors operate mainly within the private sector, and are relatively few in number in the South African context. However, veterinarians predominantly work in the private sector and generally fall in the middle to higher income bracket (Rogl, 2010), indicating the possibility for increased exposure to chiropractic and the chiropractic treatment of animals, which may prove a positive factor in their perception.

It is therefore evident that the perception of the veterinarian respondents may be influenced by varying exposure to human chiropractic and / or the chiropractic treatment of animals either through personal interaction or feedback from other people.

2.3.1.4 Expectation

Expectation has also been found by Berg and Theron (1999) to influence and distort people's perceptions, as people are more inclined to see what they expect to see due to their belief systems. Furthermore, Louw (2007) states that people with high expectations of chiropractic and its usefulness tend to also have a high level of knowledge and better perception of chiropractic. Talmage (2007) and Gamble and Gamble (1998) mention that there are several underlying features that may contribute to expectation and congruency between expectation and outcome achieved. These include whether the experience of a chiropractic consultation was congruent with the knowledge and expectation of the individual as well as whether the consultation was a good, mediocre or bad experience.

Therefore, while it may be expected that studying and practicing an allopathic form of health care may be a negative enabler towards their expectation of the usefulness of CAM and CAVM therapies, the various levels of exposure to chiropractic, and whether they were positive or negative experiences, can be expected to influence the expectation and perception that the veterinary respondents have towards chiropractic and its application to the health care of animals.

2.3.1.5 Culture

Culture can be defined as the customary beliefs and practices, or social forms of racial, religious or social groups (Oxford Advanced Learners Dictionary, 1997). Dreyer (2004) states that the influence of culture can be observed in terms of the experience of health care practices related to a particular culture that limit access to, and knowledge about health care beliefs and practices that fall outside of that culture. If their cultural background does not facilitate interaction with the chiropractic profession, there is expected to be decreased exposure to the profession and therefore a poorer perception related to it.

In South Africa, the Department of Health estimated that close to 80% of South Africans consult traditional healers as opposed to allopathic doctors (About South Africa, 2007). It is also acknowledged by Myburgh and Mouton (2007) that chiropractic is under-appreciated by the Black South African community due to rural living (71% reside in rural areas), their cultural upbringing and the lack of reference to manual therapy in their traditional health care (Korporaal, 2008 and van As, 2005). The perception of other cultural and ethnic groups prevalent in South Africa has not been ascertained but can be expected to vary in accordance with their cultural and geographic exposure to chiropractic and the chiropractic treatment of animals. For example, the South African Indian community resides mostly in the KwaZulu-Natal province of South Africa which has a chiropractic teaching institution (Durban University of Technology) and a relatively large number of chiropractors practicing in the province (Korporaal, 2010 and CASA,

2008). This may lead to a relatively high number of South African veterinarians of Indian ethnicity being exposed to chiropractic with a subsequent enabling of their perception of it.

According to Wardwell, (1994) and Coulter, (1992), the influence of perception extends to the culture in which health care professionals develop. Veterinarians study a form of allopathic medicine which may lead to the development of a particular set of ideas on health and wellness care, in turn influencing their knowledge and perception of other aspects of health care and general living. In this context, it is anticipated that the veterinarian respondents may be positively enabled by the expectation of the majority of them being White, while possibly being negatively enabled due to studying and practicing an allopathic form of health care that is intrinsic to their culture.

2.3.1.6 Motivation

Motivation is described as the reason for doing something or behaving in a certain way (Oxford Advanced Learners Dictionary, 1997). According to Berg and Theron (1999) the motivation, or reason, for certain perceptions must be understood. It would be of importance to take into account the financial and professional motivation with regard to the veterinarian respondent. If chiropractic is perceived as possible financial and professional competition to veterinarians in the field of veterinary health care, then negative motivation could influence the perception of veterinarians towards chiropractic and its application to the treatment of animals.

Conversely, if a veterinarian is motivated to expand their clinical techniques in order to offer the animal patient a wider range of health care options, then CAVM may offer additional diagnostic and therapeutic modalities above what is taught in traditional veterinary training (Shoen and Wynn, 1998). In support of this, a study undertaken by Baver *et al.,* (2006) revealed that 57% of medical specialists in their study thought that incorporating CAM therapies into their practice would have a positive effect on patient satisfaction; and 48% believed that offering CAM would attract more patients. Thus, the

motivation to broaden their scope of practice may have led to increased information gathering by South African veterinarians, leading to increased exposure to CAM and CAVM therapies, which has been found to have a positive effect on perception (Rattan, 2007; Talmage, 2007; Louw, 2007).

The aforementioned factors related to the perceiver (the veterinarian respondent) could possibly influence the respondents' knowledge and perception of chiropractic. It is demonstrated that the individual respondent's exposure to, and experience of chiropractic and the chiropractic treatment of animals is closely related to their culture, experiences and situation. These could have a varying influence on their perception and should be understood in analyzing their viewpoints.

2.3.2 External Factors: Factors in the perceived object (chiropractic and the chiropractic treatment of animals) affecting perception

2.3.2.1 History
2.3.2.2 Education (In relation to the perceived object: chiropractic and the chiropractic treatment of animals)
2.3.2.3 Proximity
2.3.2.4 Background and Motion
2.3.2.5 Novelty

2.3.2.1 History

Chiropractic started in the United States of America in 1895 (Palmer, 1944), with the first chiropractors coming to South Africa in the early 1920's. Following a Commission of Inquiry, chiropractic was banned in South Africa in 1971 by a bill introduced by the Health Minister at the time, though this was withdrawn and replaced in the same year due to chiropractic's increasing popularity (Brantingham and Snyder, 1999; Till, 1997).

The government then requested the Human Sciences Research Council (HSRC) to conduct a survey on the extent of usage and public satisfaction related to five emerging medically related professions (chiropractic, homoeopathy, osteopathy, naturopathy and herbalism). The Steenkamp Report was undertaken and presented to government, which reported a high level of usage of, and satisfaction with these professions. This led to the establishment of the Chiropractors, Homeopaths and Allied Health Professions Council in 1982 (known later as the Allied Health Professions Council of South Africa [AHPCSA]), a statutory body that wrote chiropractic into South African law (Brantingham and Snyder, 1999).

The chiropractic care of humans in South Africa is currently regulated by the Allied Health Professions Council of South Africa (AHPCSA) and represented by the Chiropractic Association of South Africa (CASA) which was formed in 1971 by the amalgamation of the Pan African Chiropractic Association (PACA) and South African Chiropractic Association (SACA) (Brantingham and Snyder, 1999). CASA (2010) claims in its mandate that it was formed to: "…promote, encourage and maintain high standards of education; training; conduct and practice within the profession in South Africa", undertaken within the laws and regulations set out by the AHPCSA.

Globally, the application of chiropractic to the treatment of animals has been haphazard and sporadic, impeded by the lack of a distinct historical foundation (Shoen and Wynn, 1998). Historically, the use of chiropractic on animals was attempted as a curiosity by the early chiropractors. The developer of chiropractic, Palmer (1944), claimed to have run a veterinary clinic as part of his chiropractic school and research facility. During the development of the profession, chiropractic was fighting for survival against the medical establishment and veterinary chiropractic was frowned on by mainstream chiropractic practitioners. It was believed that they should 'soft-pedal' the animal application of chiropractic in the fear that the public might call them 'horse doctors' (Palmer, 1944).

Internationally, the beginning of a veterinary chiropractic profession has in recent years become evident in the organisation of courses designed to teach veterinary chiropractic

techniques, the elementary research into these techniques, as well as in the formation of professional associations to purely represent the chiropractic treatment of animals (AVCA, 2010; AuVCA, 2010; IVCA, 2010; Shoen and Wynn, 1998).

The chiropractic treatment of animals has been relatively integrated into the veterinary health care systems in a number of countries outside of South Africa. In America, Australia, Canada, Germany and England there are educational programs set up in animal chiropractic as well as the formation of a number of professional associations to represent the chiropractic treatment of animals (AVCA, 2010; AuVCA, 2010; IVCA, 2010; Willoughby, 2002). The International Veterinary Chiropractic Association (IVCA) has members in a number of countries and strives to co-ordinate veterinary chiropractic on an international basis, but states that it is expected that each country, province or principality will eventually develop regional veterinary chiropractic groups to respond to local issues, as has already happened in several countries (IVCA, 2010).

At present, there is no South African based professional association concerning the chiropractic treatment of animals (Wimberley, 2009), indicating that there is no association representing the interests of the chiropractic treatment of animals in South Africa, lobbying with government for legislation and forwarding the profession's promotion and education in this field of specialization. This may be attributed to the more recent fight for survival experienced by the chiropractic profession in South Africa at the possible expense of chiropractic's specialization; something that countries with more established chiropractic programmes could pursue (Korporaal, 2010; Wardwell, 1994; Curtis and Bove, 1992).

2.3.2.2 Education (In relation to the perceived object: chiropractic and the chiropractic treatment of animals)

According to Myburgh and Mouton (2007), education is a key element both from the point of view of professional development, and in terms of the authority and credibility of a health care therapy and the associated therapists. Following the 1971 legislation,

CASA delegations were sent to countries outside of South Africa with developed chiropractic education programmes in order to guide the establishment of quality chiropractic education in South Africa. In 1984, a report was presented to the Health Ministry which led to the amendment of legislation and paved the way for the growth and development of chiropractic in South Africa. In January 1989, Technikon Natal (now known as Durban University of Technology) in KwaZulu-Natal opened its chiropractic department to students.

While the establishment of internationally recognised chiropractic education In South Africa has undoubtedly contributed to increasing utilization and acceptance of human chiropractic in this country, South Africa has been slow to develop education concerning the chiropractic treatment of animals. At present there is no recognised course for the chiropractic treatment of animals in South Africa, which results in chiropractors or veterinarians having to study outside of South Africa if they wish to gain a post-graduate qualification in animal chiropractic (Wimberely, 2009). This would negatively affect the number of qualified animal chiropractors in South Africa due to the financial toll and inconvenience of studying outside of this country, decreasing the exposure of South African veterinarians to qualified animal chiropractors and therefore potentially playing a detracting role on their perception.

2.3.2.3 Proximity

The Allied Health Professions Council of South Africa (2009) stated that there are about 400 practicing chiropractors in South Africa. With a population of over 45 million people, there is approximately one chiropractor to every 120 000 people in South Africa today. There are considerably fewer practitioners trained in the chiropractic treatment of animals in this country (researcher has found five), which is significant in that the limited exposure to the chiropractic or animal chiropractic professions could influence the knowledge and perception that one has of them.

Exposure to the chiropractic and animal chiropractic professions, and a person's perception of them, can also be influenced by the type of area a person lives and works in. Most chiropractors in South Africa work in urban areas (CASA, 2008). There are also a varying amount of chiropractors distributed amongst the nine South African provinces, the greatest number being found in Gauteng (127 chiropractors) and the least in Northern Cape (1 chiropractor) (CASA 2008). The geographic distribution and type of areas that the veterinarian respondents live and work in are therefore expected to influence their exposure to chiropractic, which may consequently influence their perception of chiropractic and the chiropractic treatment of animals.

2.3.2.4 Background and Motion

According to Wardwell (1994), since the inception of chiropractic within the global health care system over a century ago, other influential groups have questioned the various teachings and techniques of the profession at length, with allopathic medicine in particular viewing the profession with concern (Curtis and Bove, 1992). In 1963, the American Medical Association (AMA) relegated chiropractic practices to the Committee of Quackery, whose task was to be the: "...containment and, ultimately, the elimination of chiropractic" (Wardwell, 1994). Furthermore, Breen, *et al., (*2000) found that many GP's are more comfortable referring patients to physiotherapists because they feel they have a better understanding and experience of physiotherapy, even though physiotherapy and chiropractic share a number of diagnostic and therapeutic techniques (Porter, 1990).

In this context, the veterinary profession has generally ignored the possibilities of chiropractic care for animals in the past, preferring to take a position similar to that of other conventional medical professions (Shoen and Wynn, 1998). The American Veterinary Medical Association (1996) has waited until relatively recently to take a serious look at the chiropractic care for animals. Furthermore, there has been resistance to the development of the chiropractic treatment of animals from the chiropractic profession itself. In 1995, the American Veterinary Chiropractic Association

(AVCA) received a letter from attorneys representing the American Chiropractic Association (ACA) stating that they were not allowed to use the term “chiropractic” as this specifically relates to humans, though this was not upheld (Gleason, 1998).

The lack of scientific evidence to substantiate the claims made by the chiropractic profession in the past has now changed, attributed in part to the increased support for the principles of evidence based medicine by the chiropractic profession itself (Brantingham and Snyder, 1999; van Tulder *et. al*., 2005). This has led to chiropractic research articles being published in more multidisciplinary / mainstream publications, including a limited number of publications on its effectiveness and use for the health care of animals (Alvarez-Gomez, *et al.,* 2008; Sullivan, 2008; Epstein, 2002; Langworthy and Smink, 2000). The increase in published articles and media attention would likely have increased the exposure of both the medical fraternity as well as the general public to chiropractic, which has been linked to an increase in knowledge and perception of it (Rattan, 2007; Talmage, 2007; Louw, 2005). It is further expected that increased knowledge and perception of chiropractic could lead to higher utilization and integration of chiropractic into various health care systems, possibly including veterinary medicine.

The progression of a scientific basis of the chiropractic profession as well as its growing popularity and exposure has led to the profession gaining widespread social acceptance as an alternative form of health care (Coulter, 1992), becoming the most often used form of CAM by the general public (Sherman *et al.,* 2004), and the third most used form of primary health care in the world after medicine and dentistry (CASA, 2005).

This motion and development trajectory, if continued, could lead to chiropractic being further integrated into other health care systems, such as veterinary health care. The perception of veterinarians could influence the integration of chiropractic into the veterinary health care system of South Africa, and therefore needs to be investigated.

2.3.2.5 Novelty

Chiropractic has been around for over a hundred years, yet has only relatively recently gained acceptance as a form of alternative health care. There is a perceived novelty or "newness" about chiropractic as more people are only now beginning to understand its benefits as a CAM therapy (Higgs, 2009). This is even greater in the veterinary field, especially in South Africa, where the application of chiropractic is relatively new and is not yet established as a health care option for animals (Wimberely, 2009). The young nature of this new specialization of chiropractic may mean that not many people, including the veterinarian respondents, have had exposure to it. Conversely, the novelty image of the chiropractic treatment of animals could lead to increased information gathering for medical professionals, such as veterinarians, who are motivated to learn relatively new diagnostic and therapeutic modalities that lie outside of mainstream medicine, possibly leading to increased knowledge and a better perception of it.

These factors related to the perceived object need to be considered when analyzing the perception of the perceiver. The chiropractic profession has a long and complex history that is anything but reflective of a societal norm (Wardwell, 1994; Coulter, 1992). Much like the history of chiropractic integration into various health care systems, the integration of chiropractic into the veterinary health care system of South Africa has already faced opposition from the veterinary community who have expressed concern over chiropractors not working in conjunction and communication with veterinarians; and often treating animals without the necessary veterinary education (Wimberely, 2009 and SAVC Act no. 40, 1995).

According to Langworthy and Smink (2000), the only way to increase the integration and acceptance of chiropractic is to create better awareness and education of what the chiropractic profession entails, prompting the need for studies to determine what the current knowledge and perception is and what needs to be addressed in order to positively affect this.

2.3.1 External Factors: Factors in the environment (South Africa and the South African veterinary health care environment) affecting perception

It is stated by Berg and Theron (1999) that human behaviour can seldom be interpreted without considering the environment in which it occurs. Various elements in an environment can influence a person's perception and are therefore important when analyzing their view point (Robbins, 1996).

Factors in the environment influencing perception include:

2.3.3.1 Time

2.3.3.2 Work Setting

2.3.3.3 Social Setting

2.3.3.1 Time

According to Berg and Theron (1999) and Robbins (1996), the environment refers not only to the work and societal setting that the individual respondent finds him / herself in (veterinary healthcare system in South Africa), but also refers to the moment in time. The perception of the veterinary respondent may be influenced if he / she completes the questionnaire the day after consultation with a chiropractor or animal chiropractor as compared to the day before.

2.3.3.2 Social Setting

South Africa is a country greatly varying in culture, health care delivery schemes, education of health care professionals as well as inter-professional relations, differentiating it from more developed countries (Hupkes, 1990). As a result, South Africa has a unique environment and a distinctive set of circumstances that would have a different influence on perception when compared to other countries.

South Africa's health system consists of a large public sector offering State sponsored basic primary health care, and a smaller private sector offering services that include highly specialised technological health care (About South Africa, 2007). Since most South African chiropractors are in private practice (CASA, 2008), chiropractic care is unaffordable to the majority of the population of South Africa. Veterinarians, however, are expected to be middle to higher income earners, and are also predominantly employed in the private sector (Rogl, 2010). The veterinary respondents are, therefore, expected to have had increased exposure to chiropractic and should subsequently possess a higher level of knowledge and perception of the profession, and its application to the health care of animals, in comparison to the general population.

2.3.3.3 Work Setting

As previously stated (Section 2.2), the South African veterinary health care environment is such that for a chiropractor to consult with an animal there needs to be an initial evaluation by a veterinarian with subsequent referral to a chiropractor (SAVC Act no. 40, 1995; SAVC Act 19, 1982). Veterinarians, therefore, represent the primary contact for chiropractic to the veterinary health care system in South Africa and can have a marked influence on the integration of chiropractic into this system. This is something that does not presently affect the chiropractic treatment of humans in the same way, as chiropractic has become accepted as a primary health care option for humans in South Africa (CASA, 2010).

2.4 Conclusion

While chiropractic has been accepted as a health care option for humans in South Africa, the chiropractic treatment of animals is still developing and striving to integrate into South Africa's veterinary health care system (CASA, 2010; Wimberely, 2010).

Langworthy and Smink (2000) and Sanchez (1991) suggest that the integration of chiropractic into the veterinary health care system of South Africa is dependent on the

acceptance of chiropractic by the veterinarians involved in this system. This acceptance of chiropractic is further dependent on the knowledge and perception the veterinarians have of chiropractic and their view on the role chiropractic can play in the veterinary health care system of South Africa.

Therefore, this study aimed to assess the knowledge and perception of veterinarians towards chiropractic and the chiropractic treatment of animals in South Africa.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter deals with the research methodology utilized in this research study, the process of data collection used in this research study, as well as the process of statistical analysis undertaken in analysing the methodology and results related to this study.

3.2 Study Type and Design

This study was quantitative in nature, and involved the use of a structured questionnaire to collect data. According to Dyer (1997), survey research is a good way of collecting information from a large and dispersed group of people. A descriptive type design was used to collect the information. Descriptive surveys are used to establish the features of a particular group (e.g. their perception of chiropractic and the chiropractic treatment of animals) (Dyer, 1997).

The research was approved by the Faculty of Health Sciences Research and Ethics Committee (Appendix E) indicating that the research protocol satisfied the ethical requirements set out by the Faculty of Health Sciences Research and Ethics Committee, Durban University of Technology as well as the Declaration of Helsinki (Johnson, 2005).

3.3 Adverting / Recruitment

Due to the defined nature of the sample population of this study no advertising was necessary. Recruitment of respondents involved purchasing of the veterinary register from the South African Veterinary Council (SAVC), including the electronic mail (e-mail) addresses of the majority of the veterinarians (2191) registered with the SAVC at the time of purchase (10 February 2010). Permission to obtain the list of registered

veterinarians from the SAVC register was obtained from the head of registrar (Kruger, 2010) (Appendix A).

3.4 Sampling

3.4.1. Sample Size: An e-mail with a Letter of Information (Appendix B1) and a "link" to the research questionnaire (Appendix B3) was sent to every veterinarian who had provided the SAVC with a functional (accepting) e-mail address. This amounted to 1841 veterinarians.

3.4.2 Allocation: The responses were analysed as one group.

3.4.3 Method: The method of allocation to the group was through self-selection (Mouton, 1996), where the respondents chose to participate by electronically completing and submitting the questionnaire.

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria:

All veterinarians participating in this study would have needed to comply with the following inclusion criteria:

- All participants had to be registered as a veterinarian with the South African Veterinary Council (SAVC) and therefore possess the relevant qualification.
- All participants had to reside and practice veterinary medicine in South Africa at the time of being approached to participate.
- All participants had to read the Letter of Information (Appendix B1) and give informed consent by answering the Informed Consent Section / Form (Appendix B2) appropriately.
- All participants had to have access to Internet and have a functional e-mail address that was registered with the SAVC.

- The respondents had to be English literate as the questionnaire was constructed in English. With translation of the questionnaire from English into other languages problems affecting its validity occur, therefore only an English questionnaire was considered for this study (Baynham, 1995 and Scollen and Scollen, 1995).

3.5.2 Exclusion Criteria:

Veterinarians were excluded from this study for the following reasons:

- If they participated in the research focus group or pilot study. These respondents had already completed earlier versions of the questionnaire and had been involved in the modification of the questionnaire. This may have led to bias or misrepresentation of their knowledge and perception.
- Participation was excluded if the questionnaire was not submitted within an eight week time period.

3.6 Research procedure

1. An e-mail with a Letter of Information (Appendix B1) and a “link” to the research questionnaire (Appendix B3) was sent to all veterinarians who had a functional e-mail address registered with the SAVC at the time of purchasing the register.

2. The e-mail with the Letter of Information included an explanation regarding how to access the questionnaire via the “link” and complete / submit the questionnaire electronically.

3. The Letter of Information explained the criteria for participation in this study, as well as the procedure for giving informed consent.

4. The veterinarians who were eligible for this study could then access and complete the Informed Consent Form and questionnaire electronically.

5. An initial four week time period was allowed for completion / submission of the questionnaire.

6. All non-respondents where then contacted by means of two follow up e-mails (at four and six weeks after initial e-mail) to be reminded of the final date for questionnaire submission (01 September 2010), eight weeks after sending of initial e-mail.

7. The questionnaire was closed for participation after an eight week time period with all obtained data being saved by the Internet website.

8. The Internet website in addition saved the e-mail addresses of the respondents in order to omit veterinarians who had responded from future e-mail reminders for participation. The e-mail addresses were not linked to the submitted questionnaires in order to maintain anonymity of the respondents. The data obtained from the questionnaires was stored by the Internet website which required a username and password (known only to the researcher and research statistician, Esterhuizen, [2010]) for access, thereby ensuring confidentiality.

9. The data was then accessed and analysed by the researcher and research statistician, Esterhuizen (2010).

3.7 Questionnaire Background and Design

3.7.1 Measurement tool:

This was by means of a questionnaire. The researcher reviewed similar perception-related questionnaires and literature reviews, which were completed both locally and internationally (Butt, 2008; Rattan, 2007; Talmage, 2007; van As, 2005; Kew, 2006; Louw, 2005; Hunter, 2004; Dyer, 1997; Rubens, 1996).

Questions were then developed which were specifically aimed at obtaining information regarding the perception of veterinarians towards chiropractic and the chiropractic treatment of animals, leading to the formation of the Pre-Focus Group Questionnaire (Appendix C5). This was followed by the undertaking of a focus group and consultation with a research statistician (Esterhuizen, 2010), before being refined through recommendations made by the Chiropractic Research Committee, Durban University of Technology. A subscription was purchased for the Internet website (www.surveymonkey.com, 2010), with the questionnaire subsequently being set up on the Internet website (explained further in Section 3.7.5). This was followed by revision of the questionnaire by way of a pilot study.

3.7.2 Focus Group

The reason for having a focus group was to stimulate the members of the groups thinking and encourage them to develop and discuss ideas about the topic (Salant and Dillman, 1994). This enabled members of the focus group to critically assess the relevance of questions presented in the questionnaire, suggesting modifications, inclusions and exclusions of questions where pertinent. The focus group was then also able to contextualise the questionnaire (Salant and Dillman, 1994) in order to enhance its validity (Bernard 2000). This was achieved by addressing the following:

a. Face Validity: Face validity is the simplest type of validity, determined by agreement between researchers and those with an interest in the questionnaire (i.e. interpreted in this study as those participants of the focus group), that ‘on the face of it’ the tool seems valid, unambiguous and easily interpreted (Bernard, 2000).

b. Construct Validity: Measures how accurately answers to questions in a scale reflect theoretical predictions of a particular construct (Bernard, 2000).

These validity constructs were achieved by ensuring that the individuals in the focus group were representative of the specific areas of expertise related to the research to

be conducted, due either to their familiarity of the environment in which the research would take place and / or their similarity to the respondents who would complete the survey questionnaire.

According to Salant and Dillman (1994), a group of at least 8-11 people are required for a constructive focus group discussion so that best results are yielded. For this study, the focus group consisted of 9 people (including the researcher and research supervisor).

Participants in the focus group for this study consisted of the following:

- The researcher.
- The research supervisor.
- The research co-supervisor, who also conducted the video recording of the focus group.
- One qualified veterinarian.
- One qualified veterinarian with a post-graduate qualification in veterinary homoeopathy.
- One qualified chiropractor.
- One qualified chiropractor with a post-graduate qualification in veterinary chiropractic.
- Two masters chiropractic students, who were invited because they were both undertaking questionnaire based dissertations as part of a M. Tech: Chiropractic qualification.

Each member of the focus group initially received and signed (where relevant) the following documentation:

- Letter of Information (Appendix C1)
- Informed Consent Form (Appendix C2)
- Confidentiality Statement (Appendix C3)
- Code of Conduct (Appendix C4)

The purpose of these forms collectively was to ensure that the participants were informed about the intentions of the researcher, the topic involved and the nature of this study from the outset. These documents also made the whole process formal by the participants providing a written informed consent. This confirmed that they participated willingly and of their own sanction and that they would abide by a certain code of conduct and behaviour during and after the discussions. Finally, the participants also agreed in writing that the information and material discussed in the focus group was confidential and not for general public discussion.

The focus group members, after reading and signing the relevant documentation, were each handed the Pre-Focus Group Questionnaire (Appendix C5) and asked to read through it briefly. The researcher then proceeded to read aloud each question in the Pre-Focus Group Questionnaire in a sequential fashion, allowing time in between questions for discussion and recommendations to be put forward by the focus group (Morgan's Moderating Focus Groups [Vol. 4], 1998).

In this way each question was put forward to the Focus Group to determine if it was:

- Relevant to this study;
- Understandable and unambiguous and
- Clear and simple to follow so as to enable respondents to easily answer questions through instruction.

The recommendations made by the focus group as a whole were taken into account and suggested changes were implemented to produce the Post-Focus Group / Pre-Departmental Meeting Questionnaire (Appendix D1). The following changes were made to the Pre-Focus Group questionnaire:

Section 1: Demographics

Question 2: Changed from block selection to open-ended questions to promote ease of answering and statistical analysis.

Section 2: Education

Question 3: Question split to gain specific information on post-graduate veterinary qualification versus qualification outside of veterinary health care.

Section 3: Veterinary Experience

Question 1: Added to gain information on professional association membership

Question 2: Added to gain information of possible alternative veterinary professional association membership.

Question 3: Added to differentiate areas of work in veterinary health care.

Question 4: Previous question 1, moved to question 4 with added blocks/options to aid in more specific statistical analysis.

Question 9: Previous question 7, moved to question 9, options changed to aid in statistical analysis.

Question 10: Added to gain information on alternative therapy use in private veterinary practice.

Section 4: "Knowledge of Chiropractic" changed to "Knowledge of Human Chiropractic".

This heading was changed to emphasize that the questions in this section cover the application of chiropractic to the care of humans.

Question 1: "About" changed to "of" to promote understanding of the question for respondents.

Question 2: "Veterinary doctors" option changed to "veterinarians", considered an acceptable term by focus group members.

Question 3: Added to gain information on whether the respondent was being exposed to favourable information regarding chiropractic.

Question 4: Previous question 3 moved to question 4, options changed to promote understanding of question for respondents and easier statistical analysis.

Question 5: Added in place of previous question 4 to as was considered by focus group to be more objective means of evaluating the respondents' knowledge of chiropractic.

Section 5: Knowledge of Animal Chiropractic

Question 1: "About" changed to "of" to promote understanding of question for respondents.

Question 2: "Veterinary doctors" changed to "veterinarians"

Question 3: Added to gain information on whether the respondents were being exposed to favourable information regarding animal chiropractic.

Question 4: Added in place of previous question 3 as an objective means of evaluating the respondents' knowledge of animal chiropractic.

Section 6: "Referral with a Chiropractor" changed to "Interaction with a Chiropractor"

This heading was changed to indicate this section's broader scope of questions.

Question 1/2: Merged to facilitate directing of respondents to correct questions.

Question 3: Split to become questions 2 and 3, changed answer options as Focus Group members felt animal classifications were inaccurate.

Question 4: Question wording changed to gain more information from respondents.

Question 5: Wording of question changed to be more correct in terms of current South African veterinary legislation.

Question 6: Question added to gain information on respondents' knowledge of other veterinarians with history of referring to a chiropractor.

Question 7/8: Questions added to assess respondents' general interaction with CAM / CAVM therapists.

Section 7: Communication with a Chiropractor

Question 3: "Neutral" removed to aid in statistical analysis and promote a definite answer from the respondents.

Section 8: Education and Legislation

Question 1: Question added to gain knowledge on respondents' understanding of current legislation.

Question 2: Question added to gain knowledge on respondents' opinion of possible future legislation.

Question 3: Previous question 8, moved to question 3, wording changed to assess knowledge of animal chiropractic governance in South Africa.

Question 4: Question added to gain information on respondents' opinion of animal chiropractic governance in South Africa.

Questions 6-11: Added to gain respondents' opinion on possible South African animal chiropractic / manipulation course information.

Section 9 : Information

Question 1: Previous question 2, wording changed to promote understanding of question for respondents.

Question 2: Question added to gain knowledge on respondents' opinion of favourable form of receiving information regarding animal chiropractic.

The focus group was video-recorded (in this case by the research co-supervisor) and the researcher also took notes on the discussion (Silverman, 2001 and Streiner and Norman, 1995). Due to the confidentiality agreement signed by all parties present at the focus group, this video footage is only available to anyone who gains written permission from the researcher / research supervisor to view it.

3.7.3 Chiropractic Departmental Research Committee

Following the recommendations made by the Chiropractic Research Committee, Durban University of Technology, the following amendments were made to the Post-Focus Group / Pre-Departmental Meeting questionnaire (Appendix D1) to produce the Post-Departmental Meeting / Pre-Pilot Study questionnaire (Appendix D2):

Section 2: Education

Question 2: "Institute and town / country" added to question to gain more specific answers.

Question 3: "What" changed to "please specify" to be congruent with rest of questionnaire.

Question 4: "What" changed to "please specify" to be congruent with rest of questionnaire.

Section 3: Veterinary Experience

Question 2: Question wording changed from "para-veterinary associations" to "veterinary related associations" to promote understanding of question for respondents.

Question 3: Removed "have ever been involved in" from question to only assess current areas of veterinary involvement.

Question 4: Removed option blocks to promote easy of answering for respondents.

Question 6: Question removed to shorten questionnaire.

Sections 4 and 5: Knowledge of Human Chiropractic and Animal Chiropractic

Remained the same

Section 6: Interaction with a Chiropractor

Question 1: "Don't know" added as option to expand answer options.

Question 3: Question added to gain information on veterinary satisfaction with chiropractic care of referred animals.

Question 4: Question added to gain information on communication with referral chiropractors.

Section 7: Communication with a Chiropractor

This section was removed to shorten the questionnaire.

Section 8: Education and Legislation

Question 8: Question wording change from "allowed to register" to "allowed to attend" to decrease ambiguity of the question for respondents.

Section 9: Information

Question 1: Expand "Legal / ethical" option to "Ethical / legal situation of the chiropractic treatment of animals" to be more specific with the answer option.

3.7.4 Formatting of Questionnaire to Internet Website

The Post-Chiropractic Research Committee Questionnaire (Appendix D2) was reformatted to fit the criteria of the questionnaire design and management programme used by the Internet website, surveymonkey.com (2010). An informed consent page was included as the first section. This section utilized a function whereby the respondents had to answer the informed consent page appropriately (giving informed consent) before the programme allowed them to continue with the questionnaire. Some sections were split into smaller sections to promote ease of answering / flow of questionnaire and directing of respondents to relevant sections. The questionnaire design and management programme allowed for directing of respondents to sections relevant to them (e.g. If a respondent answered “no” to a particular question, they were automatically directed to the next section, as the rest of the current section was non-applicable to them), though the design programme only allowed directing of respondents to the beginning of another section.

The reformatting, once completed, created the Pre-Pilot Study Questionnaire. Due to the relatively few recommendations made by the Pilot Study participants, which only concerned the Letter of Information and “thank you” page and not the actual questionnaire, the Pre-Pilot Study Questionnaire remained unchanged and consequently became The Post-Pilot Study Questionnaire / Final Online Questionnaire (Appendix B2). This comprised of the following sections and is covered in the discussion of the Final Online Questionnaire (Section 3.7.6).

1. Informed Consent
2. Demographic Information
3. Educational Information
4. Veterinary Experience
5. Private Practice Experience
6. Knowledge of the Application of Chiropractic to Humans
7. Knowledge of the Application of Chiropractic to Animals

8. Interaction with a Chiropractor
9. If “Yes” to Referral
10. If “No” to Referral
11. Education and Legislation
12. Information

3.7.5 Pilot Study

The questionnaire was distributed to five respondents who met the inclusion criteria of the study (Esterhuizen, 2010). The questionnaire was administered in the Pilot Study exactly as it was to be administered to the target group in the main study. The purpose of this was to see how long it took for them to complete the questionnaire and identify problems relating to questionnaire instruction, question understanding and ease of answering (Hicks, 2004 and Fink and Kosecoff, 1985).

The following changes were recommended and made:

The “link” to the actual surveymonkey.com website that appeared in the Letter of Information was removed to avoid confusion with the “link” to the questionnaire.

A “thank you” page was added at the end of the questionnaire, which stated: “Thank you for completing my survey!”

3.7.6 Final Questionnaire

Section 1: **Informed Consent**- this section covered informed consent and was required to be answered correctly to continue with the questionnaire.

Section 2: **Demographic Information**- this section dealt with the demographic information of the respondents, including age, gender and ethnicity of respondents.

Section 3: **Education**- this section covered the educational background of the respondents, including veterinary and other education.

Section 4: **Veterinary Experience**- this section covered the area\s of veterinary experience of respondents.

Section 5: **Private Practice Experience**- this section was only answered by respondents who had private practice experience, dealing with particulars concerning their practice information, e.g. do they / have they made use of complementary and alternative medicine (CAM) or complementary and alternative veterinary medicine (CAVM) in their practice.

Section 6: **Knowledge of the Application of Chiropractic to Humans-** covering the respondents' knowledge and personal utilization of the chiropractic treatment of humans.

Section 7: **Knowledge of the Application of Chiropractic to Animals**- covering the respondents' knowledge and perception of the chiropractic treatment of animals.

Section 8: **Interaction with a Chiropractor**- this section asked about any referral history between the respondents and chiropractors, so as to direct respondents with a history of referral to section 9 and those without a history of referral to section 10. Section 9 and 10 were the same except for additional questions in section 9 dealing with the relevant respondents' history of referral with a chiropractor.

Section 9: **If "Yes" to Referral**- this section was only answered by respondents who had a history of referring an animal to a chiropractor and covered the

particulars of past and possible future referral as well as veterinary conditions they consider chiropractic to be effective in treating.

Section 10: **If "No" to Referral**- this section was only answered by respondents without any history of referral to a chiropractor and covered their views on possible future referral and veterinary conditions they consider chiropractic to be effective in treating.

Section 11: **Education and Legislation**- covering the respondents' knowledge and opinion on education and legislation options for the chiropractic treatment of animals in South Africa.

Section 12: **Information**- this section covered the information desired by the respondents regarding the chiropractic treatment of animals as well as the type of information sharing preferred by the respondents.

3.7.7 Measurement Frequency

The questionnaire was completed only once by each participant.

3.8 Data Analysis

3.8.1 Statistical Analysis:

Statistical analysis was achieved using SPSS version 15.0 (SPSS Inc. Chicago, Illinois, USA). Knowledge and perceptions were scored using questionnaire responses so that the higher the score, the higher the level of knowledge or perceptions. Two knowledge scores were generated, one for knowledge of human chiropractic and a second for animal knowledge. The questions making up the first knowledge score were question 6.5 a to f (6 items) and those making up the second knowledge score were questions 7.4 a to g (7 items) as well as two additional items, 11.1 and 11.3 (9 items in total). The

scores were expressed as percentages by dividing the raw scores by the maximum score and multiplying by 100. A total knowledge score was also generated which was the average of the previous two knowledge scores. Participants with missing values for all items in the scores were excluded from the analysis (Esterhuizen, 2010).

The perception scores were generated by allocating a score of 1 to a positive response on question 9.5 a to d; 9.6 a, c, d, g-r (which were only answered by those who had referred an animal to a chiropractor); 10.1 a-d, 10.2 a, c, d, g-o, q-s (which were only answered by those who had referred an animal to a chiropractor); 11.6 a and 11.11 a; and allocating 3 points to response of 11.2 a and 2 points to a response of 11.2 b. Points were summed up and divided by a maximum score of 24 and multiplied by 100 to transform it into a percentage. These scores were tested for normality of distribution and found to be non-parametrically distributed, thus non-parametric tests were used. Scores were compared between groups using Mann-Whitney or Kruskal-Wallis tests as appropriate. Spearman's correlation was used to assess intra-group relationships between knowledge and perceptions. A p value of <0.05 was considered as statistically significant (Esterhuizen, 2010).

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the research questionnaire, as well as a discussion and statistical analysis of these results. The majority of research studies undertaken by chiropractic students at the Durban University of Technology are structured in such a way as to present the results of the research in Chapter Four and discuss / analyse the results in Chapter Five. It was felt by the researcher that presenting, discussing and statistically analysing the results of this research in one chapter would promote understanding of the relevance of the results. The results are presented and discussed according to the five study objectives and sub-sections of these objectives.

Objective One: To document the demographic data of the respondents.

Objective Two: To determine the respondents' level of knowledge of chiropractic and the chiropractic treatment of animals.

Objective Three: To determine the respondents' perceptions towards chiropractic and the chiropractic treatment of animals as well as their usage, referral and interaction with chiropractors.

Objective Four: To determine the respondents' knowledge and perception of the legislation and education of the chiropractic treatment of animals in South Africa.

Objective Five: To determine any associations between knowledge, perceptions and factors influencing these.

4.2 Data Sources

Data sources utilized to compile this chapter were from both primary and secondary sources of information.

4.2.1 Primary Data

Primary data was sourced from information collected from the answered questionnaires submitted by the respondents to the researcher (Appendix B3).

4.2.2 Secondary Data

Secondary data sources included personal communications with the research statistician (Esterhuizen, 2010), supervisor (Matkovich, 2010) and co-supervisor (Korporaal, 2010) of the research study. It must be noted that the discussion of this chapter (as in Chapter Five) also required the use of the literature outlined in Chapter Two, which was obtained from books, journal articles, research dissertations, internet and other appropriate sources used to construct arguments and hypotheses and with which to compare the results of this study.

4.3 Abbreviations Pertinent to this Chapter

=	=	implies “equals to”.
%	=	percentage.
ANOVA	=	analysis of variance.
N	=	number.
n	=	refers to the sample size.
P	=	refers to the p-value, which indicates the study data’s statistical significance. The smaller the p-value ($p<0.001$) the greater the significance of the results. For this study, the significance level was set at $p=0.05$, although cognizance was

given to p=0.01 if the results were close or multiple significances were found (Esterhuizen, 2010).

Sig = Significance. The likelihood that a finding or a result is caused by something other than just chance. Usually, this is set at less than 5% probability ($p < 0.05$), meaning that the result is at least 95% likely to be accurate, or that this result would be produced by chance no more than 5% of the time (Stachowiak, 2008).

4.4 Response Rate

The South African Veterinary Council (SAVC) provided 2788 names of registered veterinarians, 250 of which had registered addresses outside of South Africa and were therefore omitted from participation in this study, as defined by the inclusion criteria.

Out of the remaining 2538 addresses registered to veterinarians residing in South Africa, 2191 were accompanied by electronic mail (e-mail) addresses and could therefore be contacted by e-mail for participation in this study. Upon sending of e-mails to the veterinarians, 350 had e-mail accounts that did not accept the e-mail, possibly due to false or changed e-mail addresses or email accounts that were full.

This meant that 1841 veterinarians where approached to participate in this research. There were 53 responses indicating that they were veterinarians who had retired from veterinary practice, one indicating that the veterinarian was deceased and a further 13 responses indicating they were veterinarians who had emigrated from South Africa but had not changed their contact details with the SAVC.

This meant that the sample population for this research was 1774 veterinarians.

There were 245 submitted questionnaires, (Esterhuizen, 2010). This gave a response rate of 13.8% (245/1774). While the responses for all answered questions were shown, only 235 of the submitted questionnaires were used for the final perception and

knowledge analysis as they were deemed by the research statistician to be sufficiently answered (Esterhuizen, 2010). Due to the number of veterinarians that indicated they had retired from clinical practice or had emigrated from South Africa, it could be postulated that there were more registered veterinarians who were retired or had immigrated but were still registered with the SAVC. These figures would have decreased the sample population, which would have subsequently increased the response rate.

Carey *et al.,* (2005) stated that any response rate over 10% can be regarded as strong for a voluntary survey without reward, though the literature recommends a response rate of over 20% in order for the results to be generalisable within the confines of the study criteria (Mearnes and Reader, 2007).

Russell *et al.,* (2004) analyzed 62 surveys published between 1980 and 2000, finding that the number of contacts with the target population was identified as the strongest predictor of the response rate. “For every additional contact with the population, the response rate can increase by about 10%” (Russell, *et al.,* 2004:46). Due to the large target population of this research, e-mail request for participation was the chosen means for contact. Questionnaire distribution by way of postage would be expensive with regard to printing and postage with a relatively low expected response rate (Esterhuizen, 2010; Louw, 2005; van As, 2005; Carey, *et al.,* 2005). There were three e-mails in total sent to the veterinarians with approximately 60-90 responses received per e-mail. This is below the expected 10% response rate per contact stated by the literature and may be due to the nature by which the target population was approached, the time constraints of practicing professionals such as veterinarians, a general disinterest in alternative therapies such as chiropractic and / or dissatisfaction with the research questionnaire.

4.5 Results

Questions 1.1 and 1.2 dealt with informed consent to ensure that informed consent was understood and given prior to continuing with the questionnaire.

4.5.1 Objective 1: To document the demographic data of the respondents:

4.5.1.1 Personal Demographics:

4.5.1.1.1 Q 2.1: *"What is your gender?"*

Table 4.1 shows that the respondents were 53.1% male and 46.9% female.

Table 4.1: Gender of respondents

Answer Options	Response Percent	Response Count
Male	53.1%	128
Female	46.9%	113
Answered Question		**241**

4.5.1.1.2 Q 2.2: *"What was your age at your last birthday?"*

The results illustrated in Table 4.2 indicate that the mean age of the sample was 41.5 years with a range from 22 to 74 years and a standard deviation of 11.6 years.

Table 4.2: Ages

N	Valid	241
	Missing	4
Mean		41.52
Std. Deviation		11.618
Minimum		22
Maximum		74

4.5.1.1.3 Q 2.3: *"What is your race?"*

Table 4.3 and Figure 4.1 illustrate that the majority of respondents were White (87.1%), followed by Black (6.6%), Indian (1.7%), Coloured (0.4%) and 'Other' (4.2%). The majority (70%) of 'Other' responses indicated that they were South African or that they believed the question to be unnecessary.

Table 4.3: Race of respondents

Answer Options	Response Percent	Response Count
Black	6.6%	16
White	87.1%	210
Coloured	0.4%	1
Indian	1.7%	4
Other (please specify)	4.2%	10
Answered Question		**241**

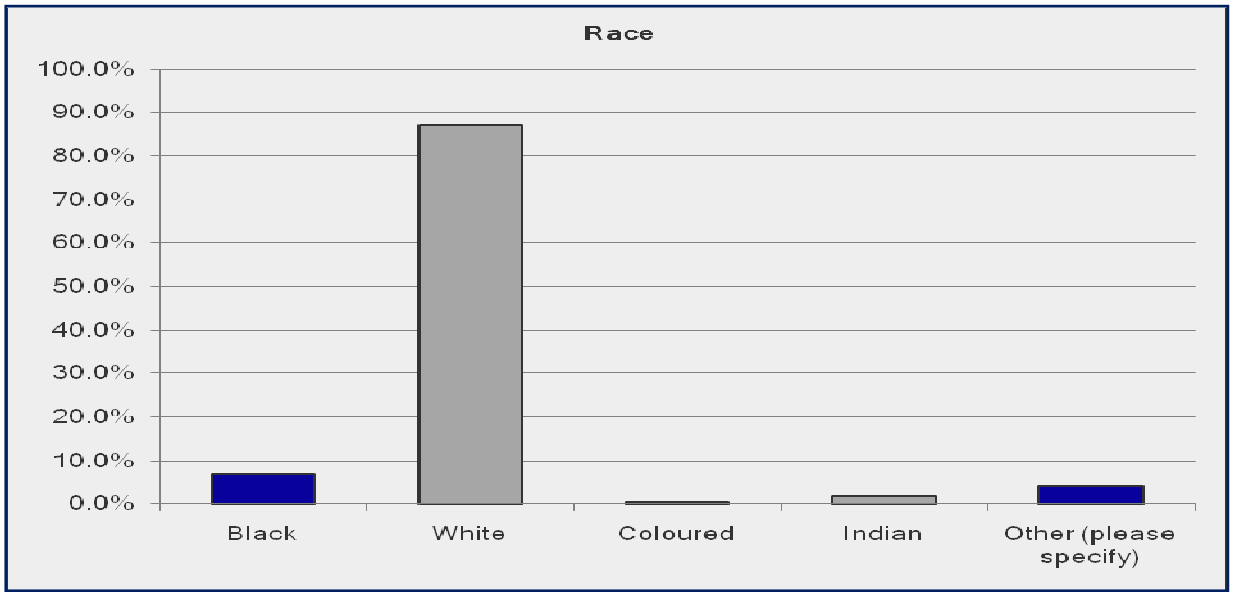


Figure 4.1: Race of respondents

4. 5.1.1.4 Q 3.1: *"In what year did you attain your veterinary degree?"*

Table 4.4 demonstrates that the years of veterinary qualification ranged from 1959 to 2010. The majority of veterinarian respondents qualified in 2006.

Table 4.4: Year of obtaining a veterinary degree

		Frequency	Valid Percent		Frequency	Valid Percent
Valid	1959	1	.4	1988	5	2.1
	1962	1	.4	1989	6	2.5
	1964	2	.8	1990	8	3.4
	1965	1	.4	1991	8	3.4
	1966	1	.4	1992	9	3.8
	1968	2	.8	1993	2	.8
	1969	2	.8	1994	5	2.1
	1971	3	1.3	1995	6	2.5
	1973	5	2.1	1996	9	3.8
	1974	2	.8	1997	7	3.0
	1975	3	1.3	1998	5	2.1
	1976	2	.8	1999	9	3.8
	1977	1	.4	2000	9	3.8
	1978	3	1.3	2001	7	3.0
	1979	2	.8	2002	9	3.8
	1980	6	2.5	2003	1	.4
	1981	4	1.7	2004	6	2.5
	1982	2	.8	2005	4	1.7
	1983	6	2.5	2006	20	8.5
	1984	3	1.3	2007	9	3.8
	1985	7	3.0	2008	9	3.8
	1986	5	2.1	2009	12	5.1
	1987	6	2.5	2010	1	.4
Total			236			100.0

4.5.1.1.5 Q 3.2: *"Where did you attain your veterinary degree from? (institution and town/country)"*

Table 4.5 illustrates that 87.8% of the veterinarian respondents obtained their veterinary degree from Onderstepoort, University of Pretoria, South Africa; while 12.2% obtained their degree from outside of South Africa.

Table 4.5: Place of veterinary qualification

		Frequency	Valid Percent
Valid	South Africa	208	87.8
	Abroad	29	12.2
	Total	237	100.0

4.5.1.1.6 Q 3.3: *"Do you hold any post-graduate veterinary qualification/s?"*

It is demonstrated in Table 4.6 that 23.6% of veterinarian respondents reported to have a post-graduate veterinary qualification. Of these, 14.3% (N=8) indicated that they had a complementary and alternative veterinary medicine (CAVM) related post-graduate qualification, one of which was an animal chiropractic / manipulation qualification (stated as being "McTimoney technique" chiropractic). This equated to 3.4% of the valid responses indicating post-graduate veterinary qualification.

Table 4.6: Post-graduate veterinary qualification

Answer Options	Response Percent	Response Count
No	76.4%	181
Yes	23.6%	56
Answered Question		**237**

4.5.1.1.7 Q 3.4: *"Do you hold any qualification/s outside of veterinary healthcare?"*

Table 4.7 indicates that 30.4% of respondents had qualifications outside of veterinary healthcare. 26.62% of these had various Bachelor of Science degrees with no one reporting to have obtained a complementary and alternative medicine (CAM) related qualification.

Table 4.7: Qualification outside of veterinary health care

Answer Options	Response Percent	Response Count
No	69.6%	165
Yes	30.4%	72
Answered Question		**237**

4.5.1.1.8 Q 4.1 a: *"Are you a member of the South African Veterinary Association (SAVA)?*

Q 4.1 b: ***"If 'yes', for how many years?"***

It is shown in Table 4.8 that 81.4% of respondents were members of the SAVA. They had an average membership of 10 years with an inter-quartile range from 4.25 to 25 years and a range from 0.8 to 50 years (table not shown).

Table 4.8: SAVA membership

Answer Options	Response Percent	Response Count
No	18.6%	44
Yes	81.4%	193
Answered Question		**237**

4.5.1.1.9 Q 4.2: *"Are you a member of any other veterinary related associations?"*

The results presented in Table 4.9 reveal that 59.3% of the respondents were members of other veterinary related associations. Of these, 5% (N=7) indicated that they were part of a CAVM related association. This equated to 3% of valid responses indicating they were part of a CAVM related association.

Table 4.9: Veterinary association membership

Answer Options	Response Percent	Response Count
No	40.7%	96
Yes	59.3%	140
Answered Question		**236**

4.5.1.1.10 Summary and Discussion of Personal Demographic Data

The gender constitution of the veterinarian respondents (Table 4.1) was found to be 53.1% male and 46.9% female. The vast majority of respondents were White (87.1%), with an average age of 41.5 years (Tables 4.2 and 4.3, respectively).

It has been found that women are more likely to utilize complementary and alternative therapies than men, often related to them being the care givers in the family environment (MacLennan and Wilson, 1996; Barnes, *et al.,* 2007; Tatalias, 2006). Consequently, it has also been found that higher utilization of chiropractic is associated with a greater perception and knowledge about it (Rattan, 2007; Talmage, 2007; Louw, 2005). Considering that the slight majority of veterinarian respondents where male, the gender constituents of the respondents may be a detractor towards their perception of chiropractic and the chiropractic treatment of animals, though this is expected to be minor.

Age has been shown to be a likely factor in perception with the literature showing that older patients are more likely to make use of alternative therapies, such as chiropractic, than younger patients (Tatalias, 2006; Reid, 2002; Kayne, Beattie and Reeves, 1999). As with gender, increased utilization of chiropractic has been associated with increased knowledge and perception of it (Rattan, 2007; Talmage, 2007; Louw, 2005). With the average age of the respondents being 41.5 years, the age of the respondents could be a positive factor towards their knowledge and perception of chiropractic and the chiropractic treatment of animals.

The literature shows CAM therapies to be generally utilized more by White ethnic / race groups than other ethnic / race groups (Alcock *et al.,* 2003 and Barnes *et al.,* 2007). Philbin *et al.,* (2008) states that culture, and the socio-economic and political environment associated with culture, has a strong influence on the manner in which members of a particular group react to different constructs. This is supported by studies undertaken both in South Africa and abroad demonstrating that CAM is generally more utilized by White ethnic / race groups, with chiropractic being further found to be underappreciated by the Black South African population (Barnes, *et al.,* 2007 and Myburgh and Mouton, 2007). Considering that the vast majority of respondents were White (87.1%), race may be a positive factor in their perception of chiropractic and its application to the health care of animals.

The respondents would all have completed at least one tertiary level qualification (Veterinary Science) as defined by the inclusion criteria, with 87.2% of the veterinarian respondents having obtained their qualification in South Africa (Table 4.5), predominantly in 2006 (Table 4.4). Additionally, 23.6% of the respondents reported to have a post-graduate veterinary qualification (12.5% of which had a CAVM related qualification) (Table 4.6) and 30.4% where found to hold a qualification outside of veterinary health care (Table 4.7), though none were CAM related. The literature shows that tertiary level education is associated with increased levels of CAM utilization due to reasons that include a greater understanding of disease processes, health care options and treatment procedures due to increased accessibility to information (e.g. libraries,

internet, media), as well as the ability to finance health care that falls outside of public health care services (Tatalias, 2006; MacLennan and Wilson, 1996; Astin, 1998). As increased utilization of chiropractic is associated with increased knowledge and perception of it, the veterinary respondents could therefore be expected to have a higher level of knowledge and perception of chiropractic than the general public (Rattan, 2007 and Talmage, 2007; Louw, 2005).

However, Onderstepoort (veterinary sciences faculty affiliated with the University of Pretoria) which offers the only South African Veterinary Council (SAVC) recognised veterinary science degree in South Africa does not currently have any chiropractic or other CAVM therapies taught in their curriculum (Wimberley, 2009). The perception of the veterinarian respondents towards chiropractic could, therefore, be negatively influenced by the majority of them not being exposed to it in their tertiary education system. Conversely, the chiropractic treatment of animals is a relatively new branch of chiropractic (Willoughby, 2010), so the majority of respondents who studied veterinarian medicine more recently may have had a higher chance of being exposed to it during their studies which may in turn influence their knowledge and perception of it.

Having obtained a CAM or CAVM related qualification should indicate a higher level of knowledge and perception towards CAM and CAVM therapies in general, including the chiropractic treatment of animals. As none of the veterinary respondents had obtained a CAM related qualification, only 3.4% of the respondents a CAVM related post-graduate qualification and only one respondent a post-graduate animal chiropractic qualification, this is not expected to influence the general perception of the respondents significantly.

It is therefore evident that while the veterinary respondents had all undertaken tertiary education and many were recently qualified, the effect of this on their perception may be ameliorated by the majority of them being South African trained with few having studied therapies that fall outside of mainstream medicine.

Out of the veterinary respondents, 81.4% where affiliated with the South African Veterinary Association (SAVA) (Table 4.8) and 59.3% with other veterinary related associations (Table 4.9) (5% of which were CAVM related associations). Being affiliated to a veterinary association could indicate a desire to stay up to date with advances in veterinary medicine, including new veterinary diagnosis and treatment techniques, as well as having exposure to CAM or CAVM through lectures and newsletters offered by the association. The American Medical Veterinary Association (AMVA) relatively recently reviewed their guidelines pertaining to CAVM, indicating that they wish to stay up to date with advances in veterinary medicine (AMVA, 1996). This is something that should filter through to its members, possibly influencing the knowledge and perception of CAVM therapies for those veterinarians affiliated to a professional veterinary association.

The aforementioned literature therefore indicates that the personal demographics of the respondents are expected to generally have a positive effect on their knowledge and perception of chiropractic and the chiropractic treatment of animals. The only evident detractors would be the high percentage of respondents who had qualified in South Africa and the relatively small number of respondents who had studied CAM or CAVM related therapies, possibly showing a lack of interest, motivation or opportunity to study a medical therapy that falls outside of mainstream medicine. These will be further discussed under Objective Five (Section 4.5.5).

4.5.1.2 Veterinary Experience:

The following Question (Q 5.1) was asked so as to direct respondents with private practice experience to Questions 5.2-5.7. The respondents without private practice experience were directed to Question 6.1. There were 220 respondents who indicated they had private practice experience and were therefore directed to answer the relevant questions.

4.5.1.2.1 Q 5.1: *"What area/s of veterinary health care are you involved in? (more than one answer possible)."*

Table 4.10 and Figure 5.2 illustrate that 92.8% of respondents were involved in private practice, 13.9% were involved with research, 12.2% were involved with academic work, 5.5% with industry and 16.0% indicating 'Other' areas of veterinary work. Of the 'Other' responses, 39% indicated that they were involved with state or government related veterinary work and 26% indicated that they were involved with wildlife / welfare work.

Table 4.10: Veterinary health care involvement

Answer Options	Response Percent	Response Count
Private Practice	92.8%	220
Academic	12.2%	29
Research	13.9%	33
Industry	5.5%	13
Other	16.0%	38
Answered Question		**237**

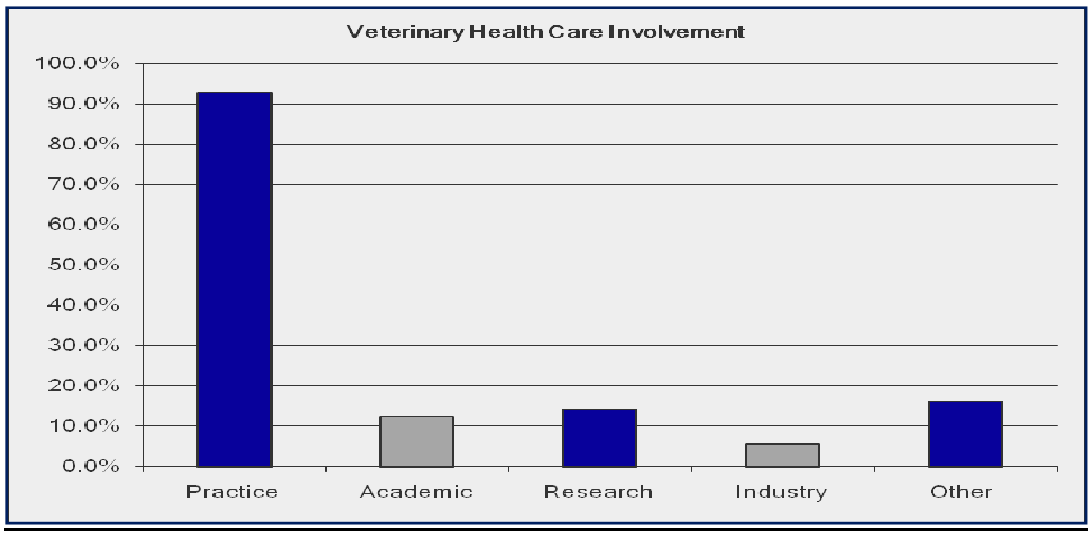


Figure 4.2: Veterinary health care involvement

4.5.1.2.2 Q 5.2: *"How many years of practice experience do you have?"*

Table 4.11 demonstrates that the average in the sample was 15 years experience with 11.7 years standard deviation and a range from 6 months to 50 years.

Table 4.11: Years of practice experience

N	Valid	217
	Missing	28
Mean		15.491
Std. Deviation		11.6607
Minimum		.5
Maximum		50.0

4.5.1.2.3 Q 5.3: *"In what type of area do you practice?"*

The results demonstrated in Table 4.12 show that 63.0% of responses worked exclusively in urban areas, 11% in rural and 26.0% in both.

Table 4.12: Area of practice

Answer Options	Response Percent	Response Count
Urban	63.0%	138
Rural	11.0%	24
Both	26.0%	57
Answered Question		**219**

4.5.1.2.4 Q 5.4: *"In which South African province do you practice?"*

Table 4.13 and Figure 4.3 illustrate that 36.8% of the respondents in private practice reported to practice in the Gauteng Province, 25.4% in the Western Cape Province, 19.1% in the KwaZulu- Natal Province, 10.0% in the Eastern Cape Province, with the remaining 5 South African provinces only accounting for 8.7% of the responses.

Table 4.13: Province of practice

Answer Options	Response Percent	Response Count
Eastern Cape	10.0%	21
Free State	2.9%	6
Gauteng	36.8%	77
Kwa-zulu Natal	19.1%	40
Limpopo	0.5%	1
Mpumalanga	2.9%	6
Northern Cape	1.0%	2
North West Province	1.4%	3
Western Cape	25.4%	53
Answered Question		**209**

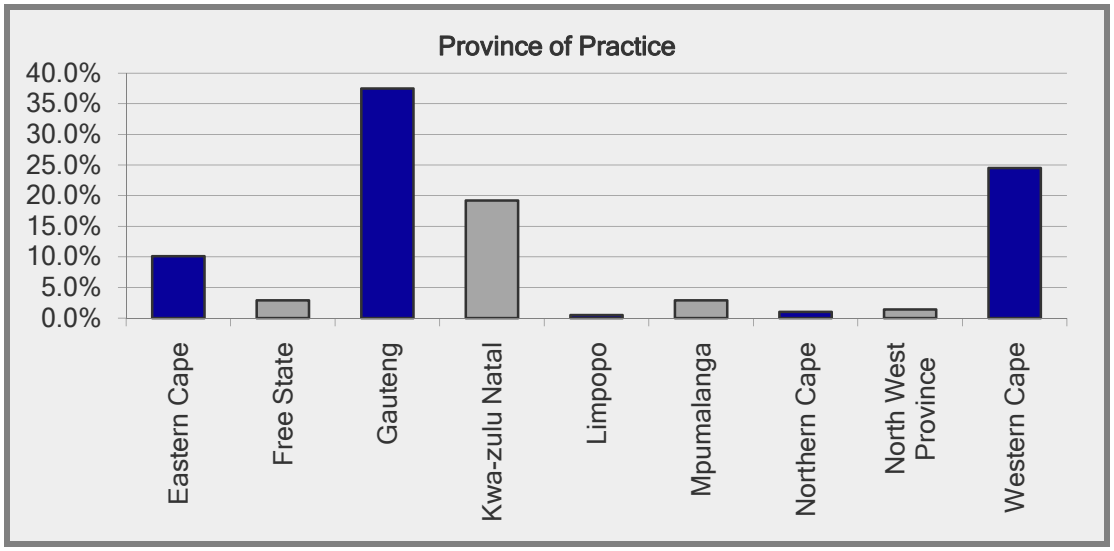


Figure 4.3: Province of practice

4.5.1.2.5 Q 5.5: *"Have you practiced outside of South Africa?"*

It is shown in Table 4.14 that 53.7% (N=117) of respondents in private practice had practice experience in one or more countries outside of South Africa. It is further illustrated in Figure 4.4 that the majority of these responses (N=88) indicated that they had veterinary practice experience in the United Kingdom, with practice experience also being reported in America (N=5), Germany (N=5), New Zealand (N=4) and Australia (N=3). In Africa, practice experience was primarily reported in Zimbabwe (N=9) and Namibia (N=5), with (N=14) of the respondents reporting to have practice experience in various other African countries.

Table 4.14: Practice experience outside of South Africa

Answer Options	Response Percent	Response Count
No	46.3%	101
Yes	53.7%	117
Answered Question		**218**

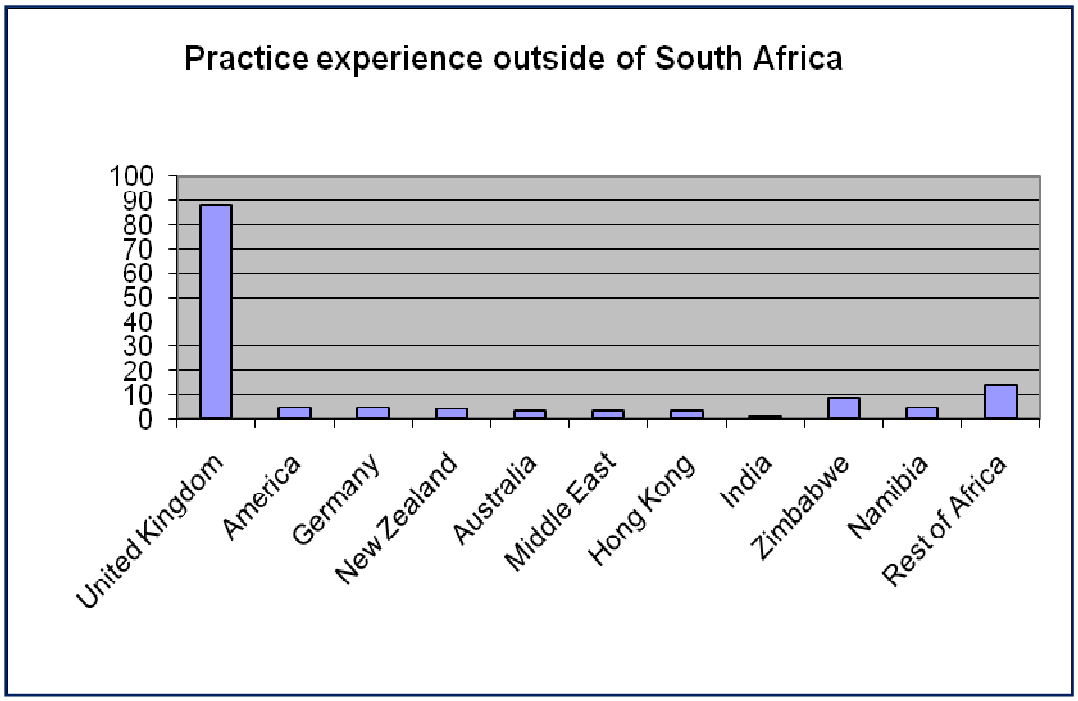


Figure 4.4 Practice experience outside of South Africa

4.5.1.2.6 Q 5.6: *"What type of animals do you treat in your practice? (more than one answer possible)."*

Table 4.15 demonstrates that 93.2% of respondents in private practice treated small animals in their practice, 37.4% treated large animals, 40.2% treated exotic animals, 23.3% wildlife and 6.4% 'Other'. Of the 'Other' responses, 43% indicated that they treated chickens or birds.

Table 4.15: Type of animals treated in practice

Answer Options	Response Percent	Response Count
Large animals	37.4%	82
Small animals	93.2%	204
Exotic animals	40.2%	88
Wildlife	23.3%	51
Other	6.4%	14
Answered Question		**219**

4.5.1.2.7 Q 5.7: *"Do you make use of any of the following alternative therapies in your practice? (more than one option possible)"*

The results presented in Table 4.16 indicate that, of the respondents utilizing CAVM therapies in private practice, 75.1% reported to utilize nutritional therapies, 50.8% physiotherapy, 43.4% homoeopathy, 20.6% herbal therapy, 19.6% acupuncture and 11.6% naturopathy. A further 6.9% (N=13) indicated that they used manipulation in their practice. Of the 'Other' responses (8.5%), 37.5% reported to refer to alternative practitioners and 12.5% reported to utilize hydrotherapy, homotoxicology or reflexology (N=2 for each therapy).

Table 4.16: Alternative therapies utilized in practice

Answer Options	Response Percent	Response Count
Homoeopathy	43.4%	82
Naturopathy	11.6%	22
Physiotherapy (including electro-modalities and massage therapies)	50.8%	96
Acupuncture	19.6%	37
Herbal therapy	20.6%	39
Manipulation	6.9%	13
Nutritional therapies	75.1%	142
Other	8.5%	16
Answered Question		**189**

4.5.1.2.8 Summary and Discussion of Veterinary Practice Experience

The inclusion criteria for this research defined that the respondents had to practice veterinary medicine in South Africa, indicating that all of the veterinarian respondents were employed, with 92.8% of them reporting to be in private practice (Table 4.10) for an average of 15 years (Table 4.11). The literature shows employment to be a positive factor in the knowledge and perception of CAM (Barnes *et al.*, 2007; Maclennan and Wilson, 2006). Correlating with increased levels of education, reasons for this may include a greater understanding of disease processes, health care options and treatment procedures due to increased accessibility to information (e.g. libraries, internet, media), as well as the ability to finance health care that falls outside of public health care services (Tatalias, 2006; Astin, 1998; MacLennan and Wilson, 1996). The veterinarians were primarily employed in the private sector and were therefore expected to be in the middle to higher income bracket, thus supporting the financial and

employment indicators that increase the likelihood of exposure to CAM therapies (Thomas and Coleman, 2004; Kayne, Beattie and Reeves, 1999).

The majority of respondents in private practice reported to work in urban (63.0%) or both urban and rural areas (26.0%) (Table 4.12). Regarding the province of practice, 4 of the 9 South African provinces accounted for 91.3% of the respondents in private practice: 36.8% of the respondents practiced in the Gauteng Province, 25.4% in the Western Cape, 19.1% in Kwa-Zulu Natal and 10.0% in the Eastern Cape Province (Table 4.13). Table 4.14 showed that a further 53.7% of these respondents had practice experience outside of South Africa (Table 4.14), with 75.2% (N=88) of these respondents reporting practice experience in the United Kingdom (Figure 4.4).

Most chiropractors in South Africa work in urban areas (CASA, 2008), indicating that there was an increased chance of the veterinarian respondents who reported to practice in urban areas coming into contact with chiropractors and therefore being exposed to chiropractic. As the majority of the veterinarian respondents reported to work in urban areas, an increase in exposure and subsequent related increase in perception and knowledge in the sample population could be expected (Louw, 2007; Langworthy and Smink, 2000).

According to the CASA (2008), there are 350 practicing chiropractors in South Africa registered with CASA. They are distributed as follows: 127 registered chiropractors in the Gauteng Province, 102 in KwaZulu-Natal, 66 in the Western Cape, 32 in the Eastern Cape, 10 in Mpumalanga, 5 in the North West Province, 4 in the Free State, 3 in the Limpopo Province and 1 registered chiropractor in the Northern Cape Province of South Africa.

The four provinces where the majority of the veterinary respondents reported to practice (Gauteng, Western Cape, KwaZulu-Natal and Eastern Cape) are therefore correlated with the provinces were the majority of chiropractors are distributed. This could be a positive factor in their perception of chiropractic as there is expected to be greater

exposure to chiropractic for the majority of respondents who live in these four provinces, which has been linked to an increase in knowledge and perception of the profession (Louw, 2007; Langworthy and Smink, 2000).

Furthermore, the United Kingdom has five recognised teaching institutions that offer courses on the chiropractic care of animals, as well as the International Veterinary Chiropractic Association (IVCA), a professional association representing the promotion and education of the chiropractic treatment of animals in Europe (IVCA, 2010). This would lead to a greater number of qualified animal chiropractors than in South Africa as there is no official education offered on the chiropractic care of animals in this country (Wimberely, 2010). This may have led to increased exposure to the chiropractic treatment of animals for the significant number of respondents who had practiced in the United Kingdom, with a subsequent increase in knowledge and perception.

The distribution and overseas experience of the South African veterinarian respondents in private practice therefore indicates that they had a high likelihood of being exposed to chiropractic and the chiropractic treatment of animals. According to Berg and Theron (1999), Robbins (1996) and Hayes (1994), this is likely to be an enabling factor in the perception of the respondents towards chiropractic and the chiropractic treatment of animals.

Table 4.16 showed that the veterinarian respondents who indicated that they utilized CAVM therapies in their practice primarily made use of physiotherapy (50.8%) and homoeopathy (43.4%) (nutritional therapy is not defined as a CAVM). This meant that 43.6% of the total respondents in private practice (220) utilized physiotherapy and 37.3% utilized homoeopathy.

The utilization of CAVM therapies by the respondents in private practice indicates the veterinary respondents should have a relatively high level of knowledge and perception of CAVM therapies. In terms of chiropractic techniques, N=13 of the respondents in private practice reported to practice manipulation, though the respondents may have

selected physiotherapy to indicate they use certain therapies that are also utilized by chiropractors. Considering that there is no recognised animal chiropractic / manipulation course in South Africa and only one respondent reported to have obtained a postgraduate chiropractic / manipulation degree, it is surprising that N=13 of the respondents claimed to utilize manipulation in their practice.

4.5.2 Objective 2: To determine the respondents' level of knowledge of chiropractic and the chiropractic treatment of animals.

4.5.2.1 Knowledge of Human Chiropractic:

4.5.2.1.1 Q 6.1: *"How would you describe your knowledge of chiropractic?"*

Table 4.17 illustrates that 2.1% of the respondents reported to have never heard of chiropractic, 63.0% reported to have heard about chiropractic but had limited knowledge on it, 29.1% reported to know a reasonable amount about chiropractic and 6% claimed to have a good level of knowledge related to chiropractic.

Table 4.17: Self reported knowledge of chiropractic

Answer Options	Response Percent	Response Count
Never heard of chiropractic	2.1%	5
I have heard of it but my knowledge is limited	63.0%	148
I know a reasonable amount about it	28.9%	68
My knowledge about chiropractic is good	6.0%	14
Answered Question		**235**

4.5.2.1.2 Q 6.2: *"How did you get this information? (More than one answer possible)"*

The results presented in Table 4.18 show that the majority of respondents with knowledge of chiropractic had been exposed to this information from people who had received treatment from a chiropractor (47.6%) and from interaction with a chiropractor (46.8%). This was followed by information from family or friends (29.6%) and from other veterinarians or specialists (23.2%).

Table 4.18: Chiropractic Information sources

Answer Options	Response Percent	Response Count
Lecture about chiropractic	3.4%	8
I have read about chiropractic in a medical journal	12.9%	30
I have read about chiropractic in a (lay) journal	12.0%	28
From my family or friends	29.6%	69
From other veterinarians, specialists, etc.	23.2%	54
Through the media	19.3%	45
Interaction with a chiropractor	46.8%	109
From people/persons who have been treated by a chiropractor	47.6%	111
Other	9.4%	22
Answered Question		**233**

4.5.2.1.3 Q 6.3: *"Was the information favourable?"*

Table 4.19 demonstrates that the vast majority (81.5%) of respondents who reported to have been exposed to information regarding chiropractic reported the information as favourable.

Table 4.19: Favourable information reporting

Answer Options	Response Percent	Response Count
No	18.5%	42
Yes	81.5%	185
Answered Question		**227**

4.5.2.1.4 Q 6.4 a: *"Have you ever been treated by a chiropractor?"*
Q 6.4 b: *"If yes, was treatment beneficial? Please comment."*

It is illustrated in Table 4.20 that 46.2% of the respondents had been treated by a chiropractor. Of those that commented, 91 % reported to have had a positive experience (figures not shown).

Table 4.20: Personal utilization of chiropractic

Answer Options	Response Percent	Response Count
No	53.8%	127
Yes	46.2%	109
If yes, was treatment beneficial? Please comment.		99
Answered Question		**235**

4.5.2.1.5 Q 6.5: *"Please choose whether you believe these statements to be true or false."*

Knowledge of human chiropractic (Table 4.21) was scored and expressed as a percentage as described in the methodology. The mean score was 65% and the range was 0 to 100%. Therefore the knowledge ranged widely with a standard deviation of 20% but on average was quite good (Esterhuizen, 2010). Table 4.22 illustrates the questions answered by the respondents in order to gain a human chiropractic knowledge score.

Table 4.21: Knowledge of human chiropractic

N	Valid	235
	Missing	10
Mean		65.1773
Std. Deviation		20.93277
Minimum		.00
Maximum		100.00

Table 4.22: Objective knowledge of chiropractic questions

Answer Options	True	False	Response Count
Chiropractic does not make use of manipulation when treating	18	214	232
Chiropractic is a form of primary healthcare	111	120	231
Chiropractic makes use of electro-modalities (e.g: ultrasound)	97	129	226
Surgery falls under a chiropractor's scope of practice	6	228	234
Chiropractic treatment is covered by most major medical aids	124	102	226
Dry needling is an adjunct treatment available to chiropractors	145	81	226
Answered Question			**234**

4.5.2.1.6 Summary and Discussion of Knowledge of Human Chiropractic

The self reported knowledge question (Table 4.17) shows that 2.1% of the respondents reported to have never heard of chiropractic, 63.0% reported to have heard about chiropractic but had limited knowledge on it, 28.9% reported to know a reasonable amount about chiropractic, with only 6% claiming to have good knowledge related to chiropractic.

Other chiropractic perception studies have generally found a poor level of knowledge related to chiropractic (Rubens, 1996; Dyer, 1997; Hunter, 2004; Louw, 2005; van As, 2005; Kew, 2006). The veterinarian respondents, however, were expected to have a higher level of knowledge of chiropractic due to the influence of their demographic factors, including age; ethnicity / race; education and employment status, as well as the geographic location and overseas (outside South Africa) study / practice experience of many of the respondents. It is therefore surprising that 65.1% of the respondents reported to have never heard of chiropractic or felt that their knowledge was limited, displaying a distinct lack of confidence regarding their knowledge of human chiropractic.

Of the respondents who reported to have knowledge of chiropractic, it was reported that they primarily gained information on chiropractic from people who had been treated by a chiropractor (47.6%) and from interaction with a chiropractor (46.8%) (Table 4.18). It was further reported that 81.5% of the information that the respondents were exposed to regarding chiropractic was favourable (Table 4.19).

The literature states that exposure to a profession either personally or through someone else's exposure may influence a person's knowledge and perception towards it (Rattan, 2007 and Talmage, 2007; Louw, 2005). This is supported by the respondents' reported means of gaining information where it was found that they gained information primarily from interaction with a chiropractor and from other people who had been treated by a chiropractor. The high percentage of respondents reporting to have been exposed to favourable information regarding chiropractic may explain the link between knowledge

and perception illustrated in the literature (Langworthy and Smink, 2000). Increased knowledge will only promote a positive perception if the knowledge is predominantly favourable.

It must be noted though that the respondents reported a poor level of exposure to chiropractic through the mediums of media (19.3%), medical journals (12.9%), lay journals (12.0%) and lectures (3.4%). This supports van As (2005) who states that the chiropractic profession is to blame for the poor knowledge of chiropractic prevalent in the general public as the chiropractic profession has been slow in promoting and educating the public regarding chiropractic.

Furthermore, 46.2% of the respondents reported to have consulted with a chiropractor (Table 4.20), with 91% of these respondents reporting a positive experience. Considering that the respondents were predominantly White (87.1%), this supports the findings of the NCCAM National American survey where it was found that 43.1% of the White population utilized CAM therapies (Barnes *et al*., 2007). According to Rattan (2007) and Talmage (2007), knowledge and perception of an individual can be positively influenced by previous consultation with a chiropractor as well as if the treatment satisfied expectation and / or was a positive experience, This indicates that the level of knowledge of the respondents regarding chiropractic could be positively influenced by a number of them having a history of positive personal utilization of chiropractic.

There was a relatively high level of objective knowledge displayed by the respondents (Table 4.21). This could be expected due to the positive influence of the demographic factors of the respondents on their knowledge of chiropractic as well as their high levels of personal and secondary exposure to chiropractic, all of which could have played a part in the relatively high level of objective knowledge of chiropractic displayed by the respondents.

4.5.2.2 Knowledge of the chiropractic treatment of animals:

4.5.2.2.1 Q 7.1: *"How would you describe your knowledge of animal chiropractic?"*

The results presented in Table 4.23 show that 21.7% of the respondents reported to have never heard of animal chiropractic, 65.9% reported to have heard of animal chiropractic but with limited knowledge of it, 9.8% claimed to know a reasonable amount about it, with only 2.6% claiming to have a good level of knowledge regarding the chiropractic treatment of animals.

Table 4.23: Self reported knowledge of animal chiropractic

Answer Options	Response Percent	Response Count
Never heard of animal chiropractic	21.7%	51
I have heard of it but my knowledge is limited	65.9%	155
I know a reasonable amount about it	9.8%	23
My knowledge about animal chiropractic is good	2.6%	6
Answered Question		**235**

4.5.2.2.2 Q 7.2: *"How did you get this information? (More than one answer possible)"*

Table 4.24 illustrates that, of the respondents with knowledge of animal chiropractic, 40.8% were exposed to information on the chiropractic treatment of animals from other veterinarians or specialists, 31.9% from interaction with an animal chiropractor, 16.2% from a lay journal and 15.3% from family or friends.

Table 4.24: Animal chiropractic information sources

Answer Options	Response Percent	Response Count
Lay lecture about animal chiropractic	4.7%	9
I have read about animal chiropractic in a medical journal	13.6%	26
I have read about animal chiropractic in a (lay) journal	16.2%	31
From my family or friends	15.2%	29
From other veterinarians, specialists, etc.	40.8%	78
Through the media	14.1%	27
From interaction with a chiropractor or animal chiropractor	31.9%	61
Other (please specify)	12.0%	23
Answered Question		**191**

4.5.2.2.3 Q 7.3: *"Was the information favourable?"*

It is shown in Table 4.25 that 74.0% of the respondents who had been exposed to information regarding the chiropractic treatment of animals reported the information as being favourable.

Table 4.25: Favourable animal chiropractic information reporting

Answer Options	Response Percent	Response Count
No	26.0%	50
Yes	74.0%	142
Answered Question		**192**

4.5.2.2.4 Q 7.4: *"Please choose whether you believe these statements to be true or false:"*

The mean score for objective knowledge of animal chiropractic (Table 4.26) was 63% with a standard deviation of 21% and a range from 0 to 100%, indicating a reasonably high level of knowledge on the topic. Table 4.27 illustrates the questions answered by the respondents who claimed to have knowledge regarding the chiropractic treatment of animals.

Table 4.26: Knowledge of animal chiropractic

N	Valid	235
	Missing	10
Mean		62.9787
Std. Deviation		21.35179
Minimum		.00
Maximum		100.00

Table 4.27: Objective knowledge of animal chiropractic questions

Answer Options	True	False	Response Count
Chiropractic on animals makes use of manipulation of limbs in treatment	198	20	218
Animal chiropractors can diagnose an animal patient in South Africa	36	180	216
Chiropractic on animals can be studied in South Africa	58	151	209
Animal chiropractors can only administer treatment under referral in South Africa	123	89	212
Chiropractic on animals treats small animals only	10	206	216
Equine spinal manipulation by a chiropractor can improve the performance of a horse	157	50	207
Chiropractic on animals does not make use of an activator gun	90	88	178
Answered Question			**221**

4.5.2.2.5 Summary and Discussion of Knowledge of the Chiropractic Care of Animals

The self reported knowledge question (Table 4.23) indicated that 21.7% of the veterinarian respondents reported to have never heard of animal chiropractic, 65.9% had heard of animal chiropractic but had limited knowledge of it, 9.8% claimed to know a reasonable amount about it, with only 2.6% claiming to know a good amount about the chiropractic treatment of animals.

The respondents claimed to have less knowledge of the chiropractic treatment of animals than of the chiropractic treatment of humans, though this could be expected as the chiropractic treatment of humans is legislated in South Africa, with both a

professional association (CASA, 2010) and internationally recognized education system (Korporaal, 2010). In contrast, the chiropractic treatment of animals has no recognised professional association or education system in South Africa (Wimberely, 2010), signifying that there should be fewer qualified animal chiropractors in South Africa and therefore a decreased exposure to animal chiropractic as compared to human chiropractic.

The veterinarian respondents who reported to have knowledge of the chiropractic treatment of animals stated to have been exposed to this information from other veterinarians or specialists (40.8%), from interaction with a chiropractor / animal chiropractor (31.9%), from lay journals (16.2%) and from family or friends (15.3%) (Table 4.24). As with the chiropractic treatment of humans, this is congruent with the literature where it was found that personal exposure, as well as indirect exposure, to a profession can influence the knowledge and perception a person has of it (Rattan, 2007 and Talmage, 2007; Louw, 2005).

It was further found that 74.0% of the respondents who had been exposed to information regarding the chiropractic treatment of animals reported the information as being favourable (Table 4.25). This is lower than the favourable information reported regarding the chiropractic treatment of humans (81.5%) but still relatively high. The lower favourable information reporting for animal chiropractic, specifically due to the main source of information being veterinary related professionals, may indicate a certain level of criticism of the chiropractic treatment of animals within the veterinary profession.

The respondents were found to have a relatively high level of objective knowledge regarding the chiropractic treatment of animals (Table 4.26), which may have been positively influenced by their knowledge of the chiropractic treatment of humans (Table 4.21).

It could be postulated that even though there may be less direct exposure to animal chiropractic as compared to human chiropractic due to relatively few animal

chiropractors being located in South Africa, the demographic and geographic factors related to the respondents may have led to them being exposed to animal chiropractic through mediums such as journals, media and internet. The respondents also reported to have been primarily exposed to the chiropractic treatment of animals through interaction with human chiropractors, as well as other veterinarians; sources that the general public may not have the same level of access to.

An overall knowledge score which was the average of the human chiropractic and animal chiropractic knowledge scores was generated (Table 4.28). The average was 64% indicating a relatively high level of overall knowledge regarding chiropractic and the chiropractic treatment of animals (Esterhuizen, 2010).

Table 4.28: Overall knowledge

N	Valid	235
	Missing	10
Mean		64.0780
Std. Deviation		15.82526
Minimum		16.67
Maximum		94.44

4.5.3 Objective 3: To determine the respondents' perceptions towards chiropractic and the chiropractic treatment of animals as well as their usage, referral and interaction with chiropractors.

4.5.3.1 Interaction with a chiropractor:

Question 8.1 was asked so as to direct those with a history of referral to a chiropractor to Questions 9.1-9.9 and those without a referral history to Questions 10.1-10.5. The two sections are the same except for additional questions regarding referral history in the section answered by those respondents with a history of referral to a chiropractor.

4.5.3.1.1 Q 8.1: *"Have you ever referred an animal patient to a chiropractor?"*

Table 4.29 demonstrates that 19.0% of the respondents had referred an animal patient to a chiropractor and 81.0% had no history of referral to a chiropractor.

Table 4.29: History of referral to a chiropractor

Answer Options	Response Percent	Response Count
No	81.0%	188
Yes	19.0%	44
Answered Question		**232**

4.5.3.2 Veterinary Respondents with a History of Referral to a Chiropractor

4.5.3.2.1 Q 9.1: *"Did the chiropractor you referred to have any post-graduate qualification in animal chiropractic?"*

Table 4.30 shows that 41.9% of the chiropractors who had animals referred to them were believed by the veterinary respondents who referred the animal/s to possess a post-graduate qualification in animal chiropractic, 30.2% were not believed to hold a post-graduate animal chiropractic qualification, while 27.9% of the respondents were unsure of the qualification of the referral chiropractor.

Table 4.30: Qualification in animal chiropractic

Answer Options	Response Percent	Response Count
No	30.2%	13
Yes	41.9%	18
Don't know	27.9%	12
Answered Question		**43**

4.5.3.2.2 Q 9.2: *"What type of animals have you referred? (more than one answer possible)."*

The results in displayed in Table 4.31 reveal that the veterinary respondents who had referred animals for chiropractic care referred predominantly small animals (79.1%) and large animals (34.9%). The other classifications of animals combined only constituted 7% of the referred animals.

Table 4.31: Type of animals referred

Answer Options	Response Percent	Response Count
Small animals	79.1%	34
Large animals	34.9%	15
Exotic animals	4.7%	2
Wildlife	0.0%	0
Other	2.3%	1
Answered Question		**43**

4.5.3.2.3 Q 9.3 a: *"Were you satisfied with the treatment received by the animal patient from the chiropractor?"*

Q 9.3 b: "If 'no', please comment."

Table 4.32 shows that 85.7% of the respondents who had referred an animal patient to a chiropractor were satisfied with the treatment received by the animal and 14.3% were not. Of the N=5 respondents who commented on their 'no' selection, 60% (N=3) commented that it was both 'yes' and 'no' as they had experienced different outcomes depending on the chiropractor that they had referred the animal patient to.

Table 4.32 Treatment satisfaction

Answer Options	Response Percent	Response Count
No	14.3%	6
Yes	85.7%	36
If no, please comment.		5
Answered Question		**42**

4.5.3.2.4 Q 9.4: *"How would you rate the communication between yourself and the chiropractor with regard to the referred animal patient/s?"*

The results presented in Table 4.33 and Figure 5.5 demonstrate that 37.2% of veterinary respondents with a referral history with a chiropractor reported to have had average communication with the chiropractor, 30.2% reported good communication between themselves and the chiropractor, 23.3% reported poor communication and 9.3% reported communication to be non-existent between themselves and the referral chiropractor.

Table 4.33: Communication with referral chiropractor

Answer Options	Response Percent	Response Count
Non existent	9.3%	4
Poor	23.3%	10
Average	37.2%	16
Good	30.2%	13
Answered Question		**43**

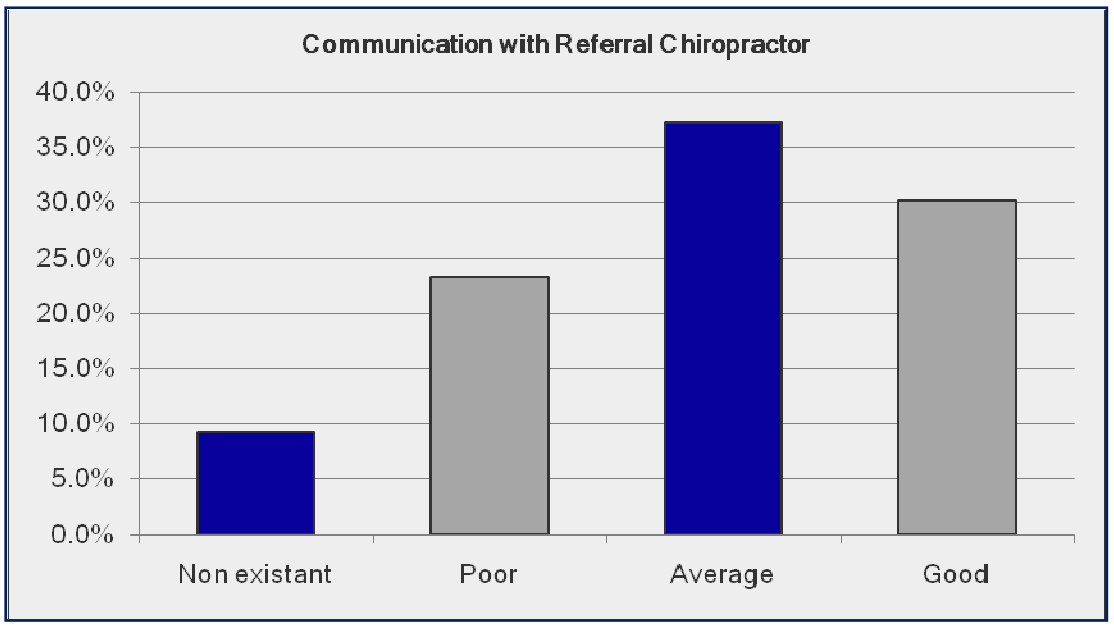


Figure 4.5: Communication with referral chiropractor

4.5.3.2.5 Q 9.5: *"What type of animal/s would you consider referring? (more than one answer possible)"*

Table 4.34 shows that the majority of veterinarian respondents with a referral history would consider referring small animals (90.9%) and large animals (50%). Only 22.7% of the respondents indicated they would consider referring an animal from the remaining categories. Of the N=3 'Other' responses, N=1 commented that they would consider all animals for referral and N=2 commented that they would only consider horses for referral to a chiropractor.

Table 4.34: Type of animals for referral consideration

Answer Options	Response Percent	Response Count
Small animals	90.9%	40
Large animals	50.0%	22
Exotic animals	13.6%	6
Wildlife	2.3%	1
None	0.0%	0
Other (please specify)	6.8%	3
Answered Question		**44**

5.5.3.2.6 Q 9.6: *"Which of these veterinary conditions would you consider chiropractic treatment to help? (more than one answer possible)."*

The results presented in Table 4.35 reveal that the respondents with a history of referral with a chiropractor considered chiropractic to be most helpful with chronic pain syndromes (88.4%); maintenance of joint and spinal health (81.4%); neck, back, leg and tail pain (81.4%); lameness (76.7%); intervertebral disc problems (69.8%); and nerve problems (65.1%).

Conversely, they considered chiropractic to be least helpful with infections (0%); seizures or neurological problems (0%); fractures (4.7%); navicular disease / laminitis (7%); and internal medicine disorders (11.6%). Of the N=2 'Other' responses, one stated that they consider chiropractic to only be helpful with chronic lameness in dogs and one stated that they were not sure.

Table 4.35: Veterinary conditions for chiropractic treatment consideration

Answer Options	Response Percent	Response Count
Fractures	4.7%	2
Behaviour or mood change	27.9%	12
Bowel, bladder, and internal medicine disorders	11.6%	5
Chronic pain syndromes	88.4%	38
Degenerative arthritis	53.5%	23
Intervertebral disc problems	69.8%	30
Infections	0.0%	0
Jaw or TMJ problems	53.5%	23
Lameness	76.7%	33
Maintenance of joint and spinal health	81.4%	35
Muscle spasms	62.8%	27
Musculoskeletal Injuries	62.8%	27
Neck, back, leg, and tail pain	81.4%	35
Nerve problems, e.g. sciatica neuralgia	65.1%	28
Post-surgical care	32.6%	14
Seizures or neurological problems,	0.0%	0
Navicular disease or laminitis.	7.0%	3
Uneven pelvis or hips	62.8%	27
Other	4.7%	2
Answered Question		**43**

4.5.3.2.7 Q 9.7: *"Has a chiropractor ever asked you to evaluate an animal?"*

Table 3.36 shows that 31.8% of the veterinary respondents with a referral history had been asked by a chiropractor to evaluate an animal.

Table 4.36: Evaluation request by a chiropractor

Answer Options	Response Percent	Response Count
No	68.2%	30
Yes	31.8%	14
Answered Question		**44**

4.5.3.2.8 Q 9.8: *"Do you know of any other veterinarians who have worked with / referred to a chiropractor?"*

Table 3.37 demonstrates that 70.5% of the veterinary respondents with a referral history with a chiropractor also knew of another veterinarian who had worked with / referred to a chiropractor.

Table 4.37: Knowledge of other veterinarians with chiropractic interaction

Answer Options	Response Percent	Response Count
No	29.5%	13
Yes	70.5%	31
Answered Question		**44**

4.5.3.2.9 Q 9.9: *"Have you worked with / referred to any of the following alternative medical therapists? (more than one answer possible)."*

Table 3.38 shows that the veterinarian responses with a history of referral with a chiropractor also reported to have worked with / referred to a homoeopath (80.5%), physiotherapist (78%), acupuncturist (65.9%), massage therapist (26.8%) and naturopath (12.2%).

Table 4.38: History of referral with alternative medical therapists

Answer Options	Response Percent	Response Count
Homoeopath	80.5%	33
Naturopath	12.2%	5
Physiotherapist	78.0%	32
Acupuncturist	65.9%	27
Massage therapist	26.8%	11
Other	7.3%	3
Answered Question		**41**

4.5.3.2.10 Summary and Discussion of Veterinary Respondents with a History of Referral with a Chiropractor

It was shown that 19.1% of the respondents had referred an animal patient/s to a chiropractor (Table 4.29). Predominantly small animals (79.1%) were referred as well as large animals (34.9%) (Table 4.31). Of the chiropractors that had animals referred to them, Table 4.30 demonstrated that 41.9% were believed by the referring veterinarian respondents to have an animal chiropractic qualification, 30.9% were not believed to have an animal chiropractic qualification and 27.9% of the respondents were unsure of the qualification of the referral chiropractor.

Of the respondents with a history of referral, 85.7% reported to have been satisfied with the treatment that the referred animal received from the chiropractor (Table 4.32), though with varying reports on the level of communication between the veterinary respondents and the referral chiropractor.

As previously stated (Section 4.5.2.2.5), South Africa does not have any professional association or education system for the chiropractic treatment of animals (Wimberely, 2010). This makes it surprising that 19% of the veterinarian respondents had a history of referral to a chiropractor as well as 70.5% of these respondents knowing of another veterinarian who had worked with / referred to a chiropractor. It is also surprising that 41.9% of the chiropractors that had animals referred to them were reported to hold a qualification in animal chiropractic, possibly indicating that a number of South African chiropractors or veterinarians may have obtained their animal chiropractic qualification outside of South Africa. Furthermore, 58.1% of the veterinary respondents referred an animal to a chiropractor either knowing that they were not qualified in animal chiropractic or unsure of their qualification. This may suggest a good perception of chiropractic care in general and willingness to utilize chiropractors for veterinary care who do not hold a post-graduate animal chiropractic qualification.

The veterinary respondents reported an extremely high level of satisfaction (85.7%) with the treatment received by the animal patient from the referral chiropractor, even though under half of the referral chiropractors were reported to hold an animal chiropractic qualification. This would be a positive factor in their perception of animal chiropractic as it is stated in the literature that consultation with a chiropractor, especially if the consultation satisfies expectation, can influence the perception of a person towards chiropractic (Rattan, 2007 and Talmage 2007).

Table 4.34 illustrated that the majority of veterinarian respondents with a referral history would further consider referring small animals (90.9%) and large animals (50%) to a chiropractor. The respondents primarily considered chiropractic to help with chronic pain

syndromes (88.4%); maintenance of joint and spinal health (81.4%); neck, back, leg and tail pain (81.4%); lameness (76.7%); intervertebral disc problems (69.8%); and nerve problems (65.1%) (Table 4.35).

The high satisfaction rate related to the chiropractic treatment of the animal patients that was expressed by the respondents should indicate a high perception and raised expectation of the ability of chiropractic to treat animals. This may explain their willingness to consider referring several types of animals to a chiropractor and belief that chiropractic could be useful as treatment for a number of veterinary conditions.

Of the veterinary respondents with a referral history, 31.8% had been asked by a chiropractor to evaluate an animal (Table 4.36). According to South African Veterinary Council (SAVC) legislation, chiropractors are not allowed to consult with animals (including diagnoses and treatment) unless they have been referred to them by a veterinarian (SAVC Act no. 40, 1995; SAVC Act 19, 1982).This indicates that a chiropractor who would want to consult with an animal would have to request that a veterinarian do an initial evaluation of the animal with subsequent referral to the chiropractor. Chiropractors abiding by current legislation in order to treat animals may explain why nearly a third of the veterinarian respondents with a history of referral to a chiropractor had also been asked by a chiropractor to evaluate an animal.

The results demonstrated in Table 4.38 indicated that the veterinarian responses with a history of referring to a chiropractor also reported to have worked with / referred to a homoeopath (80.5%), physiotherapist (78%), acupuncturist (65.9%), massage therapist (26.8%) and naturopath (12.2%).

The veterinarian respondents who had referred an animal to a chiropractor would be expected to have an increased knowledge and perception of CAVM therapies in general (Louw, 2007). This is supported by the relatively high percentage of them who showed a willingness to utilize CAVM therapies through having a history of referral to practitioners trained in their respective CAM or CAVM therapies. This high utilization of CAVM

therapies is a sign of good perception and knowledge related to these therapies, which include the chiropractic treatment of animals (Langworthy and Smink, 2000).

Louw (2004) found in his study that while 46% of general practitioners referred patients to chiropractors, there was a significantly greater difference in referral rate between those who had a higher degree of knowledge on, and exposure to, chiropractic compared with those who did not. It could, therefore, be expected that the respondents who had a history of referral with a chiropractor would have a greater knowledge and exposure to chiropractic.

4.5.3.3 Respondents without a History of Referral to a Chiropractor

4.5.3.3.1 Q 10.1: *"What type of animals would you consider referring? (More than one answer possible)"*

The results presented in Table 4.39 show that 75.7% of the veterinarian respondents without a history of referral would consider referring small animals, 34.1% would consider referring large animals, 7.0% exotic, 1.6% would consider referring wildlife and 5.9% selected 'Other' as an option. Of the "Other" responses, 45.5% indicated that they would only consider horses for referral and 36.4% indicated that they did not have enough knowledge to comment. Conversely, 16.8% indicated that they would not consider any animal for referral to a chiropractor.

Table 4.39: Type of animals for referral consideration

Answer Options	Response Percent	Response Count
Small animals	75.7%	140
Large animals	34.1%	63
Exotic animals	7.0%	13
Wildlife	1.6%	3
None	16.8%	31
Other	5.9%	11
Answered Question		**185**

4.5.3.3.2 Q 10.2: *"Which of these veterinary conditions would you consider chiropractic treatment to help? (more than one answer possible)"*

The results shown in Table 4.40 demonstrate that the respondents without a history of referral considered chiropractic to be most helpful with chronic pain syndromes (66.5%); neck, back, leg and tail pain (66.8%); muscle spasms (63.6%); maintenance of joint and spinal health (55.6%); intervertebral disc problems (52.4%); and lameness (51.9%).

Conversely, the veterinary conditions they considered chiropractic to be least helpful with included infections (0%); internal medicine disorders (5.3%); seizures or neurological problems (7.5%); and behaviour or mood change (8.0%). 11.8% of the veterinarian respondents without a history of referral to a chiropractor believed chiropractic would not be helpful with any veterinary conditions.

Table 4.40: Veterinary conditions for chiropractic treatment consideration

Answer Options	Response Percent	Response Count
Fractures	11.2%	21
Behaviour or mood change	8.0%	15
Bowel, bladder, and internal medicine disorders	5.3%	10
Chronic pain syndromes	66.8%	125
Degenerative arthritis	36.9%	69
Intervertebral disc problems	52.4%	98
Infections	0.0%	0
Jaw or TMJ problems	28.9%	54
Lameness	51.9%	97
Maintenance of joint and spinal health	55.6%	104
Muscle spasms	63.6%	119
Musculoskeletal Injuries	50.3%	94
Neck, back, leg, and tail pain	66.8%	125
Nerve problems, e.g. sciatica neuralgia	44.4%	83
Navicular disease or laminitis.	12.8%	24
Post-surgical care	21.9%	41
Seizures or neurological problems,	7.5%	14
Uneven pelvis or hips	42.2%	79
None	11.8%	22
Other	3.2%	6
Answered Question		**187**

4.5.3.3.3 Q 10.3: *"Has a chiropractor ever asked you to evaluate an animal?"*

Table 4.41 illustrates that only 4.3% of the veterinary respondents without a history of referral to a chiropractor had been asked to evaluate an animal by a chiropractor.

Table 4.41: Evaluation request by a chiropractor

Answer Options	Response Percent	Response Count
No	95.7%	179
Yes	4.3%	8
Answered Question		**187**

4.5.3.3.4 Q 10.4: *"Do you know of any other veterinarians who have worked with / referred to a chiropractor?"*

It is shown in Table 4.42 that 23.7% of the veterinary respondents without a history of referral to a chiropractor knew of another veterinarian who had worked with / referred to a chiropractor.

Table 4.42: Knowledge of other veterinarians with chiropractic interaction

Answer Options	Response Percent	Response Count
No	76.3%	142
Yes	23.7%	44
Answered Question		**186**

4.5.3.3.5 Q 10.5: *"Have you worked with / referred to any of the following alternative medical therapists? (more than one answer possible)"*

Table 4.43 demonstrates that the veterinarian respondents without a history of referral to a chiropractor had a history of working with / referring to a physiotherapist (67.1%), homoeopath (48.6), acupuncturist (37.1%), massage therapist (15.7%) and naturopath (3.6%).

Table 4.43: History of referral with alternative medical therapists

Answer Options	Response Percent	Response Count
Homoeopath	48.6%	68
Naturopath	3.6%	5
Physiotherapist	67.1%	94
Acupuncturist	37.1%	52
Massage therapist	15.7%	22
Other	12.1%	17
Answered Question		**140**

4.5.3.3.6 Summary and Discussion of Respondents without a History of Referral to a Chiropractor

Results demonstrated in Table 4.39 reveal that 75.7% of the veterinarian respondents without a history of referral to a chiropractor would consider referring small animals, 34.1% would consider referring large animals, 7.0% exotic and 1.6% would consider referring wildlife. Of this group, 16.8% would not consider any animal for referral to a chiropractor. This equates to 13.4% when calculated to both groups (with and without referral to a chiropractor).

It is also shown (Table 4.40) that the veterinarian respondents without a history of referral to a chiropractor would consider chiropractic to primarily be helpful with chronic pain syndromes (66.8%); neck, back, leg and tail pain (66.8%); muscle spasms (63.6%); maintenance of joint and spinal health (55.6%); intervertebral disc problems (52.4%); and lameness (51.9%). Only 11.8% of the veterinary respondents without a history of referral to a chiropractor reported to not consider chiropractic to be helpful with any veterinary conditions. Considering that all the respondents with a history of referral stated that they would consider referring at least one type of animal, it can be assumed that they would consider chiropractic to be helpful with at least one type of veterinary condition. Therefore, only 9.5% of the respondents (when calculated to both groups) would not consider an animal for referral to a chiropractor.

It is not surprising that the respondents without a history of referral to a chiropractor would consider fewer animals for referral as well as believing chiropractic to be beneficial for less veterinary conditions. It could be postulated that they had less confidence in their knowledge of chiropractic and / or the chiropractic treatment of animals in comparison to the respondents who had referred an animal, or possibly a poorer perception related to them.

It was also established that only 4.3% of the veterinary respondents without a history of referral had been asked to evaluate an animal by a chiropractor (Table 4.43) and 23.7% knew of another veterinarian who had worked with / referred to a chiropractor (Table 4.42). This is considerably lower than the veterinary respondents with a history of referral to a chiropractor, 31.8% of which had been asked by a chiropractor to evaluate an animal and 70.5% of which knew of another veterinarian who had worked with / referred to a chiropractor. This indicates a higher level of inter-referral with chiropractors in the group of respondents with a history of referral to a chiropractor, possibly due to increased relationship building facilitated by higher levels of exposure, knowledge and / or perception related to this group.

Furthermore, Table 4.43 illustrated that the veterinarian respondents without a history of referral to a chiropractor had a history of working with / referring to a physiotherapist (67.1%), homoeopath (48.6%), acupuncturist (37.1%), massage therapist (15.7%) and naturopath (3.6%).

While this is expectantly lower than the respondents with a history of referring to a chiropractor, it shows that they still refer to CAVM therapists, including physiotherapists who may make use of similar or the same therapies as chiropractic practitioners (Porter, 1990).

According to the literature, decreased utilization of CAM / CAVM therapies could be related to decreased knowledge, exposure and perception of them (Rattan, 2007 and Talmage, 2007; Louw, 2005). The respondents without a history of referral to a chiropractor may therefore have had less exposure to CAM / CAVM therapies in general and thus a lower level of knowledge and perception related to them.

The perception of the veterinary respondents towards chiropractic and the chiropractic treatment of animals was scored as described in the methodology. Table 4.44 illustrated that the average score was 48% with a wide deviation of 24% and a range from 0 to 96% (Esterhuizen, 2010). This is congruent with the literature where a generally poor perception of chiropractic was found by South African studies evaluating the perception of personal trainers (Kew, 2006); general practitioners (Louw, 2005); vocational counselors (van As, 2005); physiotherapists (Hunter, 2004); and orthopedic surgeons, neurologists and neurosurgeons (Rubens, 1996), though there is no available literature concerning perceptions of the chiropractic treatment of animals.

Table 4.44: Perception of chiropractic and the chiropractic treatment of animals

N	Valid	235
	Missing	10
Mean		47.5709
Std. Deviation		23.77259
Minimum		.00
Maximum		95.83

4.5.4 Objective Four: To determine the respondents' knowledge and perception of the legislation and education of the chiropractic treatment of animals in South Africa.

4.5.4.1 Education and Legislation

4.5.4.1.1 Q 11.1: ***"According to your knowledge of South African veterinary legislation, how are chiropractors allowed to practice on animals?"***

It is demonstrated in Table 4.45 that 65.0% of the respondents believe chiropractors are only allowed to practice on animals under referral, whereas 22.3% believe chiropractors are allowed to practice independently on animals and 12.7% believe chiropractors are not allowed to practice on animals at all in South Africa.

Table 4.45: Knowledge of current veterinary legislation

Answer Options	Response Percent	Response Count
Independently	22.3%	49
Under referral	65.0%	143
Not at all	12.7%	28
Answered Question		**220**

4.5.4.1.2 Q 11.2: ***"How do you think chiropractors should be allowed to practice on animals in South Africa?"***

Table 4.46 illustrates that 79.9% of respondents believed that chiropractors should only be allowed to practice on animals under referral in South Africa, 15.3% believed chiropractors should be allowed to practice independently on animals in South Africa and 4.8% believed chiropractors should not be allowed to practice on animals at all.

Table 4.46: Perception of veterinary related legislation

Answer Options	Response Percent	Response Count
Independently	15.3%	35
Under referral	79.9%	183
Not at all	4.8%	11
Answered Question		**229**

4.5.4.1.3 Q 11.3: *"Who, to your knowledge, governs chiropractic on animals in South Africa?"*

The results in Table 4.47 show that 38.6% of the respondents believed no one to govern the chiropractic treatment of animals in South Africa. In contrast, 26.5% of respondents believed the South African Veterinary Council (SAVC) to govern it, 20.2% believed the Allied Health Professions Council of South Africa (AHPCSA) to govern it and 14.8% believed both the SAVC and AHPCSA to govern the chiropractic treatment of animals in South Africa.

Table 4.47: Knowledge of animal chiropractic governance

Answer Options	Response Percent	Response Count
Allied Health Professions Council	20.2%	45
South African Veterinary Council	26.5%	59
Both	14.8%	33
No one	38.6%	86
Answered Question		**223**

4.5.4.1.4 Q 11.4: *"Who do you believe should govern chiropractic on animals in South Africa?"*

Table 4.48 illustrates that 62.4% of the respondents believed the SAVC should govern the chiropractic treatment of animals in South Africa, 4.9% believed the AHPCSA should govern it, 31.4% believed both the SAVC and the AHPCSA should govern it and 1.3 % believed no one should govern over the chiropractic treatment of animals in South Africa.

Table 4.48: Perception of animal chiropractic governance

Answer Options	Response Percent	Response Count
Allied Health Professions Council	4.9%	11
South African Veterinary Council	62.4%	141
Both	31.4%	71
No one	1.3%	3
Answered Question		**226**

4.5.4.1.5 Q 11.5: *"Which professional association should chiropractic on animals fall under in South Africa?"*

It is demonstrated in Table 4.49 that 57.7% of the respondents believed the chiropractic treatment of animals should fall under the South African Veterinary Association (SAVA), 21.6% believed it should fall under the Chiropractic Association of South Africa (CASA) and 12.3% believed it should fall under an independent association. Of the 'Other' responses, 47.4% indicated that they believed the chiropractic treatment of animals should fall under the South African Veterinary Council (which is not a professional association) and 15.8% believed it should fall under the Complementary Veterinary Medicine Group.

Table 4.49: Opinion of animal chiropractic association affiliation

Answer Options	Response Percent	Response Count
South African Veterinary Association	57.7%	131
Chiropractic Association of South Africa	21.6%	49
Independent Association	12.3%	28
Other	8.4%	19
Answered Question		**227**

4.5.4.1.6 Q 11.6: *"Would you be in support of the formation of an animal chiropractic course in South Africa?"*

Table 4.50 shows that 84.4% of the veterinarian respondents would be in support of an animal chiropractic course in South Africa while 15.6% would not be in support of it.

Table 4.50: Support for animal chiropractic course

Answer Options	Response Percent	Response Count
Yes	84.4%	189
No	15.6%	35
Answered Question		**224**

4.5.4.1.7 Q 11.7: *"How many hours should the course entail?"*

Table 4.51 and Figure 4.6 illustrate that 28.4% of the veterinarian respondents believed an animal chiropractic course in South Africa should be 0-200 hours in length, 26.2% believed it should be 200-400 hours long, 16.9% believed it should be 400-600 hours, 8.2% believed it should be 800-1000 hours and 20.2% believed it should be over 1000 hours in length.

Table 4.51: Animal chiropractic course hours

Answer Options	Response Percent	Response Count
0-200	28.4%	52
200-400	26.2%	48
400-600	16.9%	31
800-1000	8.2%	15
1000+	20.2%	37
Answered Question		**183**

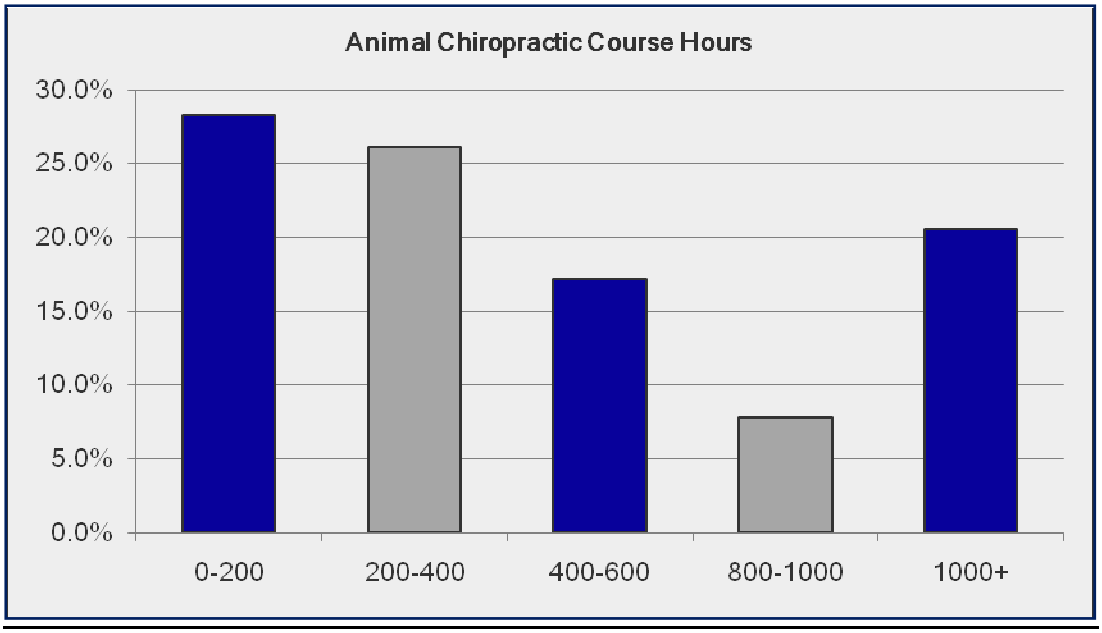


Figure 4.6: Animal chiropractic course hours

4.5.4.1.8 Q 11.8: *"Who do you believe should be allowed to attend such a course were it to be established?"*

Table 4.52 shows that 19.7% of the veterinarian respondents believed only qualified veterinarians should be allowed to attend an animal chiropractic course in South Africa, 4.8% believed only qualified chiropractors should be allowed to attend and 75.1% believed both qualified chiropractors and veterinarians should be allowed to attend. Of the 7.9% 'Other' responses, 41% indicated that they believed veterinary nurses should be allowed to attend such a course.

Table 4.52: Attendance of animal chiropractic course

Answer Options	Response Percent	Response Count
Qualified veterinarians only	19.7%	45
Qualified chiropractors only	4.8%	11
Both	75.1%	172
Other	7.9%	18
Answered Question		**229**

4.5.4.1.9 Q 11.9: *"Who do you believe should run / administer such a course were it to be established?"*

It is illustrated in Table 4.53 that 12.9% of the veterinarian responses believed only qualified veterinarians should run / administer an animal chiropractic course in South Africa, 8.9% of the respondents believed only qualified chiropractors should run / administer such a course and 77.2% believed both qualified veterinarians and chiropractors should run / administer an animal chiropractic course in South Africa.

Table 4.53: Administration of animal chiropractic course

Answer Options	Response Percent	Response Count
Qualified veterinarians only	12.9%	29
Qualified chiropractors only	8.9%	20
Both	77.2%	173
Other	3.6%	8
Answered Question		**224**

4.5.4.1.10 Q 11.10: *"What veterinary subjects should be included in the course for non-veterinarians to study? (more than one answer possible)"*

Table 4.54 and Figure 4.7 demonstrate that the veterinarian respondents believed the most important subjects for inclusion in an animal chiropractic course (for non-veterinarians to study) included anatomy (95.9%), physiology (85.1%), behavioural sciences (57.2%) and pathology (50.0%).

Conversely, they believed that microbiology and virology (9.0%); bacteriology and mycology (9.0%); and parasitology (10.4%) were the least important subjects for inclusion in an animal chiropractic course.

Table 4.54: Veterinary subjects for animal chiropractic course inclusion

Answer Options	Response Percent	Response Count
Behavioural science	57.2%	127
Physiology	85.1%	189
Microbiology and virology	9.0%	20
Bacteriology and mycology	9.0%	20
Parasitology	10.4%	23
Pathology	50.0%	111
Pharmacology and toxicology	26.1%	58
Clinical medicine and surgery	47.3%	105
Anatomy	95.9%	213
Nutrition	41.0%	91
Other (please specify)	9.0%	20
Answered Question		**222**

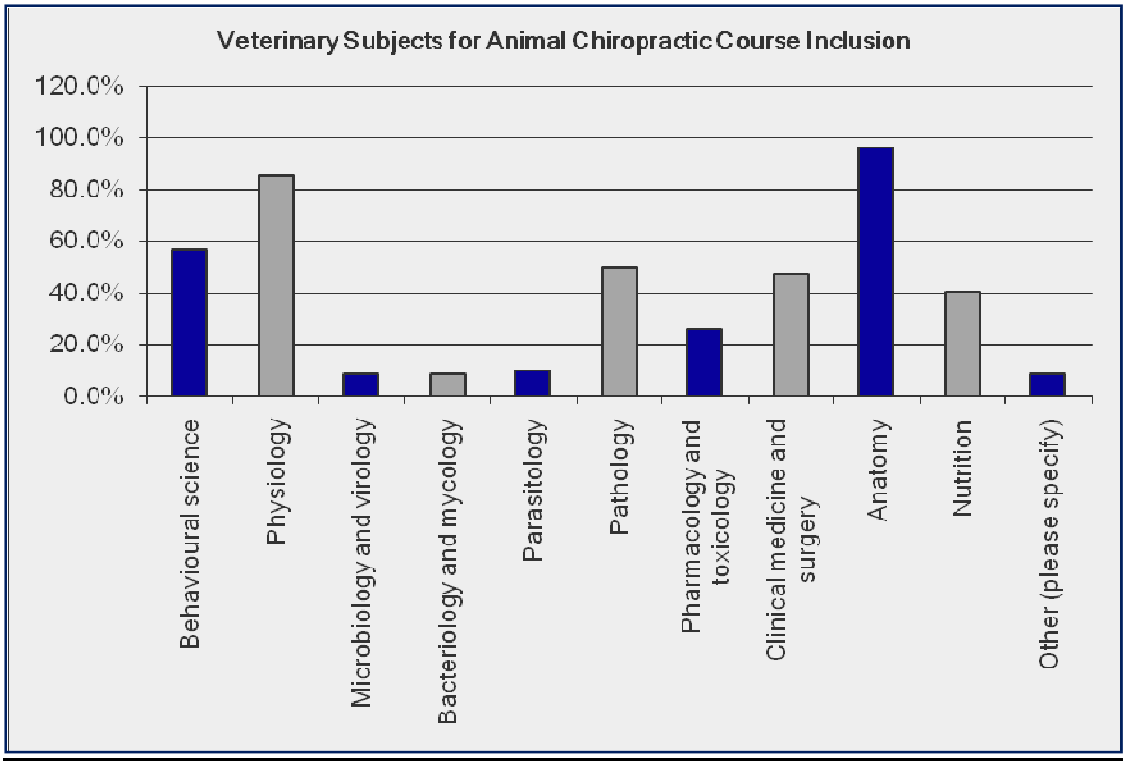


Figure 4.7: Veterinary subjects for animal chiropractic course inclusion

4.5.4.1.11 Q 11.11: *"Would you be interested in attending such a course?"*

Table 4.55 shows that 49.1% of the veterinary respondents would be interested in attending an animal chiropractic course in South Africa. Conversely, 50.9 % stated they would not be interested in attending such a course.

Table 4.55: Interest in attending an animal chiropractic course

Answer Options	Response Percent	Response Count
No	50.9%	116
Yes	49.1%	112
Answered Question		**228**

4.5.4.1.12 Summary and Discussion of Legislation and Education of the Chiropractic Treatment of Animals in South Africa

The results presented in Table 4.45 illustrated that 65.0% of the veterinary respondents believed chiropractors to only be allowed to practice on animals under referral in South Africa, whereas 22.3% believed chiropractors are allowed to practice independently on animals and 12.7% believed chiropractors are not allowed to practice on animals at all.

In contrast, when asked how they believed chiropractors should be allowed to practice on animals in South Africa, 79.9% of the respondents stated that chiropractors should only be allowed to practice under referral, 15.3% believed chiropractors should be allowed to practice independently and 4.8% believed chiropractors should not be allowed to practice on animals at all (Table 4.46).

Current legislation by the South African Veterinary Council (SAVC) states that any person performing a veterinary act (diagnosing / treating an animal for financial gain) in South Africa must be registered with the South African Veterinary Council (SAVC Act 19, 1982). Considering that chiropractors are unable to register with this council, SAVC Act no. 40 (1995) was passed. This was termed the Chiropractors, Homoeopaths and Allied Health Professionals Act and states that treatment of animals by these practitioners may be undertaken after referral from a supervising veterinarian. This signifies that 65.0% of the respondents where correct in their belief that chiropractors are only allowed to consult with animals under referral from a veterinarian. It was further illustrated that the veterinarian respondents generally felt that there is a place for chiropractic in the veterinary health care system, with 79.9% of the veterinary respondents showing agreement with the current legislation. Only 4.8% believed that chiropractors should not be allowed to practice on animals at all in South Africa and conversely, 15.3% believing chiropractors should be allowed to practice independently on animals in South Africa, as is currently the legislation regarding the chiropractic treatment of humans in this country (CASA, 2010).

Regarding governance of the chiropractic treatment of animals in South Africa (Table 4.47), 38.6% of the respondents believed no one to govern the chiropractic treatment of animals in South Africa, 26.5% of respondents believed the South African Veterinary Council (SAVC) to govern it, 20.2% believed the Allied Health Professions Council of South Africa (AHPCSA) to govern it and 14.8% believed both the SAVC and AHPCSA to govern the chiropractic treatment of animals in South Africa. This is in contrast to the responses gained when asked who they believed should govern the chiropractic treatment of animals in South Africa (Table 4.48). It was found that 62.4% of the respondents believed that the SAVC should govern it, 4.9% believed the AHPCSA should govern it, 31.4% believed both the SAVC and the AHPCSA should govern it and 1.3% believed no one should govern over the chiropractic treatment of animals in South Africa.

The SAVC is the governing body for the veterinary health care system of South Africa (SAVC, 2010), and the AHPCSA represents the governing body for chiropractic in South Africa (AHPCSA, 2010). This presents a conundrum as veterinary chiropractic essentially falls under both, and could therefore be construed as being governed by the legislation of both (which only 14.8% of respondents believed to be the case). Being veterinarians, it is not surprising that the respondents predominantly believed that the SAVC (62.4%) or both the SAVC and the AHPCSA (31.4%) should govern over animal chiropractic in South Africa. The SAVC currently states that it is advisable for a veterinarian to refer an animal to a chiropractor that is registered with the AHPCSA, but further states that the chiropractor is subject to all the acts and rules regulating the practice of a veterinary professional, as stated in the SAVC legislation (SAVC Act no. 40, 1995).

Regarding the association to which the chiropractic treatment of animals should be affiliated in South Africa (Table 4.49), 57.7% of the respondents believed the chiropractic treatment of animals should fall under the South African Veterinary Association (SAVA), 21.6% believed it should fall under the Chiropractic Association of South Africa (CASA) and 12.3% believed it should be represented by an independent

association. While the respondents were predominantly in favour of integrating the chiropractic treatment of animals into existing organisations for governance and association representation, it is promising that a small but significant number of veterinarian respondents believed that an independent association would best serve the chiropractic treatment of animals in South Africa,

The chiropractic treatment of animals has been integrated into the veterinary health care systems of a number of countries outside of South Africa, leading to the formation of professional associations that purely represent the chiropractic treatment of animals in many of these countries (AVCA, 2010; AuVCA, 2010; IVCA, 2010; Willoughby, 2002). There is currently no professional association for the chiropractic treatment of animals in South Africa (Wimberley, 2009). A professional association for the chiropractic treatment of animals would serve this emerging chiropractic specialization by playing a similar role as the professional association representing the chiropractic treatment of humans in South Africa, CASA (2010), who claim in their mandate to: "…promote, encourage and maintain high standards of education; training; conduct and practice within the profession in South Africa".

Questions 11.6- 11.11 dealt with the respondents' opinion on the formation of an animal chiropractic course in South Africa. It was reported that 84.4% of the veterinarian respondents would be in support of an animal chiropractic course in South Africa (Table 4.50). This shows good support from the veterinary respondents for the formation of an animal chiropractic course, with 49.1% of the respondents further stating that they would be interested in attending such a course (Table 4.55).

Table 4.51 illustrated that there was little consensus from the respondents as to what length of time an animal chiropractic course in South Africa should be. The majority (28.4%) of the veterinarian respondents believed it should be 0-200 hours in length, 26.2% believed it should be 200-400 hours long, 16.9% believed it should be 400-600 hours long, 8.2% believed it should be 800-1000 hours long and 20.2% believed an animal chiropractic course in South Africa should be over 1000 hours in length. They

further indicated (Table 4.54) that they considered the most important subjects for inclusion in an animal chiropractic course (for non-veterinarians to study) to be anatomy (95.9%), physiology (85.1%), behavioural sciences (57.2%) and pathology (50.0%).

The veterinary respondents predominantly believed that both qualified chiropractors and veterinarians should be allowed to attend (75.1%) and run / administer (77.2%) an animal chiropractic course in South Africa (Tables 4.52 and 4.53, respectively). This is a positive outcome as the future growth of the chiropractic treatment of animals in South Africa would require the participation of both veterinarians and chiropractors in establishing and administering a course concerning the chiropractic treatment of animals in this country.

According to Myburgh and Mouton (2007) education is a key element both from the point of view of professional development and in terms of authority and credibility of health care practitioners in the eyes of colleagues and society in general. It would seem that the formation of a course for the chiropractic treatment of animals would have the support of a number of South African veterinarians, as well as being essential to the future credibility of animal chiropractic related to the perception of the South African veterinary community and general public.

4.5.4.2 Information

4.5.4.2.1 Q 12.1: *What information about chiropractic on animals would you like to be available? (more than one answer possible)"*

Table 4.56 demonstrates that the veterinarian respondents would primarily like to receive information regarding indications for the chiropractic treatment of animals (80.9%), scientific research (68.4%), education of animal chiropractic (67.1%), the ethical/legal situation of animal chiropractic (66.2%), and different animal chiropractic techniques (63.1%). The 'Other' comments (N=2) both inquired about registered animal chiropractors in South Africa.

Table 4.56: Desired information regarding animal chiropractic

Answer Options	Response Percent	Response Count
Education, including animal chiropractic courses	67.1%	151
Scientific research	68.4%	154
Indications for the chiropractic treatment of animals	80.9%	182
Different animal chiropractic techniques	63.1%	142
Terminology	36.0%	81
Effects/ safety	59.6%	134
Ethical/ legal situation of the chiropractic treatment of animals	66.2%	149
None	3.1%	7
Other (please specify)		2
Answered Question		**225**

4.5.4.2.2 Q 12.2: *"Were it available, how would you like to receive this information? (more than one answer possible)"*

The results in Table 4.57 indicate that 60.5% of the veterinarian respondents would prefer e-mail or educational DVD / CD ROM as a means of gaining information on animal chiropractic. Furthermore, 39% would prefer a magazine article and 36.3% an oral presentation on the chiropractic treatment of animals. Of the 'Other' responses (N=11), N=3 indicated that they would like some sort of formal Internet website concerning the chiropractic treatment of animals and N=3 indicating that animal chiropractic information should be included in a veterinary newsletter.

Table 4.57: Medium for information sharing

Answer Options	Response Percent	Response Count
Pamphlet	15.2%	34
Phone call	0.4%	1
Oral presentation	36.3%	81
Magazine article	39.0%	87
E-mail	60.5%	135
Educational DVD/CD ROM	60.5%	135
None	2.7%	6
Other (please specify)	4.9%	11
Answered Question		**223**

4.5.4.2.3 Summary and Discussion of Information Regarding the Chiropractic Treatment of Animals

There was varied reporting as to what information the veterinarian respondents desired. Table 4.56 illustrated that the veterinary respondents primarily required information regarding indications for the chiropractic treatment of animals (80.9%), scientific research (68.4%), education of animal chiropractic (67.1%), the ethical / legal situation of animal chiropractic (66.2%) and different animal chiropractic techniques (63.1%). Only 3.2% of the respondents stated they did not want any information regarding the chiropractic treatment of animals. This shows a good interest in the chiropractic treatment of animals by the veterinary respondents, though it might be expected that the veterinarians who chose to participate in this research did so due to their curiosity or interest in chiropractic and animal chiropractic and not necessarily their knowledge and perception of them.

The two mediums stated to be preferred by the veterinarian respondents for gaining information regarding animal chiropractic were e-mail and educational DVD / CD ROM (Table 4.57). This could also be expected as the veterinarians were approached to participate in this research by way of e-mail and completion / submission of this research was done through an Internet website, indicating a relatively high level of computer literacy in those who participated in this research. It would then be beneficial to look at the other mediums of information sharing that were stated to be preferred by the veterinary participants. These were reported as being magazine article (39%) and oral presentation (36.3%), which may have been reported as more favourable if the means of contact (e-mail) and questionnaire completion / submission (Internet) were different.

4.5.5 Objective 5: To determine any associations between knowledge, perceptions and factors influencing these

4.5.5.1 Analysis of knowledge and perceptions

4.5.5.1.1 The association between knowledge and perceptions

Table 4.58 shows that there were significant but weak positive correlations between the three measures of knowledge (human chiropractic, animal chiropractic and total knowledge) and perceptions.

Table 4.58: Spearman's rank correlation analysis between knowledge and perceptions

			Perceptions
Spearman's rho	Knowledge of human chiropractic	Correlation Coefficient	.167(*)
		Sig. (2-tailed)	.011
		N	235
	Knowledge of animal chiropractic	Correlation Coefficient	.205(**)
		Sig. (2-tailed)	.002
		N	235
	Knowledge total	Correlation Coefficient	.232(**)
		Sig. (2-tailed)	.000
		N	235

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

4.5.5.2 Analysis of the factors influencing knowledge and perceptions

4.5.5.2.1 Being treated by a chiropractor as a factor in knowledge and perception

Table 4.59 and Table 4.60 demonstrate that there was a statistically significantly higher knowledge score in all three measures of knowledge in those who had been treated by a chiropractor, than those who had not.

Table 4.59: Treatment by a chiropractor as a factor in knowledge and perception

Have you ever been treated by a chiropractor?		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
No	Mean	61.2000	59.2889	44.5333	60.2444
	N	125	125	125	125
	Std. Deviation	20.38782	22.39823	26.22137	15.74282
Yes	Mean	69.6970	67.1717	51.0227	68.4343
	N	110	110	110	110
	Std. Deviation	20.71379	19.35571	20.20999	14.82200

Table 4.60: Test Statistics (A)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	5375.000	5437.000	5868.000	4784.500
Wilcoxon W	13250.000	13312.000	13743.000	12659.500
Z	-2.961	-2.813	-1.940	-4.027
Asymp. Sig. (2-tailed)	.003	.005	.052	.000

a Grouping Variable: Have you ever been treated by a chiropractor?

4.5.5.2.2 Having referred an animal patient to a chiropractor as a factor in knowledge and perception

It is illustrated in Table 4.61 and Table 4.62 that there was a statistically significantly higher knowledge of human chiropractic and total knowledge, but not in animal chiropractic, in those who had referred an animal patient to a chiropractor in comparison to those who had not. There was however, no difference found in perceptions between these two groups.

Table 4.61: Referral as a factor in knowledge and perception

Have you ever referred an animal patient to a chiropractor		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
No	Mean	63.2092	62.4704	47.7394	62.8398
	N	188	188	188	188
	Std. Deviation	21.35173	21.06597	25.09759	15.83666
Yes	Mean	73.8636	69.1919	49.8106	71.5278
	N	44	44	44	44
	Std. Deviation	17.01106	16.22828	14.03537	11.63378
Total	Mean	65.2299	63.7452	48.1322	64.4875
	N	232	232	232	232
	Std. Deviation	20.98683	20.37751	23.39320	15.48784

Table 4.62: Test Statistics (B)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	2913.000	3386.500	4100.000	2760.500
Wilcoxon W	20679.000	21152.500	21866.000	20526.500
Z	-3.132	-1.904	-.090	-3.438
Asymp. Sig. (2-tailed)	.002	.057	.928	.001

a Grouping Variable: Have you ever referred an animal patient to a chiropractor

4.5.5.2.3 Age as a factor in knowledge and perception

Table 4.63 shows that age was significantly, but weakly, positively correlated with knowledge of human chiropractic and total knowledge but negatively correlated with perceptions, although this correlation was also weak. This meant that as age increased, perceptions decreased.

Table 4.63: Age as a factor in knowledge and perception

			What was your age at your last birthday?
Spearman's rho	Knowledge of human chiropractic	Correlation Coefficient	.201(**)
		Sig. (2-tailed)	.002
		N	235
	Knowledge of animal chiropractic	Correlation Coefficient	-.015
		Sig. (2-tailed)	.814
		N	235
	Knowledge	Correlation Coefficient	.134(*)
		Sig. (2-tailed)	.041
		N	235
	Perceptions	Correlation Coefficient	-.230(**)
		Sig. (2-tailed)	.000
		N	235

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

4.5.5.2.4 Gender as a factor in knowledge and perception

The results in Table 4.64 and Table 4.65 show that only perceptions were significantly associated with gender, being significantly higher in females.

Table 4.64: Gender as a factor in knowledge and perception

Gender		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Male	Mean	65.7407	62.7866	44.2130	64.2637
	N	126	126	126	126
	Std. Deviation	20.58107	21.32951	23.83375	16.01062
Female	Mean	64.5260	63.2008	51.4526	63.8634
	N	109	109	109	109
	Std. Deviation	21.40883	21.47388	23.20855	15.67933
Total	Mean	65.1773	62.9787	47.5709	64.0780
	N	235	235	235	235
	Std. Deviation	20.93277	21.35179	23.77259	15.82526

Table 4.65: Test Statistics (C)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	6660.500	6784.500	5585.500	6688.500
Wilcoxon W	12655.500	14785.500	13586.500	12683.500
Z	-.408	-.162	-2.470	-.344
Asymp. Sig. (2-tailed)	.683	.872	.014	.731

a Grouping Variable: Gender:

4.5.5.2.5 Overseas qualification as a factor in knowledge and perception

Table 4.66 and Table 4.67 illustrate that local (South Africa) versus overseas qualification was not associated with knowledge or perceptions.

Table 4.66 Overseas qualification as a factor in knowledge and perception

Where did you attain your veterinary degree from? (institution and town/country)		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
South Africa	Mean	64.9676	63.0529	46.7031	64.0102
	N	206	206	206	206
	Std. Deviation	21.10945	21.38263	24.20837	15.91650
Overseas	Mean	66.0714	61.9048	54.7619	63.9881
	N	28	28	28	28
	Std. Deviation	20.02167	21.68667	19.23546	15.39159
Total	Mean	65.0997	62.9155	47.6674	64.0076
	N	234	234	234	234
	Std. Deviation	20.94375	21.37549	23.77742	15.82225

Table 4.67: Test Statistics (D)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	2852.000	2769.000	2287.500	2799.500
Wilcoxon W	24173.000	3175.000	23608.500	3205.500
Z	-.098	-.348	-1.778	-.252
Asymp. Sig. (2-tailed)	.922	.728	.075	.801

a Grouping Variable: From where did you attain your veterinary degree?

4.5.5.2.6 Post-graduate veterinary qualification as a factor in knowledge and perception

It is demonstrated in Table 4.68 and Table 4.69 that having a post-graduate veterinary qualification did not influence knowledge or perceptions.

Table 4.68: Post-graduate veterinary qualification as a factor in knowledge and perception

Do you hold any postgraduate veterinary qualification/s?		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Yes	Mean	68.7500	64.4841	46.0565	66.6171
	N	56	56	56	56
	Std. Deviation	20.85605	21.54729	22.42298	16.25321
No	Mean	63.9513	62.4220	48.1742	63.1866
	N	178	178	178	178
	Std. Deviation	20.89775	21.35833	24.22654	15.64066
Total	Mean	65.0997	62.9155	47.6674	64.0076
	N	234	234	234	234
	Std. Deviation	20.94375	21.37549	23.77742	15.82225

Table 4.69: Test Statistics (E)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	4292.500	4680.500	4681.000	4235.500
Wilcoxon W	20223.500	20611.500	6277.000	20166.500
Z	-1.606	-.699	-.687	-1.697
Asymp. Sig. (2-tailed)	.108	.485	.492	.090

a Grouping Variable: Do you hold any post-graduate veterinary qualification/s?

4.5.5.2.7 Holding a qualification outside of veterinary health care as a factor in knowledge and perception

Table 4.70 and Table 4.71 reveal that those who had a qualification beyond veterinary science had significantly higher perceptions than those who did not (p=0.047), but this did not influence the knowledge scores significantly.

Table 4.70: Other qualification as a factor in knowledge and perception

Do you hold any qualification/s outside of veterinary healthcare?		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Yes	Mean	66.4352	64.1975	52.5463	65.3164
	N	72	72	72	72
	Std. Deviation	20.26681	20.53215	22.18674	15.25014
No	Mean	64.5062	62.3457	45.4990	63.4259
	N	162	162	162	162
	Std. Deviation	21.27240	21.77782	24.20215	16.08202
Total	Mean	65.0997	62.9155	47.6674	64.0076
	N	234	234	234	234
	Std. Deviation	20.94375	21.37549	23.77742	15.82225

Table 4.71: Test Statistics (F)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	5585.000	5571.500	4886.000	5485.000
Wilcoxon W	18788.000	18774.500	18089.000	18688.000
Z	-.530	-.554	-1.983	-.727
Asymp. Sig. (2-tailed)	.596	.579	.047	.467

a Grouping Variable: Do you hold any qualification/s outside of veterinary healthcare?

4.5.5.2.8 Being a member of the South African Veterinary Association (SAVA) as a factor in knowledge and perception

It is illustrated in Table 4.72 and Table 4.73 that being a member of the SAVA was related to significantly improved perceptions of animal chiropractic but not with any knowledge scores.

Table 4.72: SAVA membership as a factor in knowledge and perception

Are you a member of the South African Veterinary Association?		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Yes	Mean	65.8895	63.2700	45.6606	64.5797
	N	193	193	193	193
	Std. Deviation	21.26566	20.89441	24.45823	15.85107
No	Mean	61.9048	61.6402	56.3492	61.7725
	N	42	42	42	42
	Std. Deviation	19.22824	23.56414	18.10927	15.68723
Total	Mean	65.1773	62.9787	47.5709	64.0780
	N	235	235	235	235
	Std. Deviation	20.93277	21.35179	23.77259	15.82526

Table 4.73: Test Statistics (G)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	3583.000	3994.500	2987.000	3548.500
Wilcoxon W	4486.000	4897.500	21708.000	4451.500
Z	-1.208	-.149	-2.675	-1.266
Asymp. Sig. (2-tailed)	.227	.882	.007	.206

a Grouping Variable: Are you a member of the South African Veterinary Association?

4.5.5.2.9 Being a member of other veterinary related associations as a factor in knowledge and perception

Table 4.74 and Table 4.75 show that being a member of other veterinary related associations was associated with increased knowledge of human chiropractic but not with any other score.

Table 4.74: Association membership as a factor in knowledge and perception

Are you a member of any other veterinary related associations?		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Yes	Mean	67.7458	63.0695	46.8225	65.4077
	N	139	139	139	139
	Std. Deviation	21.81468	20.68845	23.05532	15.47043
No	Mean	61.2281	62.5731	48.5526	61.9006
	N	95	95	95	95
	Std. Deviation	19.05605	22.34321	24.96872	16.10899
Total	Mean	65.0997	62.8680	47.5249	63.9839
	N	234	234	234	234
	Std. Deviation	20.94375	21.32984	23.81307	15.79308

Table 4.75: Test Statistics (H)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	5367.000	6562.000	6325.000	5817.500
Wilcoxon W	9927.000	11122.000	16055.000	10377.500
Z	-2.494	-.081	-.547	-1.546
Asymp. Sig. (2-tailed)	.013	.935	.585	.122

a Grouping Variable: Are you a member of any other veterinary related associations?

4.5.5.2.10 Years of practice experience as a factor in knowledge and perception

Table 4.76 illustrates that there were significant weak positive correlations between knowledge scores and practice experience but a weak negative correlation with perceptions. This is in keeping with the correlations found with age, since age and practice experience are likely to be highly correlated.

Table 4.76: Years of practice experience as a factor in knowledge and perception

			How many years of practice experience do you have?
Spearman's rho	Knowledge of human chiropractic	Correlation Coefficient	.257(**)
		Sig. (2-tailed)	.000
		N	216
	Knowledge of animal chiropractic	Correlation Coefficient	.021
		Sig. (2-tailed)	.755
		N	216
	Knowledge	Correlation Coefficient	.192(**)
		Sig. (2-tailed)	.005
		N	216
	Perceptions	Correlation Coefficient	-.267(**)
		Sig. (2-tailed)	.000
		N	216

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

4.5.5.2.11 Practice experience outside of South Africa as a factor in knowledge and perception

The results illustrated in Table 4.77 and Table 4.78 show that practicing outside of South Africa was not associated with knowledge or perceptions.

Table 4.77: Practice experience outside of South Africa as a factor in knowledge and perception

Have you practiced outside of South Africa?		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Yes	Mean	64.3875	64.1026	46.7949	64.2450
	N	117	117	117	117
	Std. Deviation	20.51842	19.75718	23.95683	15.25180
No	Mean	66.3333	62.1111	47.2917	64.2222
	N	100	100	100	100
	Std. Deviation	22.21970	21.65926	23.46116	16.45621
Total	Mean	65.2842	63.1848	47.0238	64.2345
	N	217	217	217	217
	Std. Deviation	21.29147	20.63093	23.67619	15.78113

Table 4.78: Test Statistics (I)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	5520.500	5472.500	5843.000	5775.500
Wilcoxon W	12423.500	10522.500	10893.000	12678.500
Z	-.733	-.834	-.015	-.162
Asymp. Sig. (2-tailed)	.464	.404	.988	.871

a Grouping Variable: Have you practiced outside of South Africa?

4.5.5.3 Practicing alternative therapies as a factor in knowledge and perception

4.5.5.3.1 Homoeopathy

Table 4.79 and Table 4.80 reveal that practicing homoeopathy was significantly associated with increased knowledge of human chiropractic, overall knowledge and more positive perceptions.

Table 4.79: Practicing homoeopathy as a factor in knowledge and perception

Homoeopathy		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
No	Mean	63.2035	61.6883	43.8041	62.4459
	N	154	154	154	154
	Std. Deviation	20.40577	21.70949	24.54764	15.73985
Yes	Mean	68.9300	65.4321	54.7325	67.1811
	N	81	81	81	81
	Std. Deviation	21.53052	20.56306	20.52642	15.61565
Total	Mean	65.1773	62.9787	47.5709	64.0780
	N	235	235	235	235
	Std. Deviation	20.93277	21.35179	23.77259	15.82526

Table 4.80: Test Statistics (J)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	5276.000	5604.000	4584.000	5215.500
Wilcoxon W	17211.000	17539.000	16519.000	17150.500
Z	-1.991	-1.300	-3.343	-2.066
Asymp. Sig. (2-tailed)	.046	.194	.001	.039

a Grouping Variable: Homoeopathy

4.5.5.3.2 Herbal therapy

Table 4.81 and Table 4.82 demonstrate that practicing herbal therapy was associated with significantly more positive perceptions.

Table 4.81: Practicing herbal therapy as a factor in knowledge and perception

Herbal therapy		Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
No	Mean	64.2857	62.3583	45.6633	63.3220
	N	196	196	196	196
	Std. Deviation	21.08185	21.88535	24.03344	16.25298
Yes	Mean	69.6581	66.0969	57.1581	67.8775
	N	39	39	39	39
	Std. Deviation	19.82076	18.37249	20.07271	12.99452
Total	Mean	65.1773	62.9787	47.5709	64.0780
	N	235	235	235	235
	Std. Deviation	20.93277	21.35179	23.77259	15.82526

Table 4.82: Test Statistics (K)

	Knowledge of human chiropractic	Knowledge of animal chiropractic	Perceptions	Knowledge
Mann-Whitney U	3311.000	3602.500	2796.000	3286.500
Wilcoxon W	22617.000	22908.500	22102.000	22592.500
Z	-1.353	-.576	-2.651	-1.383
Asymp. Sig. (2-tailed)	.176	.565	.008	.167

a Grouping Variable: Herbal therapy

4.5.5.3.3 Summary and Discussion of the Associations between Knowledge, Perceptions and Factors Influencing These

There were significant but weak positive correlations between the three measures of knowledge (human chiropractic, animal chiropractic and total knowledge) and perceptions (Table 4.58). This meant that the more knowledge a veterinarian respondent had of chiropractic and animal chiropractic, the better their perception of them. This is congruent with the literature where it was found that the perception one has of chiropractic is often associated with their knowledge of it (Langworthy and Smink, 2000 and Louw, 2005).

It was found that there was a statistically significantly higher knowledge in all three measures of knowledge in those who had been treated by a chiropractor than those who had not (Table 4.59 and Table 4.60). This is in keeping with the literature where it is stated by Rattan (2007) and Talmage (2007) that knowledge of chiropractic can be influenced by previous consultation with a chiropractor and whether or not they were satisfied with the treatment received from the chiropractor, since chiropractic patients generally know more about chiropractic than non-patients do.

Tables 4.61 and 4.62 Illustrated that there was a statistically significantly higher knowledge in human chiropractic and total knowledge but not in animal chiropractic knowledge in those who had referred an animal to a chiropractor compared to those who had not. There was, however, no difference in perceptions between these two groups. This may indicate that the respondents who had referred an animal to a chiropractor did so due to their knowledge of chiropractic in general and not specifically because of their knowledge of animal chiropractic. It is surprising however that there was no difference in perception between the respondents who had referred an animal to a chiropractor than those who had not, as the two groups had disparities in the type of animals they would consider referring, confidence in types of veterinary conditions they consider chiropractic to help, level of inter-referral with chiropractors, as well as referral rates with other CAM / CAVM therapists.

Age was significantly, but weakly, positively correlated with knowledge of human chiropractic and total knowledge but negatively correlated with perceptions, although this correlation was also weak (Table 4.63). There were also significant weak positive correlations between knowledge scores and practice experience but a weak negative correlation with perceptions (Table 4.76). This is in keeping with the correlations found with age, since age and practice experience are likely to be highly correlated. This meant that as the age and practice experience of the respondents increased their knowledge of chiropractic increased while their perception decreased. Age has been shown to be a likely factor in perception with the literature showing that older patients are more likely to use complementary medicine therapies, such as chiropractic, than younger patients, and are hence expected to have a higher knowledge and perception of it (Tatalias, 2006; Reid, 2002; Kayne, Beattie and Reeves, 1999). Likewise, employment is reported in the literature to be a positive factor towards the knowledge and perception of CAM therapies (Barnes *et al.,* 2007; Maclennan and Wilson, 2006; Astin 1998).

The increase in knowledge associated with increasing age and length of employment of the respondents therefore correlates with the literature while the decrease in perception

of the respondents is contradictory. This indicates that other factors such as recent qualification may have had an influence on the results. The chiropractic treatment of animals is a relatively new profession which means that the respondents who qualified more recently may have had an increased chance of being exposed to favourable information on it in their studies or professional interactions.

Gender has been shown to influence the perception of the perceiver with Reid (2002) and Tatalias (2006) stating that women are more likely to use CAM therapies in general and thus are expected to have a higher knowledge and perception relating to them. In partial support of this, it was demonstrated that the perceptions of the veterinarian respondents were significantly associated with gender, being significantly higher in females. There was no association found though between gender and knowledge (Table 4.64 and Table 4.65).

It was shown that having a local (South African) versus overseas veterinary qualification (Table 4.66 and Table 4.67), holding a post-graduate veterinary qualification (Table 4.68 and Table 4.69), as well as practicing outside of South Africa (Table 4.77 and Table 4.78), were not associated with knowledge or perceptions. This is surprising as the veterinary respondents who either studied or worked outside of South Africa reported to study or work predominantly in countries that have educational programs and professional associations concerning the chiropractic treatment of animals, neither of which has been established in South Africa (Wimberely, 2009). The lack of association between studying and working overseas and an increase in knowledge and perception may be explained by the resources (Internet, library, journals) that the veterinarian respondents would have access to in South Africa, due to factors such as education, employment and cultural considerations related to the demographics of the respondents. Chiropractic is also established as a health care option for humans in South Africa (CASA, 2010), possibly leading to a similar level of exposure to chiropractic as would be experienced in other countries with established chiropractic programmes.

It was also found that being a member of the South African Veterinary Association (SAVA) was related to significantly improved perceptions of chiropractic and the chiropractic treatment of animals (Table 4.72 and Table 4.73); and being a member of other veterinary related associations was associated with increased knowledge of human chiropractic (Table 4.74 and Table 4.75). It could then be postulated that being affiliated to an association may influence knowledge or perception of chiropractic due to increased involvement in veterinary related information gathering such as lecture participation and newsletter subscribing. The exposure to chiropractic and the chiropractic treatment of animals would differ though depending on the particular association/s that the respondents were affiliated to (different newsletters and presentations).

Tables 4.79 and 4.80 showed that practicing homoeopathy was significantly associated with increased knowledge of human chiropractic, overall knowledge and more positive perceptions; and practicing herbal therapy was associated with significantly more positive perceptions (Table 4.81 and Table 4.82). This would be expected as increased utilization of CAM or CAVM therapies could indicate a higher knowledge and perception of CAM or CAVM therapies in general, including chiropractic and the chiropractic treatment of animals.

The influence of the aforementioned factors on the knowledge and perception of the respondents regarding chiropractic and the chiropractic treatment of animals predominantly supported the findings of chiropractic perception studies found in the literature, while also opposing them in certain instances (Kew, 2006; Tatalias, 2006; Louw, 2005; van As, 2005; Reid, 2002; Kayne, Beattie and Reeves, 1999). This may be due to the unique and varying nature of the sample population with certain factors having a greater influence on their knowledge and perception of chiropractic and the chiropractic treatment of animals; and undetermined factors also possibly having an influence on them.

4.6 Review of Hypothesis

- **Null Hypothesis 1:** The respondents were expected to demonstrate a low level of knowledge regarding chiropractic and the chiropractic treatment of animals.

The objective knowledge scores rejected the hypothesis while the subjective knowledge answers suggested that the hypothesis should be accepted. There was an overall lack of confidence in the knowledge demonstrated by the respondents, especially relating to the chiropractic treatment of animals, leading to the hypothesis ultimately being supported.

- **Null Hypothesis 2:** The respondents were expected to demonstrate a poor perception of chiropractic and the chiropractic treatment of animals, as well as indicate a low level of usage, referral and interaction with chiropractors.

There was a poor level of perception found by the respondents and a relatively low level of utilization, referral and interaction; thus the hypothesis was supported.

- **Hypothesis 3:** The respondents were expected to demonstrate a low level of knowledge and poor perception regarding the legislation and education of the chiropractic treatment of animals in South Africa.

The respondents demonstrated a relatively high level of knowledge and a positive perception towards the education and legislation of the chiropractic treatment of animals in South Africa, thus leading to rejection of the hypothesis.

- **Hypothesis 4:** It was expected that there would be no associations found between knowledge, perceptions and factors influencing these

While certain factors were found to have no associations, the significant number of positive associations found between variables in this research (as discussed in Section 4.5.5) ultimately leads to the rejection of this hypothesis.

4.7 Conclusion

This concludes the presentation of the results of this research as well as the related discussion. This chapter has provided a number of insights that should be noted when considering the future education of veterinarians with regard to chiropractic and the chiropractic treatment of animals, as well as the development of the chiropractic treatment of animals in South Africa. The conclusions and recommendations of this research are discussed further in Chapter Five.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The following chapter concludes this study to determine the perception of South African veterinarians towards chiropractic and the chiropractic treatment of animals. Conclusions are drawn from Chapter Four with recommendations made based on the outcomes and conclusions of the study and include possible methodological shortcomings.

5.2 Conclusions

Objective One: To determine the demographic data of the respondents.

The demographics of the veterinary respondents, including age; race \ ethnicity; education; and employment, as well as the geographic distribution and overseas experience of the respondents in private practice in South Africa, should all have led to a relatively high level of exposure to chiropractic. This was expected to lead to a higher level of knowledge and perception of chiropractic and the chiropractic treatment of animals than the general public.

The veterinary respondents reported a low level of complementary and alternative medicine (CAM) and complementary and alternative veterinary medicine (CAVM) study. This showed that the respondents generally had little interest, motivation or opportunity to study a form of therapy that falls outside of mainstream medicine.

<u>Objective Two:</u> To determine the respondents' level of knowledge of chiropractic and the chiropractic treatment of animals.

The respondents primarily reported to have either never heard of chiropractic and / or the chiropractic treatment of animals, or to have heard of them but with limited knowledge. This is surprising considering that veterinarians represent the primary contact for alternative therapies to the veterinary health care system of South Africa and should therefore be knowledgeable about diagnostic and therapeutic modalities that lie outside of mainstream veterinary medicine.

The objective knowledge scores were relatively high regarding both human and animal chiropractic for the respondents who claimed to have knowledge of either. While this could be expected due to their demographics, it was felt by the researcher that the knowledge scores may have been inaccurate if generalised to the entire South African veterinary population due to the relatively low response rate and respondents being drawn from the veterinary population with access to Internet.

The veterinarian respondents reported to have primarily been exposed to chiropractic and / or the chiropractic treatment of animals through direct interaction with a human chiropractor / animal chiropractor or indirectly through family, friends and colleagues. Relatively few reported to have exposure to chiropractic through the media, journals and lectures on chiropractic. This may demonstrate a lack of coverage related to chiropractic and the chiropractic treatment of animals in South African media and journals as well as demonstrate a lack of chiropractic lectures aimed at the veterinary profession in South Africa.

<u>Objective Three:</u> To determine the respondents' perceptions towards chiropractic and the chiropractic treatment of animals as well as their usage, referral and interaction with chiropractors.

The veterinary respondents reported to be utilizing chiropractic in practice as well as referring to chiropractors for secondary care. This indicates that the veterinarian respondents are utilizing chiropractic for the health care of animals to some extent even though there is no formal education system or professional association regarding the chiropractic treatment of animals in South Africa.

Communication between the veterinarian respondents and the referral chiropractor was considered average, poor or non-existent in over two thirds of the respondents who had referred an animal patient to a chiropractor. Furthermore, less than half of the veterinary respondents with a history of referral to a chiropractor reported to be certain of referring an animal to a practitioner with a post-graduate animal chiropractic qualification. Inadequate communication with the referral chiropractors as well as the high number of referrals to practitioners with no formal qualification in animal chiropractic may be related to a lack of practice monitoring by an association representing animal chiropractic in South Africa, as well as a lack of an education system concerning the chiropractic treatment of animals in this country.

The veterinarian respondents generally considered chiropractic to be helpful for a number of veterinary conditions afflicting most of the animals presented at private practice in South Africa. Only 13.4%% of the respondents would not consider an animal for referral to a chiropractor and only 9.5% of the respondents did not consider chiropractic to be helpful with any veterinarian conditions at all, though none of these respondents had a history of referral with a chiropractor. This demonstrates a good expectation of the usefulness of chiropractic by the veterinarian respondents regarding its application to the health care of animals.

There was a relatively high level of usage and referral with CAVM therapies in general reported by the veterinarian respondents, particularly with homoeopathy, acupuncture and physiotherapy. Physiotherapy shares a number of diagnostic and treatment techniques with chiropractic which may indicate a desire by the veterinarian respondents to utilize these techniques for the health care of animals. If the South African veterinarians were more knowledgeable to this, it could lead to higher utilization of chiropractic and could prove a positive factor for the integration of chiropractic into the veterinary health care system of South Africa.

Objective Four: To determine the respondents' knowledge and perception of the legislation and education of the chiropractic treatment of animals in South Africa.

It was found that the veterinarian participants generally felt that chiropractic has a place in the veterinary health care system of South Africa, and were predominantly happy with the current legislation of chiropractors only being allowed to treat animals under referral in this country.

The majority of respondents reported to believe that both the Allied Health Professions Council of South Africa (AHPCSA) and the South African Veterinary Council (SAVC) should govern the chiropractic treatment of animal in South Africa and further reported to predominantly believed that the chiropractic treatment of animals should be affiliated to the South African Veterinary Association (SAVA). It is encouraging that a small number believed an independent professional association should be formed to purely represent the chiropractic treatment of animals in South Africa, as the veterinarian respondents would possibly be biased towards SAVA which is the professional association that represents veterinarians in South Africa.

It was found that an overwhelming majority of the veterinarian respondents would be in support of an animal chiropractic course in South Africa, with almost half of the respondents further stating that they would be interested in attending such a course.

This shows strong support from a number of South African veterinarians for the formation of an animal chiropractic course in South Africa.

It was further shown that the majority of the veterinarian respondents believed that an animal chiropractic course in South Africa need not be over 400 hours long and should primarily include the basic veterinary subjects, including anatomy and physiology. As with governance of animal chiropractic, the respondents indicated that they believe both veterinarians and chiropractors should administer and be able to attend such a course. This is promising to the future growth of the chiropractic treatment of animals as both veterinarians and chiropractors would be needed to take part in the establishment of professional organizations to forward the education and administration of animal chiropractic in South Africa.

<u>Objective Five:</u> To determine any associations between the factors influencing knowledge and perception as well as the related demographic factors in order to establish the strength of these relationships.

A link between the respondents' knowledge and perception of chiropractic and the chiropractic treatment of animals was established, meaning that the more they knew about chiropractic and the chiropractic treatment of animals, the better their perception of these therapies. It was also demonstrated that personal utilization of chiropractic as well as having referred an animal patient to a chiropractor were both linked to increased knowledge of chiropractic and the chiropractic treatment of animals.

Positive correlations where found concerning knowledge scores of chiropractic and animal chiropractic related to both age and years of practice experience, though age and practice experience were negatively associated with perception scores. This is contradictory to the correlation between age, practice experience and perception found in the literature (Kayne, Beattie and Reeves, 1999), and may indicate that there are other factors influencing the perception of the veterinarian respondents, such as younger veterinarians possibly having increased exposure to CAM / CAVM therapies in

their studies and generally possessing more open views towards these therapies in comparison to older veterinarians.

Being affiliated to a veterinary related association was demonstrated to influence the knowledge and perception of the respondents to different extents. This shows that a professional association not only represents the promotion and education of a profession but can also influence the knowledge and perception of its affiliates.

It was further found that the veterinarian respondents who had only studied or practiced in South Africa did not differ in knowledge or perception from those respondents with study and practice experience outside of South Africa. This may suggest that the veterinarian respondents who had only studied or worked in South Africa had a similar level of exposure to chiropractic and animal chiropractic in comparison to those who had study or practice experience abroad.

5.3 Recommendations

The response rate of the study was 13.8%. It therefore stands to reason that these results cannot be assumed to be representative of all the South African veterinarians. The small sample size was also a limitation of a representation of statistical significance in the hypotheses tested. Due to the large target population (2538), questionnaire distribution by way of postage would be expensive with regard to printing and postage with a relatively low expected response rate (Esterhuizen, 2010 Louw, 2005; van As, 2005; Carey, *et al.,* 2005;). It is for this reason that it is recommended that a follow up study be undertaken in the form of a qualitative study in order to further investigate the perception of veterinarians and / or relevant stakeholders towards chiropractic and the chiropractic treatment of animals in South Africa.

This research was a Durban University of Technology (DUT) pilot study in terms of using an Internet website based questionnaire with e-mail request for participation, which was something that, to the researcher's knowledge, had not been undertaken by researchers at DUT. This methodology could be deemed a financial and time saving method in terms of the amount of information obtained. The major limitation to broader contact with the South African veterinary community was the poor quality / low number of e-mail addresses kept by the SAVC register, leading to only 1841 out of a possible 2538 South African based veterinarians being approached for participation in this research. For this reason, it is recommended that this study be repeated after the undertaking of a chiropractic education drive aimed at South African veterinarians. This would enable the observation of any change in the knowledge and perception they have towards chiropractic and the chiropractic treatment of animals as well as meaning that the follow-up research could be undertaken at a time when the SAVC has possibly updated its veterinarian e-mail register.

Due to veterinarians being employed professionals with limited time, the questionnaire was revised to be as short as possible. This led to a concentration of questions regarding the chiropractic treatment of animals at the possible expense of the

chiropractic treatment of humans. A follow-up study may enable a greater assessment of the knowledge and perception of veterinarians towards the chiropractic treatment of humans and the association with their knowledge and perception of the chiropractic treatment of animals.

For animals to receive chiropractic care in South Africa there needs to be an initial consultation with a veterinarian with subsequent referral to a chiropractor. Veterinarians, therefore, represent the link between animals and chiropractic care in this country. The veterinarian respondents reported a poor level of knowledge specifically related to the chiropractic care of animals which would therefore indicate the need for an educational drive aimed at improving the knowledge of South African veterinarians regarding the scope of practice offered by chiropractic for the health care of animals. The veterinary respondents indicated that they would prefer electronic mail, DVD / CD ROM, magazine / journal article and oral presentation as means of future education regarding the chiropractic treatment of animals.

The chiropractic treatment of animals is not represented by a professional association in South Africa. The veterinarian respondents reported to be in favour of integrating animal chiropractic into the South African Veterinary Association and a small but significant number believed that the formation of an independent association to purely represent animal chiropractic in South Africa would be favourable. While the particulars still need further investigation, it would be recommended that the chiropractic treatment of animals be represented by an association that would undertake a similar role as the Chiropractic Association of South Africa (CASA) who represent the chiropractic treatment of humans in South Africa and claim in their mandate to: "…promote, encourage and maintain high standards of education; training; conduct and practice within the profession in South Africa" (CASA, 2010).

According to Myburgh and Mouton (2007) education is a key element both from the point of view of professional development, and in terms of authority and credibility of health care practitioners in the eyes of colleagues and society in general. This research

has shown that the formation of a course for the chiropractic treatment of animals in South Africa would have the support of a significant portion of the veterinary community and should be investigated in order to forward the growth and development of the chiropractic treatment of animals in this country.

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APPENDIX A

From: Hanri Kruger <registrar@savc.org.za>
To :Bryce Taverner <brycetav@gmail.com>

Date:Thu, Mar 4, 2010 at 8:41 AM
Subject:Re: Research Permission
mailed-by: gmail.com
signed-by: gmail.com

Dear Mr Taverner

I have consented to the disclosure of the e-mail addresses of registered veterinarians to you.

However, it does not fall with the objects of the South African Veterinary Council to approve research to be undertaken.

Yours faithfully/ Die uwe
Hanri Kruger

Registrar/Registrateur
South African Veterinary Council/ Suid Afrikaanse Veterinêre Raad

874 Church Street/ Kerkstraat 874
Lisdogan Park
Pretoria
012 - 342 1612 (T)
012 - 342 4354 (F)

P O BOX 40510, Arcadia, 0007
www.savc.org.za

APPENDIX B1: LETTER OF INFORMATION

Dear Veterinarian

Welcome to my research study

Title: The perception of veterinarians towards chiropractic and the chiropractic treatment of animals in South Africa.

Researcher: Bryce Taverner: 0825032756
Supervisor: Dr Grant Matkovich, M-Tech Chiropractic: (031) 2018204
Co- supervisor: Dr Charmaine Korporaal, M-Tech Chiropractic: (031) 3732611

Introduction:

Chiropractic has seen the emergence of various specializations including the utilization of chiropractic for the care of animals. This new field of chiropractic has grown outside of South Africa to the point where there are now over 1100 chiropractors and veterinarians educated and registered in the use of chiropractic for the care of animals in America alone. This has lead to the increased referral of animals from veterinarians to practitioners trained in the chiropractic care of animals for secondary care.

Chiropractic treatment of animals in South Africa is presently available through a few chiropractors who have attained post-graduate qualification in the chiropractic care of animals from outside of South Africa.

Being the primary health care givers for animals in South Africa, veterinarians represent the primary contact for the access of animals to alternative medicine in this country.

It is hoped this research would benefit the development of inter-professional communication and collaboration between the veterinary and chiropractic professions with regard to the health care of animals.

Procedure:

Please only proceed with participation in this research if you are a practicing veterinarian (in any field) currently residing in South Africa.

In the e-mail you received you will find a link to a website (www.surveymonkey.com). Kindly access the website via the link and complete the questionnaire at your leisure. The first section of the questionnaire will deal with informed consent. It will have to be answered appropriately to continue with the rest of the questionnaire. Please respond to the best of your current knowledge and honest opinion.

Potential Outcomes:

This research is being undertaken in accordance with an M.Tech: Chiropractic qualification from the Durban University of Technology, Durban. The results of this research may be published in a journal publication.

Remuneration and costs of study:

Participants in this study will receive no monetary remuneration and will not have to cover any costs of the undertaking of the study.

Confidentiality:

All data obtained through the questionnaire as well as the identity of respondents will remain anonymous.

Persons to contact for problems or questions:

Researcher: Bryce Taverner: 0825032756

Supervisor: Dr Grant Matkovich: (031) 2018204

Co-Supervisor: Dr Charmaine Korporaal (031) 3732611

Faculty of Health Sciences: Mr Vikesh Singh (031) 3732701

Your time and assistance with this research are greatly appreciated

APPENDIX B2

Revised for actual study where appropriate

Please select the appropriate answer:

1.	Have you read the research information sheet?	Yes	No
2.	Have you had an opportunity to ask questions regarding this study?	Yes	No
3.	Have you received satisfactory answers to you 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 this study at any time, without reasons given?	Yes	No
	c) withdraw from this 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 <u>NO</u> to any of the above, please obtain the necessary information from the researcher and/or supervisor before continuing. Thank you.

Veterinarian Questionnaire

1. Informed Concent

* 1. Informed Concent Questions

	Yes	No
Have you read the research information sheet?	◯	◯
Have you had an opportunity to ask questions regarding this study?	◯	◯
Have you received satisfactory answers to you questions?	◯	◯
Have you received enough information about this study?	◯	◯
Do you understand the implications of your involvement in this study?	◯	◯

* 2. Do you agree to voluntarily participate in this study?

◯ Yes

2. Demographic Information

* 1. Gender:

◯ Male

◯ Female

* 2. What was your age at your last birthday?

* 3. What is your race? (for statistical purposes only)

◯ Black

◯ White

◯ Coloured

◯ Indian

◯ Other (please specify)

3. Educational Information

1. In what year did you attain your veterinary degree?

Veterinarian Questionnaire

2. Where did you attain your veterinary degree from? (institution and town/country)

3. Do you hold any postgraduate veterinary qualification/s?

- ◯ No
- ◯ Yes (please specify)

4. Do you hold any qualification/s outside of veterinary healthcare?

- ◯ No
- ◯ Yes (please specify)

4. Veterinary Experience

1. Are you a member of the South African Veterinary Association?

- ◯ No
- ◯ Yes (for how many years)

2. Are you a member of any other veterinary related associations?

- ◯ No
- ◯ Yes (please specify)

3. What area/s of veterinary health care are you involved in, or have ever been involved in? (more than one answer possible)

- ☐ Practice
- ☐ Academic
- ☐ Research
- ☐ Industry
- ☐ Other (please specify)

5. Practice Experience

Veterinarian Questionnaire

1. How many years of practice experience do you have?

2. In what type of area do you practice?

- ◯ Urban
- ◯ Rural
- ◯ Both

3. In which South African province do you practice?

- ◯ Eastern Cape
- ◯ Free State
- ◯ Gauteng
- ◯ Kwa-zulu Natal
- ◯ Limpopo
- ◯ Mpumalanga
- ◯ North West Province
- ◯ Northern Cape
- ◯ Western Cape

4. Have you practiced outside of South Africa?

- ◯ No
- ◯ Yes (where?)

5. What type of animals do you treat in your practice? (more than one answer possible)

- ☐ Large animals
- ☐ Small animals
- ☐ Exotic animals
- ☐ Wildlife
- ☐ Other (please specify)

Veterinarian Questionnaire

6. Do you make use of any of the following alternative therapies in your practice? (more than one answer possible)

- [ ] Homoeopathy
- [ ] Naturopathy
- [ ] Physiotherapy (including electro-modalities and massage therapies)
- [ ] Acupuncture
- [ ] Herbal therapy
- [ ] Manipulation
- [ ] Nutrirional therapies

Other (please specify)

6. Knowledge of the application of chiropractic to humans

1. 4.1 How would you describe your knowledge of chiropractic?

- ◯ Never heard of chiropractic
- ◯ I have heard of it but my knowledge is limited
- ◯ I know a reasonable amount about it
- ◯ My knowledge about chiropractic is good

2. 4.2 How did you get this information? (More than one answer possible)

- [ ] Lecture about chiropractic
- [ ] I have read about chiropractic in a medical journal
- [ ] I have read about chiropractic in a (lay) journal
- [ ] From my family or friends
- [ ] From other veterinarians, specialists, etc.
- [ ] Through the media
- [ ] Interaction with a chiropractor
- [ ] From people/persons who have been treated by a chiropractor
- [ ] Other (please specify)

Veterinarian Questionnaire

3. Was the information favourable?

- ◯ Yes
- ◯ No

4. Have you ever been treated by a chiropractor?

- ◯ No
- ◯ Yes

If yes, was treatment beneficial? Please comment..

5. Please choose whether you believe these statements to be true or false.

	True	False
Chiropractic does not make use of manipulation when treating	◯	◯
Chiropractic is a form of primary healthcare	◯	◯
Chiropractic makes use of electro-modalities (e.g: ultrasound)	◯	◯
Surgery falls under a chiropractor's scope of practice	◯	◯
Chiropractic treatment is covered by most major medical aids	◯	◯
Dry needling is an adjunct treatment available to chiropractors	◯	◯

7. Knowledge of the application of chiropractic to animals

1. 4.1 How would you describe your knowledge of animal chiropractic?

- ◯ Never heard of animal chiropractic
- ◯ I have heard of it but my knowledge is limited
- ◯ I know a reasonable amount about it
- ◯ My knowledge about animal chiropractic is good

Veterinarian Questionnaire

2. 4.2 How did you get this information? (More than one answer possible)

- [ ] Lay lecture about animal chiropractic
- [ ] I have read about animal chiropractic in a medical journal
- [ ] I have read about animal chiropractic in a (lay) journal
- [ ] From my family or friends
- [ ] From other veterinarians, specialists, etc.
- [ ] Through the media
- [ ] From interaction with a chiropractor or animal chiropractor
- [ ] Other (please specify)

3. Was the information favourable?

- ◯ Yes
- ◯ No

4. Please choose whether you believe these statements to be true or false.

	True	False
Chiropractic on animals makes use of manipulation of limbs in treatment	◯	◯
Animal chiropractors can diagnose an animal patient in South Africa	◯	◯
Chiropractic on animals can be studied in South Africa	◯	◯
Animal chiropractors can only administer treatment under referral in South Africa	◯	◯
Chiropractic on animals treats small animals only	◯	◯
Equine spinal manipulation by a chiropractor can improve the performance of a horse	◯	◯
Chiropractic on animals does not make use of an activator gun	◯	◯

8. Interaction with a chiropractor

Veterinarian Questionnaire

1. Have you ever referred an animal patient to a chiropractor?

- ◯ No
- ◯ Yes

9. If "Yes" to Referral

1. Did the chiropractor you referred to have any post graduate qualification in animal chiropractic?

- ◯ Yes
- ◯ No
- ◯ Don't know

2. What type of animals have you referred?

- ☐ Small animals
- ☐ Large animals
- ☐ Exotic animals
- ☐ Wildlife
- ☐ Other (please specify)

3. Where you satisfied with the treatment recieved by the animal patient from the chiropractor?

- ◯ Yes
- ◯ No

If no, please comment..

4. How would you rate the communication between yourself and the chiropractor with regard to the referred animal patient/s?

- ◯ Non existant
- ◯ Poor
- ◯ Average
- ◯ Good

Veterinarian Questionnaire

5. What type of animal/s would you consider referring?

- [ ] Small animals
- [ ] Large animals
- [ ] Exotic animals
- [ ] Wildlife
- [ ] None
- [ ] Other (please specify)

6. Which of these veterinary conditions would you consider chiropractic treatment to help?

- [ ] Behaviour or mood change
- [ ] Bowel, bladder, and internal medicine disorders
- [ ] Chronic pain syndromes
- [ ] Degenerative arthritis
- [ ] Fractures
- [ ] Infections
- [ ] Intervertebral disc problems
- [ ] Jaw or TMJ problems
- [ ] Lameness
- [ ] Maintenance of joint and spinal health
- [ ] Muscle spasms
- [ ] Musculoskeletal Injuries
- [ ] Navicular disease or laminitis.
- [ ] Neck, back, leg, and tail pain
- [ ] Nerve problems, e.g. sciatica neuralgia
- [ ] Post-surgical care
- [ ] Seizures or neurological problems,
- [ ] Uneven pelvis or hips
- [ ] Other (please specify)

Veterinarian Questionnaire

7. Has a chiropractor ever asked you to evaluate an animal?

- ◯ Yes
- ◯ No

8. Do you know of any other veterinarians who have worked with/referred to a chiropractor?

- ◯ Yes
- ◯ No

9. Have you worked with/referred to any of the following aternative medical professions? (more than one answer possible)

- ☐ Homoeopath
- ☐ Naturopath
- ☐ Physiotherapist
- ☐ Acupuncturist
- ☐ Massage therapist
- ☐ Other (please specify)

10. If "No" to Referral

1. What type of animals would you consider referring? (More than one answer possible)

- ☐ Small animals
- ☐ Large animals
- ☐ Exotic animals
- ☐ Wildlife
- ☐ None
- ☐ Other (please specify)

Veterinarian Questionnaire

2. Which of these veterinary conditions would you consider chiropractic treatment to help?

- [ ] Behaviour or mood change
- [ ] Bowel, bladder, and internal medicine disorders
- [ ] Chronic pain syndromes
- [ ] Degenerative arthritis
- [ ] Fractures
- [ ] Infections
- [ ] Intervertebral disc problems
- [ ] Jaw or TMJ problems
- [ ] Lameness
- [ ] Maintenance of joint and spinal health
- [ ] Muscle spasms
- [ ] Musculoskeletal Injuries
- [ ] Navicular disease or laminitis.
- [ ] Neck, back, leg, and tail pain
- [ ] Nerve problems, e.g. sciatica neuralgia
- [ ] None
- [ ] Post-surgical care
- [ ] Seizures or neurological problems,
- [ ] Uneven pelvis or hips
- [ ] Other (please specify)

3. Has a chiropractor ever asked you to evaluate an animal?

- ◯ Yes
- ◯ No

4. Do you know of any other veterinarians who have worked with/referred to a chiropractor?

- ◯ Yes
- ◯ No

Veterinarian Questionnaire

5. Have you worked with/referred to any of the following aternative medical professions? (more than one answer possible)

- [ ] Homoeopath
- [ ] Naturopath
- [ ] Physiotherapist
- [ ] Acupuncturist
- [ ] Massage therapist
- [ ] Other (please specify)

11. Education and legislation

1. According to your knowledge of South African veterinary legislation, how are chiropractors allowed to practice on animals?

- ◯ Independently
- ◯ Under referral
- ◯ Not at all

2. How do you think chiropractors should be allowed to practice on animals in South Africa?

- ◯ Independently
- ◯ Under referral
- ◯ Not at all

3. Who, to your knowledge, governs chiropractic on animals in South Africa?

- ◯ Allied Health Professionals Council
- ◯ South African Veterinary Council
- ◯ Both
- ◯ No one

Veterinarian Questionnaire

4. Who do you believe should govern chiropractic on animals in South Africa?

- ◯ Allied Health Professionals Council
- ◯ South African Veterinary Council
- ◯ Both
- ◯ No one

5. Which professional association should chiropractic on animals fall under in South Africa?

- ◯ South African Veterinary Association
- ◯ Chiropractic association of South Africa
- ◯ Independent Association
- ◯ Other (please specify)

6. Would you be in support of the formation of an animal chiropractic course in South Africa?

- ◯ Yes
- ◯ No

7. How many hours should the course entail?

- ◯ 0-200
- ◯ 200-400
- ◯ 400-600
- ◯ 800-1000
- ◯ 1000+

8. Who do you believe should be allowed to attend such a course where it to be established?

- ☐ Qualified veterinarians only
- ☐ Qualified chiropractors only
- ☐ Both
- ☐ Other (please specify)

Veterinarian Questionnaire

9. Who do you believe should run/administer such a course where it to be established?

- [ ] Qualified veterinarians only
- [ ] Qualified chiropractors only
- [ ] Both
- [ ] Other (please specify)

10. What veterinary subjects should be included in the course for non veterinarians to study? (more than one answer possible)

- [ ] Anatomy
- [ ] Bacteriology and mycology
- [ ] Behavioural science
- [ ] Clinical medicine and surgery
- [ ] Microbiology and virology
- [ ] Nutrition
- [ ] Parasitology
- [ ] Pathology
- [ ] Pharmacology and toxicology
- [ ] Physiology
- [ ] Other (please specify)

11. Would you be interested in attending such a course?

- ◯ Yes
- ◯ No

12. Information

Veterinarian Questionnaire

1. What information about chiropractic on animals would you like to be available? (more than one answer possible)

- [ ] Education, including animal chiropractic courses
- [ ] Scientific research
- [ ] Indications for the chiropractic treatment of animals
- [ ] Different animal chiropractic techniques
- [ ] Terminology
- [ ] Effects/ safety
- [ ] Ethical/ legal situation of the chiropractic treatment of animals
- [ ] None

Other (please specify)

2. Were it available, how would you like to receive this information? (for research purposes) (more than one answer possible)

- [ ] Pamphlet
- [ ] Phone call
- [ ] Oral presentation
- [ ] Magazine article
- [ ] E-mail
- [ ] Educational DVD/CD ROM
- [ ] None
- [ ] Other (please specify)

APPENDIX C1: LETTER OF INFORMATION – FOCUS GROUP

Dear Participant,

I would like to welcome you into the focus group of my study, the title of my research project is:

An investigation to determine the knowledge and perception of the veterinary profession towards chiropractic and chiropractic on animals in South Africa.

Background to the study:

Many alternative medical therapies that have previously only been used as forms of healthcare therapies for humans are becoming recognized as forms of therapies for animals as well. These include such therapies as homoeopathy, physiotherapy, acupuncture and chiropractic. Animal chiropractic has been integrated as a form of healthcare for animals in places such as Australia, Europe and America where there is both legislation and education controlling and progressing the profession.

Chiropractic on animals in South Africa has a number of practitioners with a post graduate qualification in animal chiropractic obtained overseas. Currently there is no governing body and no form of education on animal chiropractic in South Africa.

The level of interaction between chiropractors and veterinary profession in South Africa has not been investigated. As primary health care givers for animals, it would be important to ascertain the current perspective of veterinarians on chiropractic and gage the level of current and possible future interaction between the two professions.

It is therefore the intention of the researcher to determine the current knowledge and perception that veterinarians have of chiropractic and chiropractic on animals.

Objective of the study:

The data obtained by means of this questionnaire will allow for further assessment of the percieved role of chiropractic in animal healthcare in South Africa.

The questions are concerned with the South African veterinarians:

- Knowledge and perceptions of chiropractic
- Current role and utilization of chiropractic in animal healthcare
- And the potential role that chiropractic could play in animal healthcare in the future

The questionnaire will only take a few minutes to complete, as most of the questions require you to tick or circle the appropriate answer. There are only a few short written responses that are required.

Your participation in this study is much appreciated and you are assured that your comments and contributions to the discussion will be kept confidential. The results of the discussion will only be used for research purposes.

If you have any further questions please feel free to contact either my supervisor/ co-supervisor or myself.

Bryce Taverner

APPENDIX C2: INFORMED CONSENT FORM

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

DATE: :

TITLE OF RESEARCH PROJECT : An investigation to determine the knowledge and perception of the veterinary profession towards chiropractic and chiropractic on animals in South Africa.

NAME OF SUPERVISOR	**: Dr G. Matkovich**
NAME OF CO-SUPERVISOR	**: Dr C. Korporaal**
NAME OF RESEARCH STUDENT	**: Bryce Taverner**

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 Institute 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 <u>NO</u> to any of the above, please obtain the necessary information from the researcher and / or supervisor before signing. Thank You.

<u>Please Print in block letters:</u>

Focus Group Member: _____ Signature: _____

Witness Name: _____ Signature:_____

Researcher's Name: _____ Signature:_____

Supervisor's /
Co-supervisor's Name: _____ Signature:_____

APPENDIX C3: CONFIDENTIALITY STATEMENT – FOCUS GROUP DECLARATION

<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.

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 may 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.

<u>Please Print in block letters:</u>

Focus Group Member: _____Signature:_____

Witness Name: _____ Signature:_____

Researcher's Name: _____ Signature:_____

Supervisor's /
Co-supervisor's Name: _____ Signature:_____

APPENDIX C4: 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 C5: QUESTIONNAIRE – PRE FOCUS GROUP

Veterinary Doctor Questionnaire							
1, Personal Information:							
	1.1 Gender	Male			Female		
	1.2 Age	21-30	31-40	41-50	51-60	61-70	70+
	1.3 Race (statistical purposes only)	Black	White	Coloured	Indian		
		Other, please specify..					
2. Education :							
	2.1 When did you attain your veterinary degree?						
	2.2 Where did you attain your veterinary degree?						
	2.3 What OTHER qualification/s do you hold?						
3. Veterinary Experience:							
	3.1 How many years of veterinary practice experience do you have?	0-10 years	11-20 years	21-30 years	31-40 years	41-50 years	50 + years
	3.2 What type of area do you practice in?	Urban		Rural		Both	
	3.3 In what type of practice do you work?	Solo practice	Partnership	Group practice (three or more veterinary doctors in one practice, no other disciplines)		Veterinary Health care centre (more than one discipline in one practice).	
	3.4 What South African province do	Eastern Cape	Free State	Gauteng	Kwazulu Natal	Limpopo	Mpumalanga

	you practice in?	Northern Cape	North West Province	Western Cape		
	3.5 Have you practised outside of South Africa?	Yes			No	
	3.6 If yes, where?					
	3.7 What type of animals do you treat in your practice? *(more than one answer possible)*	Canine	Feline	Equine	Bovine	Ovine
		Porcine	"Exotic animals"	"Wildlife"	Other, please specify..	

4. Knowledge of Chiropractic:						
	4.1 How would you describe your knowledge about chiropractic?	Never heard of *(continue with Question 5.1)*	I have heard of it but I do not know a lot about it	I know something about it	My knowledge about chiropractic is good	
	4.2 How did you get this information? *(More than one answer possible)*	Lay lecture about chiropractic	I have read about chiropractic in a medical journal	I have read about chiropractic in a (lay) journal	From my family or friends	
		From other veterinary doctors, specialists, etc.	Through the media	Interaction with a chiropractor		
		Other *(please specify)*				
	4.3 Have you ever been treated by a chiropractor?	No			Yes	
		If yes, did you find treatment satisfactory?	No	Yes	Certain aspects, please specify..	
	4.4 Do you know what is meant these chiropractic terms?	Manipulation/adjustment		No	Yes	
		Fixation		No	Yes	
		Referred pain		No	Yes	
		Vicero-somatic reflex		No	Yes	
		Kinematic chain		No	Yes	

		Coupled motion	No	Yes
		Flexion/distraction	No	Yes
		Trigger points	No	Yes

5 Knowledge of Animal Chiropractic:					
	5.1 How would you describe your knowledge about animal chiropractic?	Never heard of *(continue with Question 6.1)*	I have heard of it but I do not know a lot about it	I know something about it	My knowledge about animal chiropractic is good
	5.2 How did you get this information? *(More than one answer possible)*	I have worked with an animal chiropractor	Lay lecture about animal chiropractic	I have read about animal chiropractic in a medical journal	I have read about animal chiropractic in a (lay) journal
		From my family or friends	From other veterinary doctors, specialists,etc.	Through the media	
		Other *(please specify)*			

5.3 Do you know what is meant by these animal chiropractic terms?	Term 1	No	Yes
	Term 1	No	Yes
	Term 1	No	Yes
	Term 1	No	Yes
	Term 1	No	Yes
	Term 1	No	Yes
	Term 1	No	Yes
	Term 1	No	Yes
	Term 1	No	Yes

6 Referral with a Chiropractor:						
	6.1 Have you ever referred a patient to a chiropractor?	No		Yes		
	6.2 If no, would you be interested in referring?	**No *(continue with question 6.5)***	**Yes *(continue with question 6.4)***			
	6.3 If yes, what type of animal/s have you referred? *(more than one answer possible)*	Canine	Feline	Equine		
		Bovine	Ovine	Porcine		
		"Exotic" animals	"Wildlife"			
		Other (please specify)				
	6.4 Chiropractic referral is an option for patients with? *(more than one answer possible)*	Behaviour or mood change			No	Yes
		Bowel, bladder, and internal medicine disorders			No	Yes
		Chronic pain syndromes			No	Yes
		Degenerative arthritis			No	Yes
		Intervertabral disc problems			No	Yes
		In horses: "head shy" or "cinchy"			No	Yes
		Jaw or TMJ problems			No	Yes
		Lameness			No	Yes
		Maintenance of joint and spinal health			No	Yes
		Muscle spasms			No	Yes
		Musculoskeletal Injuries			No	Yes
		Neck, back, leg, and tail pain			No	Yes
		Nerve problems, e.g. sciatica neuralgia			No	Yes
		Post-surgical care			No	Yes
		Seizures or neurological problems,			No	Yes
		Navicular disease or laminitis.			No	Yes
		Uneven pelvis or hips			No	Yes
		Other (please specify)			No	Yes
	6.5 Has a chiropractor ever referred an animal to you?	No		Yes		
7 Communication with a Chiropractor:						
	7.1 Have you ever communicated with a chiropractor about a patient?	No		Yes		
	7.2 How did this communication take place?	Verbal Communication			No	Yes
		Telephone			No	Yes
		Letter			No	Yes
		E-mail			No	Yes
		Other, please specify				
	7.3 How would you rate this communication experience?	Very negativ	Negative	Neutral	Positive	Very positive

		e				
	7.4 Do you think this communication could be improved?	No			Yes	
	7.5 What form of communication should be utilized in the future?	Verbal communication			No	Yes
		Telephone			No	Yes
		Letter			No	Yes
		E-mail			No	Yes
		Other, please specify..				

8 Education and Legislation:					
	8.1 Do you feel chiropractors are properly qualified to treat animals?	No	Yes, certain conditions	Yes, absolutely	
	8.2 Do you believe a course in animal chiropractic should be established in South Africa?	No	Yes		
	8.3 Would you be interested in attending such a course?	No	Yes		
	8.4 Who do you believe should be allowed to apply for such a course where to be established? *(more than one answer possible)*	Qualified veterinary doctors	Qualified chiropractors	Anyone	
		Other, please specify:			
	8.5 How do you think chiropractors should be allowed to practice on animals in South Africa?	Independently	Under referral	Not at all	
	8.8 Do you believe chiropractic on animals should fall under a governing body?	No	Yes		
9 Information:					
	9.1 Would you be interested in further information about animal chiropractic?	No *(proceed to end)*	Yes		
	9.2 What other information would you like to have about animal chiropractors? *(more than one answer possible)*	Education, including animal chiropractic courses	No	Yes	
		Scientific research	No	Yes	
		Indications for animal chiropractic treatment	No	Yes	
		Different animal chiropractic techniques	No	Yes	
		Terminology	No	Yes	
		Effects/ safety	No	Yes	
		Ethical/ legal situation	No	Yes	
		Other, please specify			

Thank you very much for taking time to complete this questionnaire

APPENDIX D1: QUESTIONAIRE POST FOCUS GROUP / PRE DEPARTMENTAL MEETING

Chiropractic Questionnaire					
1.1 Gender.	Male			Female	
1.2 Age at last birthday.					
1.3 Race (statistical purposes only).	Black	White	Coloured	Indian	
	Other, please specify..				
2. Education :					
2.1 In what year did you attain your veterinary degree?					
2.2 Where did you attain your veterinary degree from?					
2.3 Do you hold any postgraduate veterinary qualification/s?	No	Yes, please specify…			
2.4 do you hold any qualification/s outside of veterinary healthcare?	No	Yes, please specify…			
3. Veterinary Experience:					
3.1 Are you a member of the South African veterinary association?	No	Yes, how many years have you been a member?			
3.2 Are you registered with any para-veterinary associations?	No	Yes, which one/s?			

	3.3 What area/s of veterinary healthcare are you involved in/ or have been involved in?	Private practice *(answer rest of section 3)*	Academic *(proceed to section 4)*	Research *(proceed to section 4)*	Industry *(proceed to section 4)*	
	3.4 How many years of practice experience do you have?	0-5 years	6-10 years	11-15 years	16-20 years	21-25 years
		26-30 years	31-35 years	36-40 years	41-45 years	45+ years
	3.5 What type of area do you practice in?	Urban	Rural	Both		
	3.6 In what type of practice do you work?	Solo practice	Partnership	Group practice (three or more veterinarians in one practice, no other disciplines)	Multi disciplinary healthcare centre (more than one discipline in one practice).	
	3.7 What South African province do you practice in?	Eastern Cape	Free State	Gauteng	Kwa-zulu Natal	Limpopo	Mpumalanga
		Northern Cape	North West Province	Western Cape			
	3.8 Have you practised outside of South Africa?	Yes	No			
		If yes, where?				
	3.9 What type of animals do you treat in your practice? *(more than one answer possible)*	Small Animals	Large animals	Mixed	"Exotic" animals	Wildlife
		Other, please specify…				
	3.10 Do you make use of any alternative veterinary therapies in your practice?	Yes	No			

	3.11 If yes, what therapies do you make use of? *(more than one answer possible)*	Acupuncture	Massage therapy or other physiotherapies	Manipulation	Herbal therapy
		Homeopathy	Nutritional therapy	Other, please specify…	

4. Knowledge of Human Chiropractic:						
	4.1 How would you describe your knowledge of chiropractic?	Never heard of chiropractic *(proceed to section 5)*	I have heard of it but I do not know a lot about it	I know something about it	My knowledge about chiropractic is good	
	4.2 How did you get this information? *(More than one answer possible)*	Lay lecture about chiropractic	I have read about chiropractic in a medical journal	I have read about chiropractic in a (lay) journal	From my family or friends	
		From other veterinarians, specialists, etc.	Through the media	Interaction with a chiropractor	From people/persons who have been treated by a chiropractor	
		Other, please specify:				
	4.3 Was the information favourable?	Yes		No		
	4.4 Have you ever been treated by a chiropractor?	No		Yes		
		If yes, did you find treatment beneficial?	Yes	No, Why?		
	4.5 Please choose whether you believe these statements to be true or false.	Chiropractic does not make use of manipulation when treating		True	False	
		Chiropractic is a form of primary healthcare		True	False	
		Chiropractic makes use of electro-modalities (e.g: ultrasound)		True	False	
		Surgery falls under a chiropractor's scope of practice		True	False	
		Chiropractic treatment is covered by most major medical aids		True	False	
		Dry needling is an adjunct treatment available to chiropractors		True	False	

5 Knowledge of Animal Chiropractic:					
	5.1 How would you describe your knowledge of animal chiropractic?	Never heard of animal chiropractic *(continue with Question 6.1)*	I have heard of it but I do not know a lot about it	I know something about it	My knowledge about animal chiropractic is good
	5.2 How did you get this information? *(More than one answer possible)*	I have worked with an animal chiropractor	Lay lecture about animal chiropractic	I have read about animal chiropractic in a medical journal	I have read about animal chiropractic in a (lay) journal
		From my family or friends	From other veterinarians, specialists,etc.	Through the media	
		Other, please specify:			
	5.3 Was the information favourable?	Yes		No	
	5.4 Please choose whether you believe these statements to be true or false.	Chiropractic on animals makes use of manipulation of limbs in treatment	True	False	
		Animal chiropractors can diagnose an animal patient in South Africa	True	False	
		Chiropractic on animals can be studied in South Africa	True	False	
		Animal chiropractors can only administer treatment under referral in South Africa	True	False	
		Chiropractic on animals treats small animals only	True	False	
		Equine spinal manipulation by a chiropractor can improve the performance of a horse	True	False	
		Chiropractic on animals does not make use of an activator gun	True	False	

6 Interaction with a Chiropractor:						
	6.1 Have you ever referred a patient to a chiropractor?	No			Yes	
		If no, would you be interested in referring?	**Yes (continue with question 6.4)**		**No (continue with question 6.5)**	
		If yes, did they have any post-graduate qualification in animal chiropractic	Yes	No	Don't know	
	6.2 What type of animal/s have you referred? *(more than one answer possible)*	Small animals	Large animals	Equine only	"exotic" animals	wildlife
		Other, please specify:				
	6.3 What type of animal/s would you consider referring? *(more than one answer possible)*	Small Animals	Large animals	Equine only	"exotic" animals	wildlife
		Other, please specify:				
	6.4 Which of these veterinary conditions would you consider chiropractic treatment to help?	Behaviour or mood change			No	Yes
		Bowel, bladder, and internal medicine disorders			No	Yes
		Chronic pain syndromes			No	Yes
		Degenerative arthritis			No	Yes
		Intervertebral disc problems			No	Yes
		Infections			No	Yes
		Jaw or TMJ problems			No	Yes
		Lameness			No	Yes
		Maintenance of joint and spinal health			No	Yes
		Muscle spasms			No	Yes
		Musculoskeletal Injuries			No	Yes
		Neck, back, leg, and tail pain			No	Yes
		Nerve problems, e.g. sciatica neuralgia			No	Yes
		Post-surgical care			No	Yes
		Seizures or neurological problems,			No	Yes
		Navicular disease or laminitis.			No	Yes
		Uneven pelvis or hips			No	Yes
		Other (please specify)				
	6.5 Has a chiropractor ever asked you to evaluate an animal?	Yes			No	
	6.6 Do you know of any other veterinarians who have worked with/referred to a chiropractor?	Yes			No	

	6.7 Have you referred an animal/s to any other alternative medical practitioner/s?	Yes		No
	6.8 If Yes, which one/s? (more than one answer possible)	Acupuncturist	Physiotherapist	Herbalist
		Homoeopath	Other, please specify….	

7 Communication with a Chiropractor:					
	7.1 Have you ever communicated with a chiropractor about an animal patient?	No *(continue with question7.4)*		Yes	
	7.2 How d*i*d this communication take place?	Verbal Communication		No	Yes
		Telephone		No	Yes
		Letter		No	Yes
		E-mail		No	Yes
		Other, please specify			
	7.3 How would you rate this communication experience?	Very negative	Negative	Positive	Very Positive
	7.4 Would you like to have more communication with an animal chiropractor in the future?	No *(proceed to section 8)*		Yes	
	7.5 In what form would you like this communication to take place? *(more than one answer possible)*	Verbal communication		No	Yes
		Telephone		No	Yes
		Letter		No	Yes
		E-mail		No	Yes
		Other, please specify..			

8 Education and Legislation:					
	8.1 According to your knowledge of South African veterinary legislation, how are chiropractors allowed to practice on animals?	Independently		Under referral	Not at all
	8.2 How do you think chiropractors should be allowed to practice on animals in South Africa?	Independently		Under referral	Not at all
	8.3 Who, to your knowledge, governs chiropractic on animals in South Africa?	Allied Health Professionals Council	South African Veterinary Council	Both	No one
	8.4 Who do you believe should govern chiropractic on animals in South Africa?	Allied Health Professionals Council	South African Veterinary Council	Both	No one
	8.5 Which professional association should chiropractic on animals fall under in South Africa?	South African Veterinary Association		Chiropractic association of South Africa	Independent Association

	8.6 Would you be in support of the formation of an animal chiropractic course in South Africa?	Yes			No	
	8.7 How many hours should the course entail?	0-200	200-400	400-600	800-1000	1000+
	8.8 Who do you believe should be allowed to register for such a course were it to be established?	Qualified veterinary doctors		Qualified chiropractors		Both
		Other, please specify:				
	8.10 Who do you believe should run such a course were it to be established?	Qualified veterinarians		Qualified chiropractors		Both
		Other, please specify..				
	8.11 What veterinary subjects should be included in the course for non veterinarians to study? *(more than one answer possible)*	Physiology	Microbiology and virology	Bacteriology and mycology	Parasitology	Pathology
		Pharmacology and toxicology	Clinical medicine and surgery	Anatomy	Nutrition	Other, please specify:
	8.12 Would you be interested in attending such a course?	Yes		No		
9 Information:						
	9.1 What information about chiropractic on animals would you like to be available? *(more than one answer possible)*	Education, including animal chiropractic courses		No		Yes
		Scientific research		No		Yes
		Indications for the chiropractic treatment of animals		No		Yes
		Different animal chiropractic techniques		No		Yes
		Terminology		No		Yes
		Effects/ safety		No		Yes
		Ethical/ legal situation of the chiropractic treatment of animals		No		Yes
		None		No		Yes
		Other, please specify…				
	9.2 Were it available, how would you like to receive this information? *(for research purposes)*	Pamphlet		Phone call		Oral presentation
		Magazine article		E-mail		None
		Other (please specify):				

Thank you for taking time to complete this questionnaire