An exploratory mixed-methods study to determine factors which may affect satisfaction levels of patients outside of a clinical setting.

Mini-dissertation in partial compliance with the requirements for the Masters Degree in Technology: Chiropractic, in the Department of Chiropractic at the Durban University of Technology.

by

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I, Grant L. Talmage, declare that this dissertation represents my own work, both in conception and execution.

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This Research dissertation is dedicated to my parents, whose unfailing support and belief in me, has helped me through the years.

“People often walk in and out of your life…but friends will leave footprints in your heart”-Anonymous

To all my friends who have left their footprints…

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To my “Old Man”, for the years of standing by my side. For sharing the good times and the not so good. For believing in my dreams and aspirations…for believing in me…

To my Mom…it is so hard to put what I feel into words! For showing me the true meaning of “Kia Kaha”

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Abstract

It has been shown that patient satisfaction evaluation is an excellent tool that may be used to determine whether practitioner services are meeting the needs of the general public. Furthermore, it has been observed that patients who were satisfied with their treatment would behave differently to those who were dissatisfied with their levels of care. It was shown that patient's who were satisfied with their levels of treatment were more likely to be compliant with their treatment regime and more likely to seek out similar care for the same condition in the future.

With satisfaction having such an affect on patient's behaviour toward practitioner's and the treatment experience, it is imperative to understand the underlying factors that may affect the levels of satisfaction.

Objectives: The purpose of this study was to determine any factors that may affect general satisfaction levels of patient's in a non-clinic setting.

Methods: An exploratory mixed-method approach was used in which an observation of the treatment process, carried out by observers, was compared to results reported by participants in the study, by the completion of a self-administered questionnaire.

Results: The results indicated that the participants were very satisfied with the levels of Chiropractic care received. What was evident from the study is that communication, both verbal and non-verbal, may play a role in determining general satisfaction levels.

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Definitions

1. Alternative hypothesis:

"A restatement of the research hypothesis in the same terms as those used by the null hypothesis" (Tropper, 1998).

2. Communication:

"Any act by which one person gives to or receives from another person information about the person's needs, desires, perceptions, knowledge, or affective states. Communication may be intentional or unintentional, may involve conventional or unconventional signs, may take linguistic or non linguistic forms, and may occur through spoken (verbal) or other modes (non-verbal)" (National Joint Committee for the communicative needs of persons with severe disabilities, 1992).

3. Face validity:

This type of validity is a subjective judgement by those involved in the research, that the instrument designed is measuring what it is supposed to measure, and whether the sample being measured is representative of the traits being measured by the instrument (Leedy, 1997).

4. Novelty:

"A new or unfamiliar thing or experience" (The Concise Oxford Dictionary, 1999).

5. Null hypothesis:

"The assumption that the parameters of two (or more) populations are equal to one another" (Tropper, 1998).

6. Patient centered approach:

This is defined by Duggan *et al*., (2006) as that interaction between the doctor and the patient in which the doctor fully explores the patients illness or presenting complaint, and patients were able to reach an agreement with the physician about the nature of their illness and what to do about it.

7. Percept:

Sensory information, which has been interpreted and organised, then integrated into a comprehensive idea or image, which the observer is clearly aware of (Coren and Ward, 1989).

8. Perception:

"*The neuro-physiological processes, including memory, by which an organism becomes aware of and interprets external stimuli* " (The Concise Oxford Dictionary, 1999).

9. Perceptual set:

Expectations or preconceived ideas an observer will bring into a situation where a perception may be formed (Coren and Ward, 1989).

10. Reliability:

"The term reliability means that measurements made are consistent, i.e. if the same experiment is performed under the same conditions, the same measurements will be obtained" (Goddard and Melville, 2001).

11. Research hypothesis:

"The proposition a researcher sets out to establish" (Tropper, 1998).

12. Satisfaction:

The extent of an individual's experience of the treatment compared with his or her own expectations and patient satisfaction is related to the extent to which the general health needs of the patient are met (Asadi-Lari, Tamburini and Gray, 2004).

13. Student:

Student, in terms of this research, is defined as a person who is enrolled in Chiropractic Programme at the Durban University of Technology, and still completing the requirements of the degree. Chiropractic students who treat patient's, do so under the supervision of a qualified Chiropractor, and may not treat patient's without the Chiropractors consent.

14. Validity:

"The term validity means that the measurements are correct, i.e. the instrument measures what it is intended to measure, and that it is measures this correctly" (Goddard and Melville, 2001).

Chapter One

1.1. Introduction:

To understand the complex nature of perception, one must look toward the study of psychology in order to define what perceptions are and what factors influence perception. Perception is defined as "*The neuro-physiological processes, including memory, by which an organism becomes aware of and interprets external stimuli* " (The Concise Oxford Dictionary, 1999).

Robbins (1996) and Bergh *et al.,* (1999) point out that a number of factors in the perceiver, the perceived object and the situation (the context) that may shape and sometimes distort perception. This is suggestive of the fact that perception is subjective. The subjectivity of perception can be linked to many factors, which may be attributed to the perceiver, the object being perceived and the situation in which the object is being perceived.

In this respect certain attributes of the practitioner, consultations as well as barriers within the consultation process were identified by Ford *et al.,* (2002) and Ford *et al.,* (2003) that would contribute to a perceived patient centred consultation. These were outlined as follows (Ford *et al.,* 2002 and Ford *et al.,* 2003):

- Considering the patient's perspective in the consultation.
- The lack of technical resources available to the practitioner to ensure an accurate and thorough examination or treatment of the patient.
- Developing a constructive / good practitioner-patient relationship.
- Sharing the evidence of findings with the patient.
- Having enough time with the patient.
- A lack of medical evidence in presenting the diagnosis to the patient.
- The practitioner's attitudes towards the patient and the patient's concerns.

- A practitioner's lack of appropriate training in the field of patient centred care.

Furthermore, research conducted by May (2000), Evans *et al.,* (2003) and supported by Faldon (2004) indicated that patient satisfaction was further enhanced / detracted from when the following indicators were assessed:

- Friendliness, bedside manner and the appropriate sensitivity demonstrated by the practitioner to the patient's needs.
- How the patient's pain had changed from one consultation to the next.
- The competency of the practitioner as they interacted with the patient's.
- The treatment experience in terms of the approach to the treatment and the particular techniques used by the practitioner.
- The patient's gaining of a good understanding of their problem and learning strategies for self-management of their problem.
- The practitioner's appropriate dispensement of post-treatment information.
- The practitioner's willingness to be flexible when scheduling appointments.

The above factors support the earlier work of Gamble and Gamble (1998) who states that once a person has formed an opinion (or perceived an object in a particular light), they tend to adhere to it. Once this occurs they do their best to manipulate or distort any information that appears to contradict or conflict with their evaluation, so that it will conform to their view of the object or process. May (2000) concurs with Gamble and Gamble (1998), but goes further to state that although past experiences may influence the patient's present beliefs, their future behaviour and perceptions may be influenced by an episode of satisfactory health care. This is congruent with the work of Sigrell (2002) who theorised that the patient's attitudes and beliefs in relation to health care, forms the basis for their expectations of treatment.

This is supported in a recent study conducted by Haneline (2006), who concluded that patient's that were satisfied with the level of care received would seek out similar care for an episode of the same condition in the future. Furthermore, several authors believe that the profession of Chiropractic to some extent has a patient centered approach in the treatment process (Vernon, 1991 and Miller and Gemmell, 2004). This gives Chiropractors an advantage in establishing favourable patient perceptions, when seen in the context of the following statement by Vernon (1991) about patient centred care in the Chiropractic profession: "*The quality of interaction between the physician and the patient can be extremely influential in the patient outcomes and, in some (perhaps many) cases, patient and the provider expectations and interactions may be more important than specific treatments*".

Therefore, it is imperative to look at those factors, which may influence patient's who are experiencing an episode of health care, as it would seem that the satisfaction of the patient is not only confined to the practitioner-patient relationship, but all factors influencing this interaction – the background of the patient (perceiver), the perceived service provided (object) and the situation (treatment environment) that may shape perception (Robbins, 1996; Bergh *et al.,* 1999). Furthermore, it stands to reason that it is important to repeat satisfaction surveys when any one or more of this triad of factors is changed as this will change the perception of the patient (perceiver), as well as influence the patient's future actions. This research implies that the level of service delivery not only has an impact on the immediate here and now, but also on patient's future actions and reactions to the particular profession (May, 2000).

In this context it should be noted that according to the literature (May, 2000; Ford *et al.,* 2002; Evans *et al.,* 2003; Ford *et al.,* 2003 and Faldon, 2004), the identified factors are all related to clinic based evaluations of patient perception and satisfaction and may therefore not be applicable to other contexts (non-clinic setting) in which clinical encounters occur (e.g. treatment of athletes at the field side). Therefore, it is necessary to conduct research into the type of factors that

influence the patient's perception and general satisfaction in a non-clinic setting in order to more accurately determine the influence of factors on the perception and satisfaction of the athletes participating in various sporting events.

Therefore, an exploratory mixed-methods study to determine factors which may affect satisfaction levels of patient's outside of a clinical setting (non-clinic (sport)) was proposed for this study.

1.2. Aims of the Study:

The ***first Objective*** was to determine if there were any identifiable common factors highlighted by the observers to the treatment process (Phase One).

The ***second Objective*** was to collect data and documentation with respect to:

- Participant demographics
- Knowledge questions responses
- General satisfaction question responses

The ***third Objective*** was to determine any relationships between the various factors (participant demographics and knowledge versus general satisfaction scales) that were documented in the second objective for the purposes of weighing up their contribution to the scale of general satisfaction.

The ***fourth Objective*** of the study was to determine if any factors affecting general satisfaction levels that could be identified by comparing and contrasting the results from the observational study and the self-administered questionnaire (Phase Three).

1.3. Rationale of the Study:

This study was completed in order to accurately determine the levels of general satisfaction of sports competitors treated at sporting events with respect to the treatment they receive on the given day. However, the factors influencing these participants may not be the same as those found in a clinical context based on the inherent differences in constructs surrounding the clinic based and non-clinic based (sport) settings generally. This is particularly true in the South African context where the infrastructure surrounding sporting facilities (non-clinic setting) are often limited to tent like structures surrounded with basic amenities, which is vastly different from a clinic environment.

Once these factors have been determined, the level of general satisfaction could then be determined and questions surrounding whether the students are providing satisfactory treatment and overall participant care at sporting events can then be more appropriately addressed.

Finally, the information furnished from this study could impact on the future delivery of Chiropractic care to the general public within the sports setting.

1.4. Limitations of the Study:

For the purposes of this study, the researcher assumed that all the information given by the participants was an accurate reflection of their perceived reality when they completed the questionnaires. However, factors beyond the scope of this research may have affected the responses of the participants, potentially biasing the data collected (Dyer, 1997).

In addition every effort was made to ensure that the observational bias, in the observational phase (Phase One) of the research process, was kept to a minimum through the methodological approach used. This is described in further detail in Chapter three: Materials and methods (page 21).

1.5. Conclusion:

The preceding chapter has briefly summarised the literature, highlighting the areas of interest in this study, presented the Objectives, hypotheses as well as the rationale behind the study. It also points out the inherent limitations of the study.

The presentation of this study will be followed by Chapter Two, which will be a presentation of the body of literature related to the topic of study in this research project. This will be followed by Chapter Three, which will outline the materials and methods utilized to structure the design of this research project. Chapter Four presents the results obtained and Chapter Five outlines the discussion of the results within the context of the literature. Conclusions are then drawn and presented in Chapter Six with recommendations based on the study outcome presented thereafter, thereby concluding the research project.

Chapter Two

Literature Review

2.1. Introduction:

It has been long understood that patient satisfaction, as a measure of quality of care, is important to the treating practitioner, (Donabedian, 1988; Salomon *et al.,* 1999; Yeomans, 2000; Labarere *et al.,* 2001). It also has an important role to play in the perception of care provided and ultimately the outcome of the treatment process (Hudak and Wright, 2000). Patient satisfaction surveys often guide and help practitioner's to determine the extent to which the service they provide will meet the needs of the general public (Avis *et al.,* 1995; Donabedian, 1988). Assessing the underlying perceptions of patient's is an excellent source of information for identifying potential areas of preconceived ideas or conclusions about treatment and ultimately corrective actions may be taken to alter the perceptions of patient's, thereby promoting satisfaction levels (Labarere *et al.,* 2001). In this respect patient's are in the best possible position to adequately evaluate the services provided by medical practitioner's (Sawyer and Kassak, 1993).

2.2. The Concept of Perception:

Perception is explained as the process of organising sensory information into what is termed a percept. This is explained simply by stating that information received through the five different senses in the body is used to build or construct a perceptual experience. It is in this way that information is processed and meaning is put to it and a perception is formed. As a result various hypotheses have been formulated to try and explain this perceptual development and many theoretical (e.g. constructive) approaches have been explored (Coren and Ward, 1989; Hayes, 1994; Eysenck and Keane, 1996; Atkinson *et al.,* 2000).

Constructive theories maintain that perception involves the integration of several sources of information and could be affected by cognitive factors and experience (Coren and Ward, 1989). Thus constructivist theorists have emphasised the importance of “Top-down” and “Bottom-up” processes in perception development (Hayes, 1994; Eysenck and Keane, 1996). In essence “Bottom-up” processes are driven by external input from available stimuli, whereas “Top-down” processing is affected by a person’s prior knowledge and expectations (Hayes, 1994; Myers, 1996; Atkinson *et al.,* 2000). Eysenck and Keane (1996) stated that perception would be influenced, to some extent, by both “Bottom-up” and “Top-down” processes, as these occur simultaneously. This theoretical approach was emphasised by *Neisser’s perception cycle*, which demonstrated that perceptual development was an active process, ever changing and required both the “Top-down” and “Bottom-up” processes to provide comprehensive perceptual information (Coren and Ward, 1989; Hayes, 1994; Eysenck and Keane 1996; Atkinson *et al.,* 2000).

As a result perceptual development may be summarised in a very simplified manner in the following figure (Nicholas, 2003):

Figure 2.1: Perceptual Development Steps.

- Stimulus

⇑ ⇓

- Sensory organs and the brain

⇑ ⇓

- Interpreted and given meaning (percept)

2.3. Factors Affecting Perception:

Although the theoretical construct that is used to explain perceptions, it must be remembered that the perception created may differ from the reality which created the perception. As a result mistakes are often made while perceiving and remembering information. In this context information may be misinterpreted and leading to premature conclusions or the incorrect conclusions about physical objects and/or events (Eysenck and Keane, 1996). This supports the suggestion by Robbins (1996) and Bergh *et al.,* (1999) that perception is subjective by nature. Therefore it is important that the perceiver in the process of information interpretation critically analyses the information to avoid misinterpretation and the development of the incorrect perceptions (Hayes, 1994, Eysenck and Keane, 1996, Bergh *et al.,* 1999). In this context, the subjectivity of perception can be linked to many factors, which may be attributed to the perceiver, the object being perceived and the situation in which the object is being perceived (environment) (Robbins, 1996; Bergh *et al.,* 1999). These are outlined below as follows (Hayes, 1994; Robbins, 1996; Bergh *et al.,* 1999):

Table 2.1: Factors Affecting Perception:

Factors in the perceiver: • Attitudes. • Motivation. • Interests. • Experience. • Expectations. • Values. • Culture.	Factors in the environment: • Time. • Work setting. • Social setting.
Factors in the perceived object: • Motion. • Novelty. • Sounds. • Proximity. • Background. • Size.	

Table 2.1 can be categorized further according to the “Bottom-up” and “Top-down” theories of perceptual development, where “Top-down” processing is affected by a persons’ prior knowledge and expectations, whereas “Bottom-up” processing is affected by external input and from available stimuli (Hayes, 1994; Myers, 1996; Atkinson *et al.,* 2000). Therefore, factors in the perceiver will affect “Top-down” processing; factors in the environment and in the perceived object will affect “Bottom-up” processing of perceptual development.

2.4. Factors in the Perceiver Affecting Perception:

Information is not just interpreted from an immediate stimulus, but previous knowledge is used to interpret the sensory information, which is a process commonly known as the “Top-down” theory of perception development (Hayes, 1994). Past experiences, in the perceiver, may bias interpretation of various stimuli therefore affecting perception (Coren and Ward, 1989; Eysenck and Keane, 1996). This is known as a perceptual set (Hayes, 1994). The following factors may affect perceptual set (Hayes, 1994; Robbins, 1996; Bergh *et al.,* 1999):

- Expectations.
- Motivation and emotion.
- Values and attitude.
- Culture.
- Previous experience.

The above factors have been shown to have an affect on perceptual development (Coren and Ward, 1989; Hayes, 1994; Eysenck and Keane, 1996; Robbins, 1996; Bergh *et al.,* 1999; Atkinson *et al.,* 2000). A person’s expectation can distort their perceptions, because they are more inclined to see what they expect to see (Robbins, 1996; Bergh *et al.,* 1999). To illustrate this point, teenagers are often perceived to be rebellious and mischievous, based on prior

expectations regardless of their behaviour or attitude. With this example, it is evident how the various factors in the perceiver can distort perception. However, this is one example of how perceptual development may be affected by the possible factors identified by Hayes (1994), Robbins (1996) and Bergh *et al.,* (1999).

As a result of the influence of these factors and once a person has formed an opinion or perceived an object in a particular light, they tend to adhere to it (Gamble and Gamble, 1998). A study has shown that people do their best to manipulate or distort any information that appears to contradict their evaluation, so it will conform to their view of the object or process, confirming the perceptual set (Gamble and Gamble, 1998).

2.5. Factors in the Environment Affecting Perception:

The environment in which we see objects or events taking place is very important, because various elements within the environment can influence our perceptions (Robbins, 1996). Bergh *et al.,* (1999) stated that perception is seldom interpreted without considering the context or situation in which it occurs. Bergh *et al.,* (1999) illustrates this concept by the following example: *"Persons who have just terminated a relationship are more likely than others to notice the happy couples around them, until they adjust to their loss or are in a new relationship".*

Similarly, any patient who walks into a practitioner's practice would expect the practice to be clean, hygienic and an environment that facilitates positive healing encounters.

2.6. Factors in the Perceived Object Affecting Perception:

Various factors can affect the way we see certain perceived objects (Robbins, 1996; Bergh *et al.,* 1999). Objects are rarely observed in isolation (Robbins, 1996) as the relationship between the object and the background in which it is observed will influence perception (Robbins, 1996). Thus people, objects or events that are similar will be grouped together as having similar characteristics even if they have different distinguishable features (Robbins, 1996). Therefore, the patient (perceiver) will have an affect how the perceived object is seen in context. This process has implications in the medical field, as poorly skilled health care professionals could be seen to tarnish a professions' reputation. As through their individual decisions and actions when treating patient's, they are perceived by the patient in a good or bad light, and the patient will tend to adhere to his / her perception (Gamble and Gamble, 1998).

2.7. Conceptualising Satisfaction:

It has been argued that satisfaction is an entirely relative process (Williams, 1994). This is explained by Williams (1994) by means of the "Discrepancy" model, which is defined in part by the perceived discrepancy between patient's expectations and the actual experience. Therefore, it can be argued that dissatisfaction may occur when "Top-down" (Factors in the perceiver) processes do not match to "Bottom-up" (Factors in the environment and the perceived object) processes, leading to a discrepancy between the two processes. Alternatively if the expectation of the process is less than that which is experienced, satisfaction of the process would result. Furthermore, Williams (1994) stated that dissatisfaction would only be reported when an extremely negative event occurred. Therefore a positive response in a satisfaction survey should not be interpreted, as if the treatment was good, but rather that an extremely negative event had not occurred during the treatment process (i.e. the match was good).

However, the concept of satisfaction is nevertheless approached by different authors from various angles, based on the subtle nuances evident in satisfaction literature (Sitzia, 1999; Hudak and Wright, 2000; Cho, 2004). Notwithstanding this May (2000), echoes this sentiment in the following statement: *"Although there is ongoing theoretical debate about what exactly satisfaction is, its importance as an outcome measure is undeniable. Patient's not only have the right to expect high quality care both in the process and the outcome of an episode of treatment, but also it is impossible to separate satisfaction from a successful outcome for any persistent condition."*

2.8. The Importance of Satisfaction:

Patient satisfaction evaluation is an excellent tool that may be used to determine whether practitioner services are meeting the needs of the general public (Avis *et al.,* 1995; Donabedian, 1988), and by assessing patient perceptions, underlying precepts may be altered by implementing corrective plans of action (Labarere *et al.,* 2001).

Hudak and Wright (2000) observed that patient's who are satisfied with their treatment would behave differently to those who are dissatisfied with their levels of care. This is an important observation, as it can be concluded that patient's who are satisfied with their levels of care are more likely to be compliant with their treatment regime (Hughes, 1991; Sawyer and Kassak, 1993; Campbell, 1999; Goldstein *et al.,* 2000; Hudak and Wright, 2000; Yeomans, 2000). Furthermore, patient's that were satisfied with the levels of care received would seek out similar care for an episode of the same condition in the future (Haneline, 2006). Satisfied patient's were more likely to remain under the treatment of their Chiropractor or another practitioner and refer other people / patient's for treatment whereas dissatisfied patient's were more likely to initiate legal actions against their practitioner's or complain to the relevant regulatory bodies (Sawyer and Kassak, 1993; Levinson *et al.,* 1997). Satisfied patient's also tend to improve the quality of work of the practitioner's, which have positive outcomes on the

practitioner's ability to provide quality health care as the understanding of the relationship parameters are congruent (Hughes, 1991).

2.9. Factors Affecting Satisfaction:

Research conducted in the area of patient satisfaction, has attempted to identify the underlying factors/themes that may affect the levels of perceived satisfaction with patient care. These factors/themes include (Sawyer and Kassak, 1993; Jahng *et al.,* 2005; Gaumer and Gemmen, 2006):

Those factors that could be classified as "Bottom-up" processing with respect to the patient's perception include:

1. **Practitioner Conduct**

    - Communication quality.
    - Empathy.
    - Competence.
    - Humaneness.

2. **Access**

    - Convenience of the practitioner's rooms.
    - Appointments.
    - Facilities.

3. **Finances**

    - Medical costs incurred

4. Assessment of the Treatment Outcome

- Treatment adherence by the patient's to their appointments and self-help management strategies.
- Reporting of adverse reactions to the treatment process.
- Less improvement of symptoms at follow-up consultations.
- When practitioner's and patient's have similar beliefs about patient participation.
- The practitioner's ability to effectively diagnose serious conditions and recommend action.
- The practitioner's concern about the patient as a person and their overall health.
- When practitioner's and patient's share similar beliefs about patient participation, then patient clinical outcomes seem to be more positive
- Technical quality of care

Those that could be classified as "Top-down" processing with respect to the patient's perception include:

5. Patient Characteristics

- Patient's previous experiences with health care.
- Patient's expectations of the treatment process.
- Patient's perceptions.

The factors listed above (1-5) above were discussed in terms of patient satisfaction surveys within the Chiropractic field and may be limited to this context. However, satisfaction is acknowledged as a multi-faceted concept encompassing many factors (Sitzia and Wood, 1997; May 2000). Thus when looking to the literature more broadly, there are many other factors which may play a role in affecting the levels of perceived satisfaction and are listed as

follows (Carey *et al.,* 1995; Sitzia and Wood, 1997; May, 2000; Evans *et al.,* 2003; Faldon, 2004; Mast, 2007 and Mast *et al.,* 2007):

Similarly, as seen from the above list, the following factors may be divided into those affecting the “Top-down” or “Bottom-up” processes, with respect to patient’ perception development as follows:

The Factors Affecting “Top-down” Processes:

- How the nature of the patient’s pain had changed.
- Friendliness, bedside manner and the appropriate sensitivity, of the practitioner’s, demonstrated to the patient’s needs.
- The competency of the practitioner’s as they interacted with the patient’s.
- The treatment experienced by the patient in terms of the approach to the treatment and the particular techniques used by the practitioner.
- The patient’s gaining of a good understanding of their problem and learning strategies for self-management of their problem.
- The post-treatment information dispensed and self-help strategies given by the practitioner.
- The practitioner’s ability in good history taking, their competent physical examination and the explanation of the presenting problem.
- The practitioner’s willingness to be flexible when scheduling appointments.
- The practitioner’s ability to effectively communicate with the patient.

The Factors Affecting the “Bottom-up” Processes of the patient:

- Expectations.
- Age.
- Education attainment.
- Ethnicity.
- Gender.

When assessing all of these factors it becomes apparent that a patient centered approach (Duggan *et al.*, 2006) to care seems to consider many if not all the factors identified in the foregoing discussion (Carey *et al.,* 1995; Sitzia and Wood, 1997; May, 2000; Evans *et al.,* 2003; Faldon, 2004; Mast, 2007 and Mast *et al.,* 2007). In this respect some of the more important attributes of the practitioner, consultation as well as barriers within the consultation process were identified by Ford *et al.,* (2002) and Ford *et al.,* (2003) that would contribute to a successfully perceived patient centered consultation. These were outlined as follows:

- Sharing of the evidence.
- Considering the patient's perspective in the consultation.
- A good practitioner-patient relationship.
- Having enough time with the patient.
- The practitioner's appropriate training in the field of patient centered care.
- The positive attitude displayed by the practitioner.
- Ensuring that sufficient time is available for the examination of the evidence found upon examination.
- The appropriate technical resources are available.
- Pertinent medical evidence supports the decisions and conclusions of the assessment process.

As a result several authors believe that the profession of Chiropractic, to some extent has a patient centered approach to the care of patient's (Vernon, 1991; Miller and Gemmell, 2004), which gives Chiropractors an advantage in establishing favourable patient perceptions (Miller and Gemmell, 2004).

It would therefore seem that the satisfaction of the patient is not only confined to the practitioner-patient relationship, but all factors influencing this interaction – the background of the patient (perceiver), the perceived service provided (object) and the situation (treatment environment) that may shape perception (Bergh *et*

al., 1999). Furthermore it has been acknowledged that more research needs to be done to identify the factors that affect satisfaction and to enhance the understanding of the concept of satisfaction (Gaumer, 2006; Gaumer and Gemmen, 2006).

2.10. Perception, Perceptual Set and Satisfaction:

The importance of attitudes and beliefs of patient's "Top-down" can be seen to have a significant role to play in the patient's expectations of treatment, and their perceptions of health care. It was theorised that patient's attitudes, beliefs, knowledge and past experiences in relation to health care form the basis for their expectations of treatment (Williams *et al.,* 1998; Sigrell, 2002). Although past experiences may influence the patient's present beliefs, their future behaviour could be influenced by a current episode of care. (May, 2000). This is an example of an effect of "Bottom-up" processing exceeding the expectation of "Top-down" processing. This is in contrast to the "discrepancy model" which is described by Williams (1994) as those instances where the patient's expectations do not correspond to the treatment experience, where dissatisfaction would be the result.

The interaction of these two processes is known as the "transactional approach", where if, expectations were to change or the analysis of the object or event were to alter, then the perceptual experience could change. This therefore results in either a positive or a negative perception of the perceived object or perceived environment (Coren and Ward, 1989).

In this context patient perception was found to be the most important factor in predicting their satisfaction. In addition, it was concluded that differences in expectation could influence the treatment process. Thus it has been acknowledged that more research is needed to understand how attitudes and perceptions about health care affect "Top-down" processing and the providers, as well as the environment's affect on "Bottom-up" processing and the resultant

affects on the levels of satisfactory health care (Sawyer and Kassak, 1993; May, 2000; Sigrell, 2002). In order to achieve this, a well-structured process needs to be followed in order to capture all the possible factors that have been identified to date (May, 2000; Ford *et al.,* 2002; Evans *et al.,* 2003; Ford *et al.,* 2003 and Faldon, 2004), therefore, the following section describes the evaluation of patient satisfaction.

2.11. Patient Satisfaction Survey Evaluation:

Several studies conducted in the field of Chiropractic have focused on patient satisfaction, showing favourable results and high satisfaction levels (Cherkin and MacCornack, 1989; Sawyer *et al.,* 1993; Coulter *et al.,* 1994; Hurwitz, 1994; Carey *et al.,* 1995; Verhoef *et al.,* 1997; Gemmell *et al.,* 2001; Sigrell, 2002; Jahng *et al.,* 2004; Gaumer, 2006 and Haneline, 2006).

However, these studies have been conducted within a structured clinic environment such as in a teaching clinic or within private practices. It is important to note that in a clinic (teaching clinic/private practice) setting, the environment is vastly different to that on the side of a sports field (non-clinic setting). More privacy is afforded to the patient's and there are adequate facilities to treat the patient's to the fullest extent in a clinic setting versus a non-clinic setting. Furthermore, the practitioner's are appropriately attired and conduct themselves in a very formal/professional manner. Once again it could be seen that the perceived environment, the perceived object (service and quality of care) are very different to those factors at a sports event.

Conversely, patient's were less satisfied with Chiropractic care when they reported an adverse reaction to Chiropractic treatment and when their expectations had not matched the reality of care received ("Top-down" processes or the discrepancy model). These expectations included perceived improvement in their conditions with limited expense (whether on medical aid cover or in

congruence with their lower incomes) (Sawyer and Kassak, 1993; Hurwitz *et al.,* 2004).

To date no such study has been documented in peer-reviewed literature with respect to a non-clinical environment, such as the sporting environment. As stated in the foregoing discussion various factors have been previously identified to affect patient perceptions and satisfaction (May, 2000; Ford *et al.,* 2002; Evans *et al,* 2003; Ford *et al.,* 2003 and Faldon, 2004). However, these factors are all related to clinic based evaluations of patient perception and satisfaction and therefore may not be applicable to other (non-clinic) contexts in which clinical encounters occur (e.g. treatment of athletes at the field side). As discussed previously, if expectations were to change or the analysis of the object or event were to alter, then the perceptual experience would then change, resulting in either a positive or a negative perception of the perceived object or perceived environment (Coren and Ward, 1989). Therefore, it is necessary to conduct research into the type of factors that influence the patient's in a non-clinic (sport) setting in order to more accurately determine the influence of factors on the perception and satisfaction of the athletes participating in various sporting events.

Thus an exploratory mixed-methods study to determine factors, which may affect satisfaction levels of patient's in a non-clinic setting, was proposed for this study.

Chapter Three
Materials and Methods

3.1. Introduction:

This chapter deals with the process of data collection and the research methodology used to collect the data. The statistical analysis is also discussed in detail within this chapter.

The data collected included information obtained from the observation process, the participant questionnaires and finally the statistical analysis of the data.

3.2. Study Design:

The research design of this study was an exploratory, mixed-method approach. The research design was split into three distinct phases.

The first phase (Phase One) of the research design was an observational study performed by two observers observing Chiropractic students administering treatment in a non-clinic setting. In this phase the observers were attempting, to identify factors which may affect the levels of general satisfaction of the care that the participants received from the Chiropractic students in a non-clinic setting.

As with any research done by observation, observer bias must be taken into account (Esterhuizen, 2006). To minimise the effects of observer bias two observers were invited to observe the treatment process (Dyer, 1997). The results from both observers were recorded independently (Appendix K) to ensure minimal observer bias (Dyer, 1997). The observers noted what they observed, with every new participant treated at the non-clinic (sport) events attended.

Therefore, the sampling for phase one of the research process used consecutive convenience sampling (Esterhuizen, 2006).

The second phase (Phase One) in the research process was the distribution of a questionnaire (Appendix F) to the patient. This was done post-treatment, by the researcher requesting the patient to participate in the study and enquire as to whether they would be willing to fill out the self-administered questionnaire about treatment received. The sampling used was consecutive convenience sampling (Esterhuizen, 2006). The completed questionnaires from the participants were then paired with the corresponding observational data collected in Phase One by the observers. Therefore, with the completion of Phase Two, the completed data collection consisted of two completed observational data collection forms and one completed questionnaire by the participant and were paired together, for data analysis (Phase Three). It should be noted that only matched pairs (observational data and completed questionnaire) were used. Those participants who did not consent to participate, the completed observer data collection forms were shredded.

Finally, the third phase (Phase Three) of the research process was to compare and contrast the results from the observational study (phase 1) and the self-administered questionnaires (Phase Two) to determine if any recurrent themes / factors affecting general satisfaction could be identified and concluded from the research process using the matched data pairs form the data collection phase (Phase One and Phase Two).

Therefore, the approach to the study was an exploratory, mixed-method analysis and it was approved by the Durban University of Technology, Faculty of Health Sciences Research Committee and the Ethics Review Board. This approval declared that the research conformed to the standards set by the Helsinki Declaration of 1975.

3.3. Advertising/ Recruitment:

Due to the nature of the research project, no advertising was necessary.

However, a notice was placed at the non-clinic (sport) setting, notifying patient's that a research project was being conducted and invited the patient's to participate in the research process (Appendix J). These non-clinic (sport) settings included the:

- Mr. Price Pro surfing competition-July 2007.
- Durban Bouldering competition-July 2007.
- Gaterite Verulam 50km walk/ 42km run/ 21km run/ 5 km run-July 2007.

These particular events were chosen as a cross-section of the general population who had previously experienced Chiropractic treatment (Mr Price Pro), those who had not experience Chiropractic before (Durban Bouldering Competition) and a sample of the population of a mixture of those who had experienced and who had not experienced Chiropractic treatment before (Gaterite Verulam Challenge). This was the only manner by which the researcher was able to control for the effect of "naivety" with respect to Chiropractic exposure thereby allowing for varying levels of exposure to ensure that there was no "novelty" or "experience" bias in those participants presenting for research.

Recruitment of patient's in Phase Two of the research process was determined by using consecutive convenience sampling (Esterhuizen, 2006) of all the new participants who received treatment at the non-clinic (sport) setting.

3.4. Sample:

Phase One of the research process required that the two observers complete Appendix K to identify the various factors affecting perception and general satisfaction, that were identifiable from an observational vantage point of every

new patient treated at the non-clinic (sport) setting. Therefore, consecutive convenience sampling of the patient's was used (Esterhuizen, 2006). In this way, the patient's presenting for treatment also presented themselves to the research process by pure chance.

It is commonly believed that convenience sampling is in no way representative of a population (Leedy, 1997). However, in the case of this research, no previous statistics were available to calculate the amount of patient's that might be treated. Every patient who received treatment was approached to take part in this study so as to ensure that each patient had an equal opportunity to participate in the study. Therefore there was no bias evident in the sampling of the participants (Esterhuizen, 2006).

Phase Two, which consisted of the completion of the self-administered questionnaires with the corresponding observational data, was calculated as ten completed sets of matched data per event (Esterhuizen, 2006). As three events were attended, this allowed for the completion of thirty matched pairs of data (completed questionnaires with the corresponding observational data).

3.4.1. Methodology:

Two observers were selected to conduct Phase One of the study. The two observers were selected on the grounds of their familiarity with the research project, the sporting environment, the environment under which the Chiropractic care was given and the delivery of the Chiropractic care. The Durban University of Technology, Faculty of Health Sciences Research Committee and the Ethics Review Board approved this selection. This removed selection bias (Dyer, 1997) ensuring that the observers' input was not only that of the researcher in selecting the observers.

The completion of the self-administered questionnaire in Phase Two by participants in the study was selected by the use of consecutive convenience sampling (Esterhuizen, 2006) of all the new participants who presented to the non-clinic (sport) setting, and received treatment on that given day. It should be noted that only matched pairs (observational data and completed questionnaire) were used. Those patient's who did not consent to participate, the completed observer data collection forms were shredded.

3.4.2. Allocation:

Phase One: Two observers were selected to take part in the observation phase of the research prior to the commencement of the data collection process.

Phase Two: There were no selection criteria that the patient's had to fulfill with respect to the treatments received. The participant's responses were however placed into sub-groups following allocated statistics according to the sport type, gender, age, ethnic group and the type of injury sustained for statistical purposes.

3.4.3. Characteristics:

Phase One: The observers needed to have a thorough and similar understanding of the observational data collection form used to gather data in phase one.

Phase Two: The characteristics of the patient's, who took part in the second phase of the research, included any sporting competitor who was registered to participate in one of the named sporting event(s) (see 3.3) on the day(s) of the

event(s), and were subsequently treated by one of the Chiropractic students in the non-clinic (sport) setting.

3.4.4. Inclusion Criteria:

- Any registered sports person presenting as a patient seeking treatment from one of the Chiropractic students at a sporting event(s), who was then consequently treated at the non-clinic (sport) setting by the Chiropractic student.
- The questionnaires needed to be completed in full in order for the questionnaire to be considered valid for the purposes of data collection and analysis.

3.4.5. Exclusion Criteria:

- Non-competitors (e.g. organisers, sponsors, spectators, family members, children of any of the aforementioned) who were treated at the sporting events.
- Competitors who were not treated by the Chiropractic students at the non-clinic (sport) setting.
- **As per the Focus Group:**
    - Participants could not be younger than 15 years of age.
    - The participants had to have the ability to read and understand English, in order to complete the questionnaire proficiently. This decision was also based upon a statement made by Scollen & Scollen (1995), who stated that even if the words were translated accurately, the meaning of a particular phrase or the combination thereof may become unclear to different cultures even when the same words are used. This may indicate that meaning is not only determined by words and phrases, but may also be by their

interpretation by others (Scollen & Scollen, 1995). This concept was re-enforced by Baynham (1995) who stated that when words were taken out of context they may lose their meaning, indicating even to an English speaker that words out of context would have different meanings.

A recommendation of this study would be to expand the data collection sheets, namely the questionnaires, into different languages in order to capture more accurately the cultural aspects of care.

3.5. Procedure for Data Collection:

The methodology of the study required the researcher to attend various sporting events. The events attended by the researchers were as follows:

- Mr. Price Pro surfing competition-July 2007.
- Durban Bouldering competition-July 2007.
- Gaterite Verulam 50km walk/ 42km run/ 21km run/ 5 km run-July 2007.

The events were attended by the two observers and the Chiropractic students who were there to treat the sports people presenting as patient's seeking care at the non-clinic (sport) setting.

Phase One

This phase was characterised by the two observers attending the sports event(s) in a strictly observational capacity and to record the treatment process, environment and the context (doctor patient relationship) in which the patient's who were treated. The process observed was recorded on documentation provided to the two observers, which was designed for ease of use and rapid data collection (Appendix K). Following treatment by a Chiropractic student, the

patient's were approached by one of the observers and asked if they were prepared to take part in the research process by the completion of a self-administered questionnaire. These procedures lead into the second phase of the research process.

Phase Two

The research was explained to the patient and they were subsequently requested to read the letter of information about the research project (Appendix I), and then the patient's were asked to sign the corresponding documentation providing informed consent (Appendix H). The participant was then given a copy of the questionnaire (Appendix F) and was asked to complete the documentation. The completed questionnaire was then returned to the observers at the event. The participant was thanked for their time and their willingness to participate in the study. Only matched pairs (completed questionnaires and corresponding observational data forms) were used in this study. Those patient's that did not consent to the participation had the corresponding observational data forms shredded. The data collection phase of the research process was concluded once thirty matched pairs of data were completed and collected.

3.6. Measurement Tools:

Phase One:

A "check-list" was generated from factors identified in the literature (May, 2000; Ford *et al.,* 2002; Evans *et al.,* 2003; Ford *et al.,* 2003 and Faldon, 2004) as well as by the focus group. These factors were inserted into an observational data collection form (Appendix K) which the two observers used to identify factors in the treatment process. This was achieved by ticking the appropriate response to the factor, as the interaction was in progress.

The observational data collection form contained responses that enquired about the Chiropractic student, treatment environment and the care received. The

responses in the observational data collection form were designated to certain scales and sub-scales across the observational data collection form but in no particular order.

The responses included scales and sub-scales which were allocated to:

1. General satisfaction
2. Understanding of the assessment process
3. Chiropractic student conduct: Sub-scales included
    - *Competence.*
    - *Humaneness.*
    - *Communication.*
    - *Chiropractic student demeanour*:

Phase Two:

The measurement tool utilised in the second phase of the data collection process was the use of a self-administered questionnaire, which was conceptualised and designed specifically for use in the research project. A copy of the original questionnaire may be found in the appendices as Appendix E: Focus group: Questionnaire.

3.7. Procedure for Questionnaire Development:

Factors listed in the literature review were taken into account and used to generate a variety of possible questions contextualised to the structure and functioning of the Chiropractic students' sports events. (Bergh *et al.*, 1999; Yeoman, 2000; May, 2000; Ford *et al.,* 2002; Sigrell, 2002; Evans *et al.,* 2003; Ford *et al.,* 2003; Faldon, 2004). This took into account all the factors that were only applicable in a clinic setting.

The questionnaire was then constructed utilising different sections and types of questions to ascertain an array of information pertaining to the participant, the participant's condition, the participant's previous understanding of Chiropractic, the environment and the treatment process. Therefore, the answers elicited information about the participant (the perceiver), the treatment area (the perceived environment) and the treatment process (the perceived object).

The questionnaire was then subjected to a focus group which led to amendments to the questionnaire after constructive criticism by the focus group as well as the departmental research meeting. Piloting of the questionnaire followed, with amendments to the questionnaire after constructive criticism by the pilot study group. This last step finalised the questionnaire, which was then approved for use in this study by the Durban University of Technology, Faculty of Health Sciences Research Committee and the Ethics Review Board. This approval declared that the research conformed to the standards set by the Helsinki Declaration of 1975.

3.7.1. Questionnaire Development:

The questionnaire was developed by using the factors that may affect participant's perception of the treatment process and their levels of satisfaction, as identified in the literature review. (Bergh *et al.*, 1999; Yeoman, 2000; May, 2000; Ford *et al.,* 2002; Sigrell, 2002; Evans *et al.,* 2003; Ford *et al.,* 2003; Faldon, 2004).

3.7.2. Focus Groups:

According to a study by Salant and Dillman (1994), a group of at least 8-11 people are required for a constructive focus group to yield the best results. For this study, the focus group consisted of 10 people, who were selected to take part due to:

- Their familiarity of the environment in which the research would take place and / or
- Their similarity to the participants who will complete the survey questionnaire, because they are representative of the sample population.

The reason for holding the focus group was to stimulate individuals thinking about the research topic and to encourage them to develop ideas about the questionnaire (Salant and Dillman, 1994). In this way focus groups are encouraged to support the research by increasing the relevance of the research (Salant and Dillman, 1994) with respect to time, place (environment) and people (people's expectations) and service (treatment) (Salant and Dillman, 1994; Bergh *et al.*, 1999).

In accordance with the guidelines of Morgan (1997), the members of the focus group included:

1. The researcher.
2. The supervisor - The supervisor had instructed and guided the researcher through the research process and the questionnaire development. The supervisor was also involved in organising Chiropractic treatment at the various sporting events.
3. Five Chiropractic students who were and are involved in treating patient's at the non-clinic (sport) events. As the students were primarily responsible for administering the treatment to the sporting competitors, they were able to offer their perspective on treatment and participant general satisfaction levels post-treatment.
4. A qualified Chiropractor. This Chiropractor often assisted students and sports competitors at the sporting events, and could offer a different perspective to the treatment process.
5. Two sporting competitors who had previously been treated by the Chiropractic students at sporting events outside of this research process, as they could provide critical insight into what was thought of

the treatment received and other factors that may have played a role in the forming of their perceptions about the treatment.

The composition of this focus group was necessary to maintain similarity of the group because it was vital for the groups ability to share a common discussion thread (Morgan, 1997), but diverse enough in their experiences to cover as many varying perceptions of the triad (the perceiver, the perceived object and the perceived environment (Robbins, 1996 and Bergh *et al.*, 1999)).

Therefore the focus group for this study consisted of 10 people, some from health-care professions, some lay persons, including the researcher and a supervisor (camera operator). Sessions are usually tape-recorded (supervisor) and an observer (researcher) also took notes on the discussion (Silverman, 2001; Streiner and Norman, 1995). Therefore, a DVD of the proceedings (Appendix L) was made and is available as evidence of the individuals involved and the content of the discussion. (The DVD is available upon request through the Department of Chiropractic).

A registration process is common practice to verify that the people entering the focus group have met the screening requirements for the focus group (Morgan, 1997). This is done for two reasons:

Firstly, it is necessary to verify that participants are reasonably representative of those you want in the focus group, and secondly, to aid in analysis of the questionnaire, the backgrounds of the people participating in the focus group need to be varied in order to assist in explaining and clarifying various views. Research shows an in-depth knowledge can be gained by listening to the members of the focus group sharing their experiences and opinions (Morgan, 1998).

After registration each member of the group received the following documentation:

- Informed Consent Form. (Appendix A)
- Letter of Information. (Appendix B)
- Confidentiality Statement. (Appendix C)
- Code of Conduct. (Appendix D)
- A Copy of the Questionnaire. (Appendix E)

The focus group members, after reading and signing the corresponding documentation, (Appendices A, B, C and D) were asked to read through the questionnaire (Appendix E). The researcher then proceeded to read out aloud each question in the questionnaire sequentially. In this way each question was put forward to the focus group to determine if it was:

- Relevant to the study.
- Understood and unambiguous.
- Clear and simple with respect to the instructions given in order to answer the questions.

If the focus recommended suggestions, changes were made to the relevant question(s), to the satisfaction of the focus group as a whole. Through this process the face validity of the questionnaire was tested / determined. Face validity referred to whether “on the face of it” the questionnaire seemed unambiguous, valid and easily interpreted by the people taking part in the focus group (Bernard, 2000; Hicks, 2004).

The questionnaire was also tested for its content validity and construct validity by the same focus group. An instrument has content validity when the content of the questionnaire is considered effective, and well rounded enough to be able to assess a particular concept, by members of the focus group (Bernard, 2000). Similarly construct validity measures how accurately answers to questionnaires reflect theoretical predictions of a particular construct within

the questionnaire. The focus group was utilized here to ensure that the questionnaire was congruent with the context of this study's aims and objectives (Bernard, 2000).

Following suggestions made at the focus group meeting, changes were adapted to the questionnaire, these changes included:

3.7.2.1. Focus Group changes to the Questionnaire:

With following changes were affected to Appendix E and the amended version constitutes Appendix F.

Section A: Current Demographic Data.

- Insertion of the date of the event and the sporting activity at the event.
- Country of residence question was changed to follow on from the ethnicity question.
- A participant occupation was to be written in and not selected as manual labour or non-manual labour.
- Add canoeing, gyming, hockey, swimming, and walking to the list of "Other sporting disciplines" which was to be listed alphabetically.

Section B: Consultation Details.

- A table of health professionals that could be consulted following injury was to be put at the start of the section, the word "Coach" was removed from the table and group "physiotherapist" and "physical therapist" were grouped together.
- Space was made available so a "Body figure" could be added to the questionnaire, to allow the participant to indicate area of injury.

- The question “Has this area been injured before?” was changed to “Have you injured the region of complaint before?”
- The wording “If yes, indicate the type of practitioner.” was changed to “If yes, indicate the type of health professional consulted.”
- Questions directed toward the treatment process were recommended to be put into a separate section as “Section C: Consultation Satisfaction”.
- The wording “Was the student suitably attired in their role as a person who is responsible for your care?” was changed to “Was the student suitable dressed in their role as a person who is responsible for your care?”
- The wording “Did the student explain the post-treatment implications?” was changed to “Did the student explain the post-treatment complications?”
- The wording “Would you see the student at the Chiropractic Day Clinic, following your treatment here?” was changed to “Would you see a student at the Chiropractic Day Clinic, following your treatment here?”
- The wording “Based on your diagnosis, did the student spend enough time treating you?” was changed to “Did the student spend enough time treating you?”
- The wording “Did the visit today address all the problems for which you attended this facility?” was changed to “Did the visit today address the problem(s) for which you attended this facility?”
- The wording “Did the student seem concerned about your injury?” was changed to “Did the student seem concerned about your presenting complaint?”
- The wording “Were you advised as regards other treatment options after this event by the student?” was changed to “Were you advised about other treatment options after this event by the student?”
- The wording “Did the student take your ethical and/or religious concerns into account while treating you?” was changed to “Did the student take your religious concerns into account while treating you?”

- The question “Was there treatment provided outside the treatment facility when you were unable to leave the field of play?” was changed to “Was there Chiropractic treatment available outside the Chiropractic treatment facility when you were unable to leave the field of play?”
- The rating system was changed from “Agree/Disagree most strongly” to “Strongly agree and strongly disagree”.
- The wording “Ability of the student to put you at ease was perceived?” was changed to “Ability of the student to put you at ease?”
- The wording “Follow-up treatment included referral to:” was changed to “Follow-up treatment included recommendations/suggestions to follow up with:”
- The rating for “Chiropractic treatment offered at this facility” was changed from a “high/no understanding” to a “Low/High rating”.
- “Which one of the following statements best reflects your opinion of chiropractic?” changed to “Which one of the following statements best reflects your opinion of chiropractic? Please indicate a TRUE or FALSE for each statement.”

In addition of the following questions were included:

- “Did the student introduce themselves to you?”
- “What else would you like to have seen at the Chiropractic treatment facility?” with a few lines available for comment.

The following questions were removed:

- “Did the student adequately explain the diagnosis?”
- “Was the allocation of time for your treatment sufficient?”
- “Did the student explain the treatment process adequately?”

Section C: Knowledge of Chiropractic

The following questions were added to the questionnaire:

- "Have you ever consulted a Chiropractor before?"
- "If yes, were you satisfied with the treatment?"
- "Do Chiropractors treat the following conditions?" changed to "Will you consult a Chiropractor for the following?"
- The addition of the following conditions were included into the table: Ankle pain, Carpal tunnel syndrome, colic, constipation, joint sprain, muscle strains/tears, period pain.
- "Chiropractors are highly competent." Changed to "Chiropractors are competent."
- "I am uncomfortable with it." changed to "I am uncomfortable with Chiropractic."
- "Not informed enough to comment" changed to "I am not informed enough to comment."
- "Rate your understanding of Chiropractic" changed to "Rate your understanding and knowledge of Chiropractic."
- Rating changed from "High/No understanding" to "Low/High understanding and knowledge"

The changes made to the questionnaire, following the focus group meeting can be seen in Appendix F: Questionnaire: Post-focus group.

3.7.3. Pilot Study:

The purpose of the pilot study was to ascertain the following information (Fink and Kosecoff, 1985; Hicks, 2004):

1. Were there questions that were misleading to the participant?
2. Were the questions appropriate for the participants participating in the survey?
3. Was the information obtained in the survey consistent?
4. Was the information obtained in the survey accurate?
5. Would the questionnaire yield the correct and necessary information?
6. Would the researcher be able to use the information collected in the survey correctly?
7. Whether a reasonable amount of time had been allocated for the task.
8. Whether or not the instructions were clearly understood by the participants.

The focus group / departmental meeting adapted questionnaire, was sent to four participants, who could have met the inclusion / exclusion criteria of this study, because the participants' chosen were representative of the study population to be researched. They were required to read through the letter of information (Appendix I), the letter of informed consent (Appendix H) and to answer the questionnaire (Appendix F). The questionnaire was thus judged in terms of its readability, simplicity and whether the instructions to the questionnaire were simple and easy to understand. In addition the pilot assisted in determining the length of time that it took to complete the questionnaire (average 15-20 minutes).

Corrections were then made to the questionnaire following suggestions / comments which were made by the pilot group members following completion of the questionnaire evaluation form (Appendix G). Changes affected by the pilot study included the following:

3.7.3.1. Pilot Study changes to the Questionnaire:

Appendix F: Section D:

"Will you consult a Chiropractor for the following?" It was suggested that a few of the medical terms in the table be placed into "layman" terms for easier understanding. The decision was made not to change this, as this was a good indicator of the participant's knowledge of general medical diagnoses and whether Chiropractic care could be utilised for these diagnoses.

Appendix H:

The first question read "Have you read the research information sheet?" was changed to "Have you read the Letter of Information?"

Appendix I:

Grammatical and syntax changes were made following correction by the pilot study group.

3.7.3.2. Ethics Department changes to the Questionnaire:

Prior to the approval of the research topic, the Durban University of Technology, Faculty of Health Sciences Research Committee and the Ethics Review Board, the following changes were recommended and affected.

Appendix F: Section A:

"Financial status question response was changed from "Financially Dependent/Independent" to "Financially able/unable to support yourself."

The foregoing process is similar to that of a Delphi study. A Delphi study is a social research technique, where the aim is to obtain a reliable group opinion, using a particular group of experts. The technique is characterised by its repetitive nature, maintaining participant anonymity of their answers / opinions. Furthermore, the exchange of information is carried out through a study group co-ordinator, so that irrelevant information is excluded. Finally, the questions are formulated in such a way that the answers can be calculated statistically and quantitatively (Landeta, 2006).

3.7.4. Discussion of the Final Questionnaire:

The self-administered questionnaire was divided into four main sections, namely section A, section B, section C and Section D (Appendix F).

Section A

Information collected in Section A was concerned with current demographic data and other personal data of the participants taking part in the study (e.g. age, gender, ethnic group, occupation, financial status, medical aid, language spoken, country of residence and sporting discipline).

Section B

Information collected in Section B was concerned with information targeting the reason for the consultation, with the health profession commonly seen following injury (question 1) and the most commonly treated area (question 2 – body figure sketch) questioned.

Section C

Questions in Section C, which were based upon available literature, (Bergh *et al.*, 1999; Yeoman, 2000; May, 2000; Ford *et al.,* 2002; Sigrell, 2002; Evans *et al.,* 2003; Ford *et al.,* 2003; Faldon, 2004) were directed at the general satisfaction of the consultation, and in addition were broken down into three scales and four sub-scales. The scales were as follows:

1. **General satisfaction:** Questions 5-24, 26-39, 41.
2. **Understanding of the assessment process**: Questions 7, 8, 9, 11 and 29.
3. **Chiropractic student conduct:** Sub-scales included
    - *Competence:* Questions 7, 8, 18, 20, 21, 22, 29, 31, 32, 35, 36, 37 and 40.
    - *Humaneness:* 6, 7, 14, 16, 20, 22, 24, 27, 28, 30, 33 and 37.
    - *Communication:* 7, 8, 18, 21, 24, 28, 29, 36 and 41.
    - *Chiropractic student demeanour*: 5, 6, 11, 14, 16, 21, 22, 24, 27, 28, 29, 30, 33 and 37.

Section D

Questions in Section D were aimed at eliciting information about the participants knowledge about Chiropractic and the questions were constructed for use in the following scale:

1. **Knowledge and understanding of Chiropractic:** Questions 1, 3 to 48.

Therefore when looking at the **entire questionnaire**, it can be summarised into the following scales and sub-scales:

1. **General satisfaction:** Questions 5-24, 26-39, 41, B1, D1 and D2.
2. **Understanding of the assessment process**: Questions 7, 8, 9, 11 and 29.
3. **Knowledge and understanding of Chiropractic:** Questions 1, 3 to 48 and B1.
4. **Chiropractic student conduct:** Sub-scales included
    - *Competence:* Questions 7, 8, 18, 20, 21, 22, 29, 31, 32, 35, 36, 37 and 40.
    - *Humaneness:* 6, 7, 14, 16, 20, 22, 24, 27, 28, 30, 33 and 37.
    - *Communication:* 7, 8, 18, 21, 24, 28, 29, 36 and 41.

- *Chiropractic student demeanour*: 5, 6, 11, 14, 16, 21, 22, 24, 27, 28, 29, 30, 33 and 37.

3.8. Measurement Frequency:

Due to the nature of the study, the administration of the questionnaire was once off in nature. Phase One (observational study) and Phase Two (completion of the self administered questionnaire) took place only once at each sporting event that was attended by the observers.

3.9. Data Analysis:

SPSS version 15.0 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the data. It should be noted that, for this study, significance was set at $p = 0.05$, although cognizance was given to $p=0.01$ if the results were close or multiple significances were found.

Objective One: Ratings of the two observers were compared using Cohen's kappa statistic. The scores of negatively worded questions were reversed. A score of 1 was given where the response was "yes", and a score of 0 was given where the response was "no". The means of the two observers ratings were used to compute a total observational score which was the sum of the ratings for each item, such that the higher the score, the better the Chiropractic student's performance. For each item individually, the mean response of the two observers was described using frequency tables and bar charts.

Objective Two: Descriptive statistics were used to report participant's demographics and responses to Chiropractic treatment. Frequency tables and bar charts were used for categorical variables, while quantitative variables were described using

the mean, standard deviation and range, or the median in the case of Likert Scale variables.

Objective Three: Participant general satisfaction scale and subscale scores were computed by summing up the items constituting the scales. Scores were compared between groups using non parametric tests since the scores were highly skewed. Mann-Whitney tests were used to compare the median scored between two groups, while Kruskal-Wallis tests were used to compare scores between more than two groups. Correlations between two quantitative variables were done with Spearman's rank correlation analysis.

Objective Four: The correlation between observation score and participant general satisfaction scores were assessed using Spearman's rank correlation coefficient.

Chapter Four

Results

4.1. Introduction:

This chapter represents the statistical analysis of the data collected. The data is discussed in four study objectives:

Objective One: To determine factors commonly identified by the observers to the treatment process.

Objective Two: To describe the participant demographics, their knowledge about Chiropractic and general satisfaction.

Objective Three: To assess any relationships between the various factors that were documented in the second objective.

Objective Four: To determine if any factors affecting general satisfaction levels that could be identified by comparing and contrasting the results from the observational study and the self administered questionnaire.

4.2. Data Sources:

Data sources utilized to compile this chapter were from both primary and secondary sources of information. Primary sources included information collected from the participants of the study in the form of a completed questionnaire (Appendix F) and from the information collected by the observers (Appendix K).

Secondary data sources included various books on statistical analysis (Bland, 1996; Swinscow, 1996; Wright, 1997; Tropper, 1998; Campbell and Machin, 1999; Hinton, 2001), personal communications with the statistician (Esterhuizen, 2007) and the supervisor of the research project (Korporaal, 2007). Note that the discussion of this chapter (as in chapter 5) also required the use of the literature as outlined in chapter two, which was obtained from books, journal articles and other appropriate sources.

4.3. Abbreviations Pertinent to the Chapter:

- "p" refers to the p-value which indicates the data statistical significance (Bland, 1996; Swinscow, 1996; Wright, 1997; Campbell and Machin, 1999; Hinton, 2001).
- "n" refers to the to the sample size. Sample in this case is defined as *"A subset of a population"* (Tropper, 1998).
- "%"=percentage.
- "<" refers to a figure "less than" the figure reported.
- "=" implies "equals to."
- "GP" refers to a General Practitioner.

4.4. Results

Before the results are presented in this chapter, a few statistical concepts and calculations are explained. This provides the reader with a basic understanding of the significance of the values calculated and how these values are calculated.

4.4.1. Cohen's Kappa:

Cohen's Kappa is used to determine external validity and rater reliability. Validity and reliability are measured in a variety of ways, however these are limited by the study categories in the research (Wright, 1997; Campbell and Machin, 1999). In this respect results obtained in the

research may only indicate that the observers agree some of the time when conducting the research. This is corrected for in the Cohen's kappa where the concept of "chance-corrected measurement of agreement" is measured, which is commonly known as kappa (k). Simply put, it is the number of times the observers are likely to agree by chance subtracted from the number of times the observers agree (Wright, 1997; Campbell and Machin, 1999).

It is calculated in such a way that if k=1, this would mean that the observers agree all the time. Kappa values of less than 0.4 are described as 'poor', between 0.4 and 0.6 are 'moderate', values of 0.6 and 0.8 are 'substantial' and values above 0.8 are 'almost perfect'. Kappa is therefore calculated as follows (Campbell and Machin, 1999):

$$k = \left(\frac{P_{(observed)} - P_{(expected)}}{1 - P_{(expected)}} \right)$$

4.4.2. Null Hypothesis Testing:

When designing a research project, the researcher tests a hypothesis and tries to prove (or disprove) similarities between the research categories. This is a research hypothesis. It is generally assumed that there is no difference between the tested research categories. This is known as the "Null hypothesis". Therefore the research hypothesis is the opposite of the null hypothesis and is termed the "Alternative hypothesis" (Bland, 1996; Tropper, 1998; Campbell and Machin, 1999; Hinton, 2001).

Essentially the research hypothesis (alternative hypothesis) assumes a difference in the research categories (i.e. between the participants and the 2 observers) and null hypotheses assumes they are the same. Logically

the null hypothesis would be false and the alternative hypothesis true if the research data in this study is showed a difference between the participants and the 2 observers (Bland, 1996; Tropper, 1998; Campbell and Machin, 1999; Hinton, 2001).

4.4.3. Significance of the p-value:

If data collected during the research process is not consistent with the null hypothesis. This means that the null hypothesis would be rejected and the alternative hypothesis would probably be true. In addition the data is represented as being either statistically significant or insignificantly different from the null hypothesis. When a small p-value is calculated, the data is said to be statistically significant. This means that the data collected provided enough information to reject the null hypothesis, therefore an effect was detected in the research process and the alternative hypothesis would probably be true. Conversely, if the p-value were large, the data collected did not provide sufficient information to reject the null hypothesis, which means that there is not enough evidence to support the alternative hypothesis, therefore indicating further research is required.

The p-value (significance level) is usually selected before the collection of data and is usually set at $p=0.05$ or $p=0.01$, which renders the probability (p-value) at a significant level. The smaller the p-value ($p<0.001$) is said to be highly significant (Bland, 1996; Swinscow, 1996; Wright, 1997; Campbell and Machin, 1999; Hinton, 2001). For this study significance was set at $p = 0.05$, although cognizance was given to $p=0.01$ if the results were close or multiple significances were found.

4.5. Objective One: To determine factors commonly identified by the observers to the treatment process.

4.5.1. The level of Agreement between Observers

Two observers were used to observe the treatment process. Their level of agreement for each item was measured using Cohen's Kappa statistic. The percentage agreement was also reported and where possible the p-value was calculated (i.e. this was only possible when a Cohen's kappa could be calculated). This is shown in Tables 4.1 to 4.28.

Note :

The items indicated in the following tables (Tables 4.1 to 4.28) correlate with the sequential order to statements that the observers recorded on Appendix K.

Table 4.1: Agreement between Observers for Item 1

		Observer 2 Item 1	Total
		Yes	Yes
Observer 1 Item 1	yes	30	30
Total		30	30

Table 4.1 shows that there was 100% agreement between observers for item 1 as both observers responded "yes" to this question. Due to the item being a constant, there is no kappa statistic computed in this case.

Table 4.2: Agreement between Observers for Item 2

		Observer 2 Item 2		Total
		No	Yes	No
Observer 1 Item 2	No	1	0	1
	yes	0	29	29
Total		1	29	30

In Table 4.2 there was also 100% agreement between the two observers. The kappa statistic is 1.00 and the p value is <0.001. Thus there was a highly significant level of agreement between the two observers for item 2.

Table 4.3: Agreement between Observers for Item 3

		Observer 2 Item 3		Total
		No	Yes	No
Observer 1 Item 3	No	3	0	3
	Yes	0	27	27
Total		3	27	30

In Table 4.3 there was also 100% agreement between the two observers. The kappa statistic is 1.00 and the p value is <0.001. Thus there was a highly significant level of agreement between the two observers for item 3.

Table 4.4: Agreement between Observers for Item 4

		Observer 2 Item 4		Total
		No	Yes	No
Observer 1 Item 4	No	4	1	5
	Yes	1	24	25
Total		5	25	30

For item 4 there was 93.3% agreement between the two observers. The kappa statistic was 0.760 and the p values was <0.001. Thus there was a highly significant level of agreement between the two observers for item 4.

Table 4.5: Agreement between Observers for Item 5

		Observer 2 Item 5	Total
		Yes	Yes
Observer 1 Item 5	Yes	30	30
Total		30	30

Table 4.5 shows that there was 100% agreement between observers for item 5 as both observers responded “yes” to this question. Due to the item being a constant, there is no kappa statistic computed in this case.

Table 4.6: Agreement between Observers for Item 6

		Observer 2 Item 6		Total
		No	Yes	No
Observer 1 Item 6	Yes	1	29	30
Total		1	29	30

The agreement between observers for item 6 was 97%. However, no kappa statistics could be computed because the response was constant for observer 1.

Table 4.7: Agreement between Observers for Item 7

		Observer 2 Item 7		Total
		No	Yes	No
Observer 1 Item 7	No	27	2	29
	Yes	1	0	1
Total		28	2	30

There was 90% agreement between the observers for item 7 (Table 4.7). The kappa statistic was -0.047 and the p value was 0.786. Thus for this item the observers did not agree significantly more times than would have occurred by chance alone.

Table 4.8: Agreement between Observers for Item 8

		Observer 2 Item 8		Total
		No	Yes	No
Observer 1 Item 8	No	2	0	2
	yes	0	28	28
Total		2	28	30

There was 100% agreement between the observers for item 8 (Table 4.8). The kappa statistic was 1.00 and the p value was <0.001. Thus there was a high level of agreement for item 8.

Table 4.9: Agreement between Observers for Item 9

		Observer 2 Item 9		Total
		no	yes	No
Observer 1 Item 9	No	4	1	5
	Yes	2	22	24
Total		6	23	29

There was 90% agreement between the observers for item 9 (Table 4.9). The kappa statistic was 0.664 and the p value was <0.001. Thus there was a significant level of agreement between the observers for item 9.

Table 4.10: Agreement between Observers for Item 10

		Observer 2 Item 10	Total
		Yes	Yes
Observer 1 Item 10	yes	30	30
Total		30	30

There was 100% agreement between the observers for item 10 (Table 4.10). Both observers responded “yes” to this question, thus no kappa statistic could be computed.

Table 4.11: Agreement between Observers for Item 11

		Observer 2 Item 11	Total
		Yes	Yes
Observer 1 Item 11	yes	30	30
Total		30	30

There was 100% agreement between the observers for item 11. Both observers responded “yes” to this question, thus no kappa statistic could be computed (Table 4.11).

Table 4.12: Agreement between Observers for Item 12

		Observer 2 Item 12		Total
		No	yes	No
Observer 1 Item 12	no	1	2	3
	yes	0	27	27
Total		1	29	30

For item 12 there was 93% agreement (Table 4.12). The kappa statistic was 0.474, p=0.002. Thus there was a significant level of agreement between the two observers for this item.

Table 4.13: Agreement between Observers for Item 13

		Observer 2 Item 13		Total
		No	yes	No
Observer 1 Item 13	no	3	1	4
	yes	1	24	25
Total		4	25	29

For item 13 there was 93% agreement (Table 4.13). The kappa statistic was 0.710 p<0.001. Thus there was a highly significant level of agreement between the two observers for this item.

Table 4.14: Agreement between Observers for Item 14

		Observer 2 Item 14	Total
		Yes	Yes
Observer 1 Item 14	yes	30	30
Total		30	30

There was 100% agreement between the observers for item 14 (Table 4.14). Since both observers responded “yes” to this item, it is a constant, and thus no kappa statistics could be calculated.

Table 4.15: Agreement between Observers for Item 15

		Observer 2 Item 15		Total
		No	yes	No
Observer 1 Item 15	no	1	1	2
	yes	0	27	27
Total		1	28	29

Item 15 gave 96.5% agreement (Table 4.15). The kappa statistic was 0.651 ($p<0.001$), indicating a high level of agreement.

Table 4.16: Agreement between Observers for Item 16

		Observer 2 Item 16		Total
		No	yes	No
Observer 1 Item 16	no	1	1	2
	yes	0	28	28
Total		1	29	30

Item 16 gave 97% agreement (Table 4.16). The kappa statistic was 0.651 ($p<0.001$), indicating a high level of agreement.

Table 4.17: Agreement between Observers for Item 17

		Observer 2 Item 17	Total
		N/A	No
Observer 1 Item 17	N/A	30	30
Total		30	30

There was 100% agreement between the observers for item 17 (Table 4.17). Since both observers responded “N/A” to this item, it is a constant, and thus no kappa statistics could be calculated.

Table 4.18: Agreement between Observers for Item 18

		Observer 2 Item 18		Total
		No	N/A	No
Observer 1 Item 18	no	1	3	4
	N/A	0	26	26
Total		1	29	30

There was 90% agreement between the observers for item 18 (Table 4.18). The kappa statistic was 0.366 (p=0.010). Thus there was significant agreement between the observers.

Table 4.19: Agreement between Observers for Item 19

		Observer 2 Item 19	Total
		Yes	Yes
Observer 1 Item 19	yes	30	30
Total		30	30

There was 100% agreement between the observers for item 19 (Table 4.19). Since both observers responded “yes” to this item, it is a constant, and thus no kappa statistics could be calculated.

Table 4.20: Agreement between Observers for Item 20

		Observer 2 Item 20	Total
		Yes	Yes
Observer 1 Item 20	yes	30	30
Total		30	30

There was 100% agreement between the observers for item 20 (Table 4.20). Since both observers responded “yes” to this item, it is a constant, and thus no kappa statistics could be calculated.

Table 4.21: Agreement between Observers for Item 21

		Observer 2 Item 21		Total
		No	yes	No
Observer 1 Item 21	no	27	0	27
	yes	2	1	3
Total		29	1	30

There was 93% agreement between the observers for item 21 (Table 4.21). The kappa statistic was 0.474, p=0.002, indicating a significant level of agreement between the two observers.

Table 4.22: Agreement between Observers for Item 22

		Observer 2 Item 22		Total
		No	yes	No
Observer 1 Item 22	no	1	0	1
	yes	0	29	29
Total		1	29	30

The observers agreed 100% with item 22 (Table 4.22). The kappa statistic was 1.00 (P<0.001).

Table 4.23: Agreement between Observers for Item 23

		Observer 2 Item 23		Total
		No	Yes	no
Observer 1 Item 23	no	2	1	3
	yes	0	26	26
Total		2	27	29

The agreement was 96.5% for item 23 (Table 4.23). The kappa statistic was 0.782 ($p<0.001$), indicating a significant level of agreement.

Table 4.24: Agreement between Observers for Item 24

		Observer 2 Item 24		Total
		No	yes	no
Observer 1 Item 24	no	27	2	29
	Yes	1	0	1
Total		28	2	30

There was a 90% level of agreement between observers for item 24 (Table 4.24). The kappa statistic was -0.047 ($p=0.786$). Thus there was no significant agreement between the observers for this item.

Table 4.25: Agreement between Observers for Item 25

		Observer 2 Item 25		Total
		No	yes	no
Observer 1 Item 25	no	2	1	3
	yes	0	27	27
Total		2	28	30

There was a 97% level of agreement between the observers for item 25 (Table 4.25). The kappa statistic was 0.783 ($p<0.001$), indicating a highly significant agreement.

Table 4.26: Agreement between Observers for Item 26

		Observer 2 Item 26		Total
		No	yes	no
Observer 1 Item 26	no	25	1	26
	yes	4	0	4
Total		29	1	30

There was an 83% level of agreement for question 26 (Table 4.26). The kappa statistic was -0.056 (p=0.690), indicating lack of agreement between the observers.

Table 4.27: Agreement between Observers for Item 27

		Observer 2 Item 27		Total
		No	yes	No
Observer 1 Item 27	yes	1	29	30
Total		1	29	30

The observers agreed 97% of times in item 27 (Table 4.27). No kappa statistic could be computed since observer 1's responses were constant.

Table 4.28: Agreement between Observers for Item 28

		Observer 2 Item 28		Total
		No	Yes	no
Observer 1 Item 28	no	4	0	4
	yes	0	26	26
Total		4	26	30

The responses agreed 100% of the time in item 28 (Table 4.28). Thus the kappa statistic was 1.00 ($p<0.001$) and the level of agreement was highly significant.

Therefore agreement was almost always over 90% and significant. The items where no agreement was found were those which were phrased negatively in the questionnaire. Perhaps it was the double negative that caused confusion for one or both of the observers leading to the poorer agreement.

Since agreement was generally high between the observers, it was decided that the mean response for each item would be used to analyse the first Objective, i.e. to describe the factors identified by the observers to the treatment process.

4.5.2. The Factors commonly identified by the Observers to the Treatment Process:

The mean score of each of the items is shown in Figure 4.1, ranked from highest to lowest mean score. There were 7 items which scored a mean of 1, the highest possible score. These were items 1,5,10,11,14,19 and 20. Two items scored a mean of 0 (items 17 and 18). This was because N/A was recoded to 0, and this was the most frequent score for these 2 items.

Item 9 scored the worst (mean of 0.81), followed by item 4. However, on the whole, all items received generally high scores, implying that the observers felt that the Chiropractic students had mostly performed each specific task as outlined by the statements which the observers responded to.

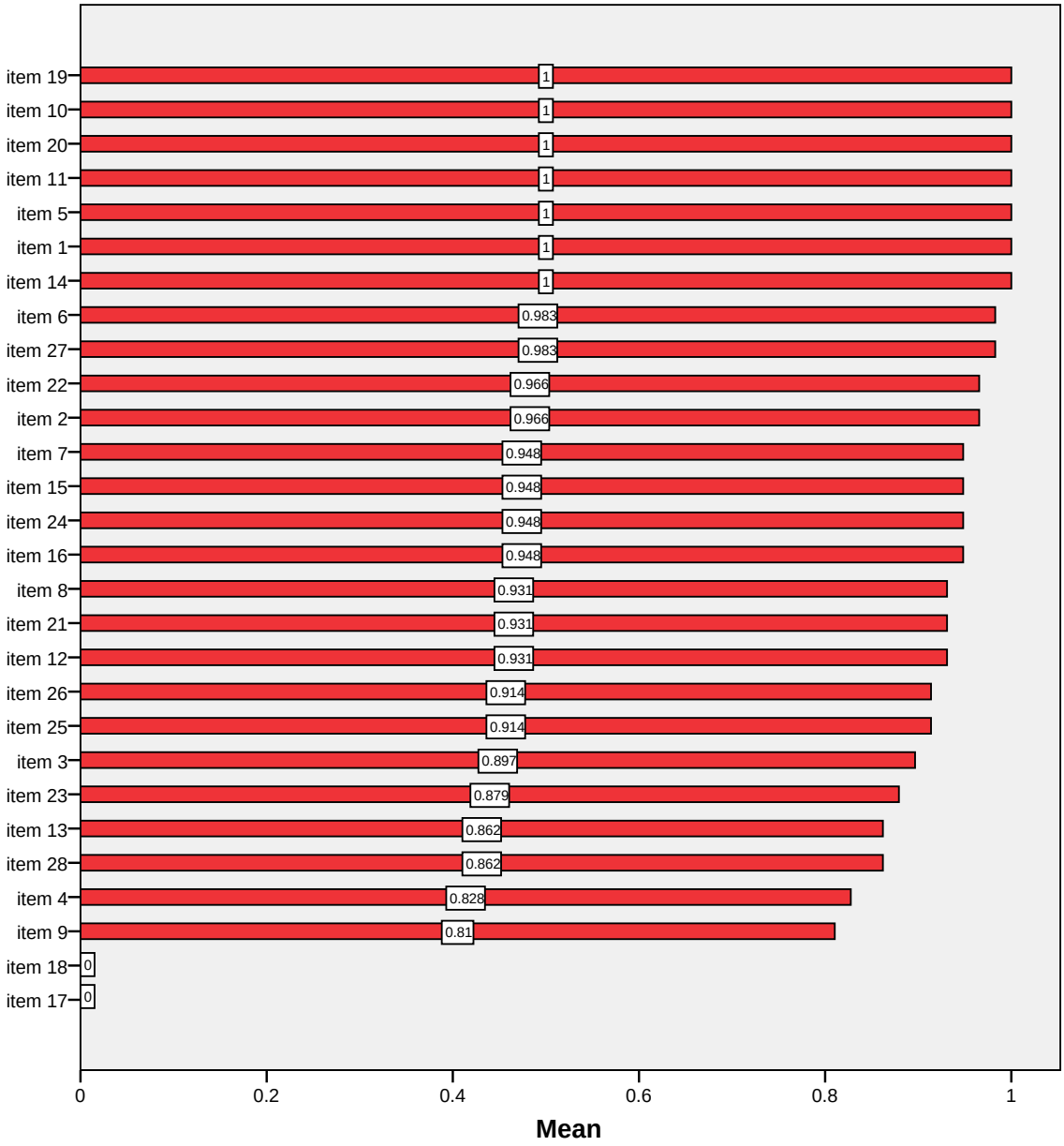

Figure 4.1: Mean Observational Scores for each item

4.6. Objective Two: To describe the participant demographics and consultation details (4.6.1.), participant knowledge about Chiropractic treatment and management (4.6.2.) and participant general satisfaction (4.6.3.)

4.6.1. Participants Demographics and Consultation Details:

Thirty participants of mean age 35.6 years (standard deviation 15.6 years) ranging from 17 to 64 years old were recruited for this study. Five participants that took part in the study were excluded from the sample group. Incomplete questionnaires could not be used in the analysis and fulfilled the exclusion criteria of the study. For this reason, five of the questionnaires were removed and shredded. Following this the majority of participants were male (63.3% - Figure 4.2), 90% were White (Table 4.29), and 83.3% were South African (Table 4.30).

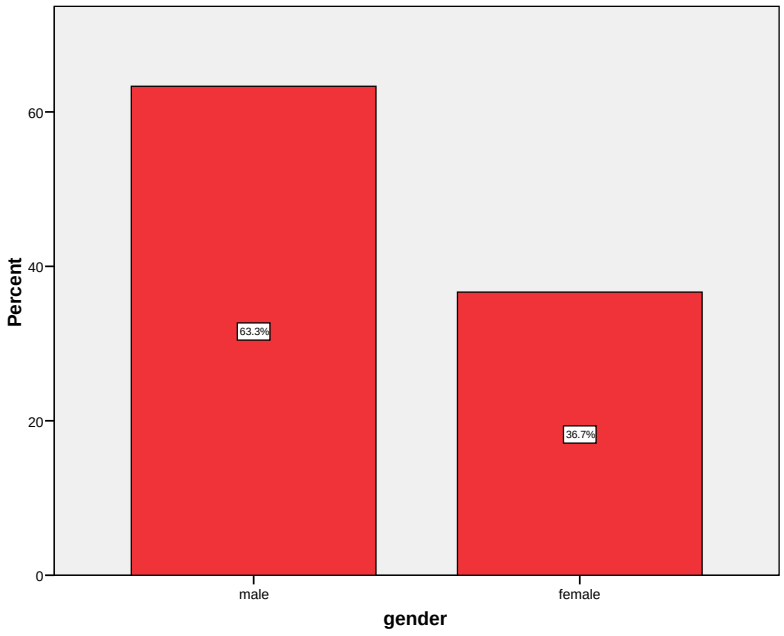

Figure 4.2: Gender Distribution of Participants (n=30)

Table 4.29: Ethnic Distribution of Study Participants (n=30)

	Frequency	Percent
Asian	2	6.7%
Indian	1	3.3%
White	27	90.0%
Total	30	100.0%

Table 4.30: Country of Study Participants

	Frequency	Percent
Australia	3	10.0%
Brazil	1	3.3%
England	1	3.3%
South Africa	25	83.4%
Total	30	100.0%

Eighty percent reported to be able to support themselves, and 70.4% were on a medical aid scheme. The participants in the study were mostly not professional athletes and their occupations are listed in Table 4.31.

Table 4.31: Occupation reported Study Participants

	Frequency	Percent
Missing / unknown	1	3.3%
Administrator	1	3.3%
Bookkeeper	2	6.7%
Educator	2	6.7%
Environmental consultant	1	3.3%
Information Technology	2	6.7%
Logistics	1	3.3%
Manager	2	6.7%
Marketing	1	3.3%
Medical Representative	1	3.3%

Table 4.31: Occupation reported Study Participants continued …

Operations Manager	1	3.3%
Secretary	1	3.3%
Self employed	3	10.0%
Student	4	13.4%
Surf coach	1	3.3%
Surfer	5	16.8%
Technician	1	3.3%
Total	30	100.0%

The level at which they played the sport is shown in Figure 4.3. They mostly played at club level (46.7%).

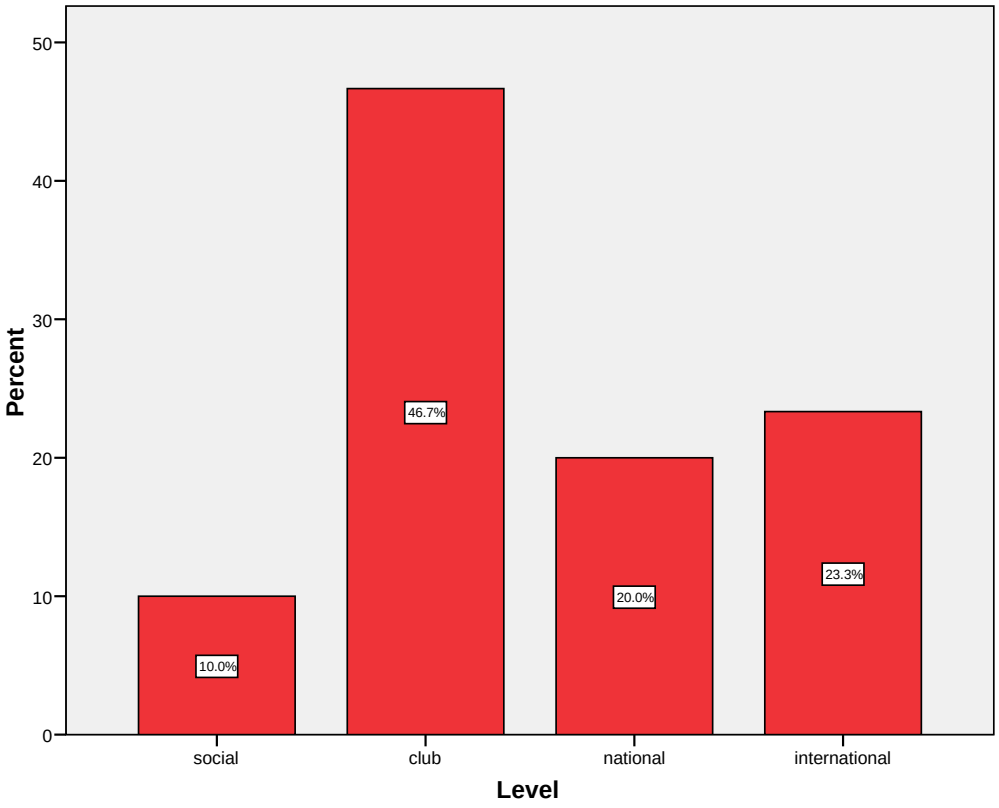

Figure 4.3: Level at which the Participants played Sport

Ninety percent of participants have English as their first language, and of those who have a second language, 75% speak Afrikaans, 19% speak English, and 6% speak isiZulu (Tables 4.32 and 4.33).

Table 4.32: First Language of Participants

	Frequency	Percent
Afrikaans	2	6.7%
English	27	90.0%
Other	1	3.3%
Total	30	100.0%

Table 4.33: Second Language of Participants (n=16)

	Frequency	Percent
Afrikaans	12	75.0%
English	3	18.7%
IsiZulu	1	6.3%
Total	16	100.0%

The above table shows n=16. The reason for this is that only 16 of the participants filled in the second language column.

Figure 4.4 shows that walking was the most popular other sport done by participants.

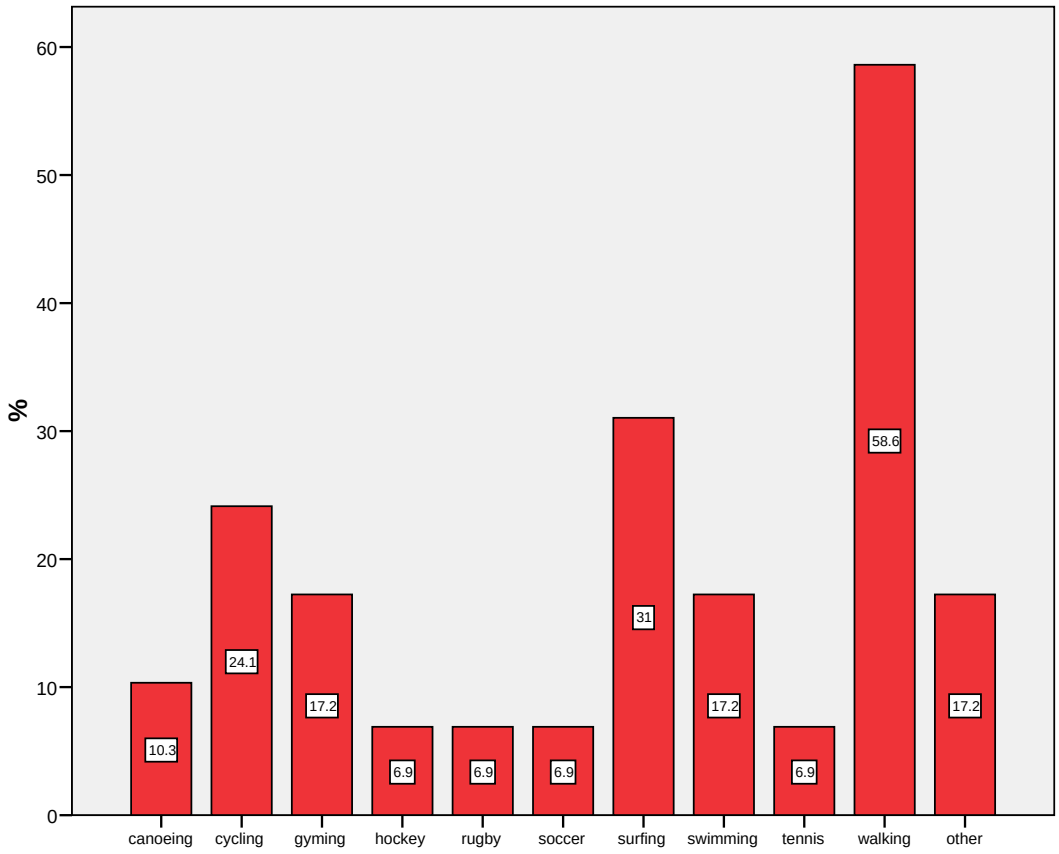

Figure 4.4: Percentage of Participants who take part in Other Sports

The ranking of median response by participants as to which health professional they would consult for an injury is shown in Figure 4.5. Chiropractors, physiotherapists and GPs all ranked the highest with a median score of 4 (on a five point Likert Scale). Homeopaths ranked the lowest with a median score of 1.

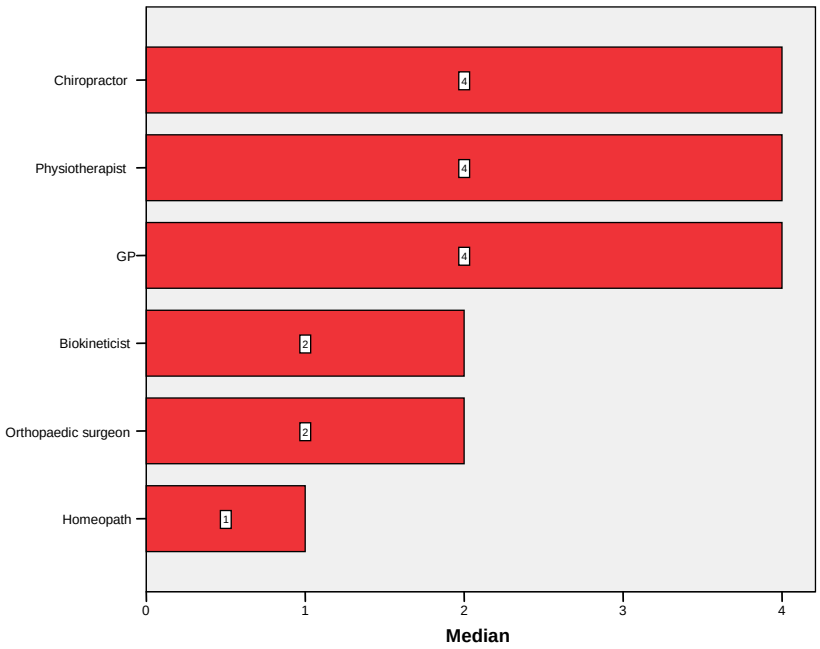

Figure 4.5: Ranking of Health Professionals usually consulted following injury

Figure 4.6 shows that the neck (36.7%) was the most common site of injury in participants, followed by the lower back (33.3%) and the thoracic spine (26.7%). In total 43.3% (n=13) had injured the region of complaint previously.

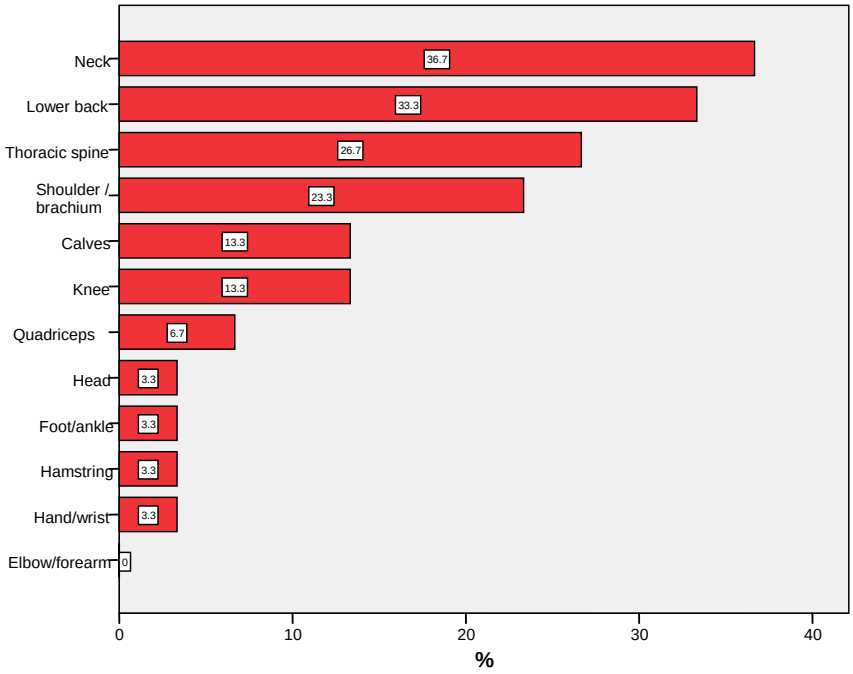

Figure 4.6: Site of Injury

4.6.2. Participant Knowledge about Chiropractic Treatment and Management:

Overall 63.3% had consulted with a Chiropractor before (n=19) and 85.7% of these were satisfied with the treatment they had received.

Table 4.34 shows the qualifications that participants thought that Chiropractors received. Only 9.1% were correct.

Table 4.34: Qualification the Chiropractors receive

	Frequency	Percent
Degree	5	22.7%
Honours	2	9.1%
Bachelors degree	3	13.6%
Masters degree	2	9.1%
PhD	10	45.5%
Total	22	100.0%

Figure 4.7 shows the median score for a variety of conditions with the lower the score the more frequently the participants would consult a Chiropractor for each condition. Shoulder and neck pain received a median score of 1, indicating that the majority of participants would always consult a Chiropractor for these conditions. Whereas participants would be less likely to see a Chiropractor for hip pain, whiplash, back pain, sciatica, low back pain (LBP) and muscle strain which received a median score of 2. Knee pain to headaches were mostly sometimes, while other conditions including allergies and colic were mostly rated as never.

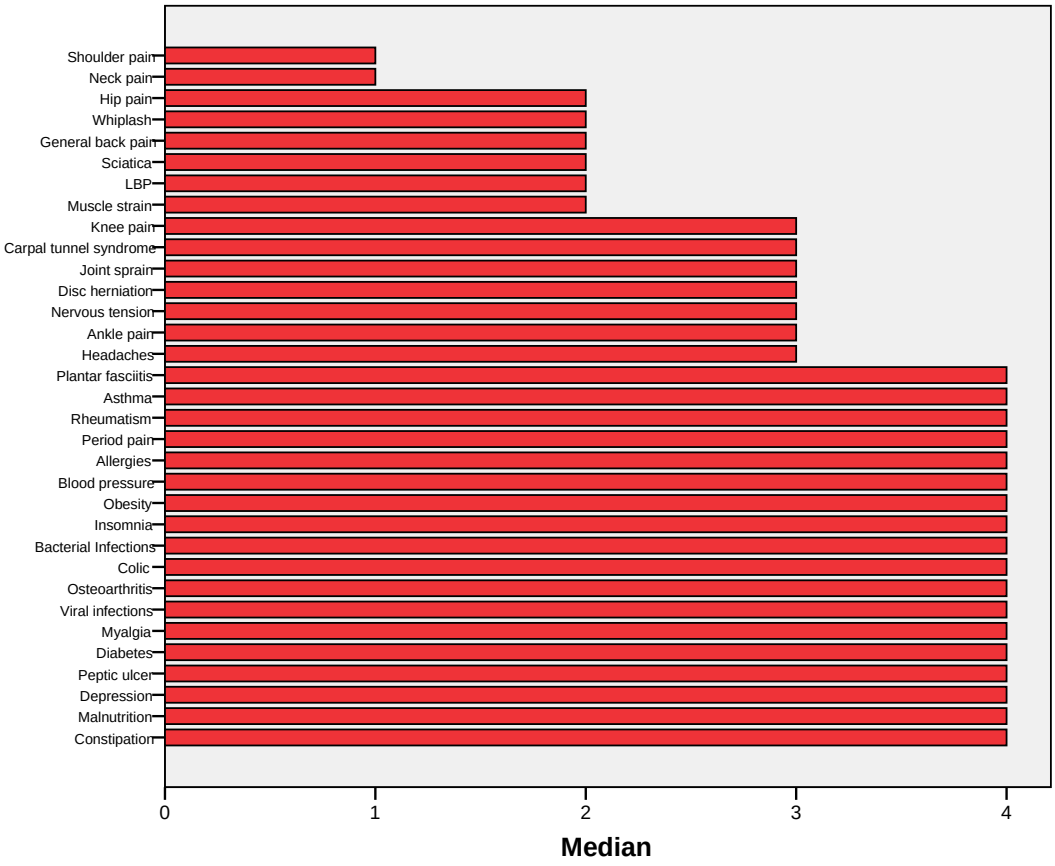

Figure 4.7: Median Response for various Conditions

Table 4.35 shows that the attitudes towards Chiropractic were generally very positive. Only 10.3% thought that Chiropractic did more harm than good and were uncomfortable with it. Eighty-six point seven percent thought that Chiropractors provide excellent care.

Table 4.35: Responses to Knowledge Questions about Chiropractic

	True		False	
	Count	%	Count	%
Chiropractic does more harm than good	3	10.3%	26	89.7%
Chiropractic is classified as a conservative therapy	10	38.5%	16	61.5%
Chiropractic is quackery	1	3.6%	27	96.4%
It provides excellent care for some musculoskeletal conditions	28	96.6%	1	3.4%
Chiropractors are competent	29	96.7%	1	3.3%
Chiropractors are well educated	28	93.3%	2	6.7%
Chiropractors do not work on the spine	3	10.3%	26	89.7%
Chiropractors only work on extremities	4	13.8%	25	86.2%
I am uncomfortable with chiropractic	3	10.3%	26	89.7%
I am not informed enough to comment	4	16.0%	21	84.0%
Chiropractors provide excellent care	26	86.7%	4	13.3%
All participants that failed to answer any one of these questions were requested to do so or indicate the reason they did not complete them (verbally or in writing). It was established that not all participants responded to all the questions in this section, as they felt that the question was not applicable to them (i.e. if they had answered the questions, then they felt that "I am not informed enough to comment" was not relevant) or they were undecided with respect to their response. Thus incomplete questions were taken as participants having responded to the question in as honest a manner as was possible for the participant at that time of questionnaire completion and that the questionnaire was deemed as having been completed fully by the respondent.				

The median rating of participants' knowledge and understanding of Chiropractic was 3 on a scale of 1 to 5. Thus most participants did not feel very well informed about Chiropractic.

4.6.3. Participant General Satisfaction:

Table 4.36 shows the responses to the individual general satisfaction questions 5 to 24. (The questions in this section of the questionnaire should have been numbered from 1 to 21. This was an over-sight by the researcher and was not corrected before being sent for final printing and distribution.) They were mostly answered positively. The two questions where a "no" is recorded more frequently than a "yes" were questions 22 and 23, where N/A was the most frequent response, and this was recoded into "no".

Table 4.36: Responses to Individual General Satisfaction Questions 5 to 24

Participant questionnaire number		No		Yes	
		Count	%	Count	%
5	Student suitably dressed	0	.0%	30	100.0%
6	Student courteous	0	.0%	30	100.0%
7	Student explained post treatment complications	0	.0%	30	100.0%
8	Student adequately explained assessment	1	3.3%	29	96.7%
9	Did you understand what was wrong	0	.0%	30	100.0%
10	Sufficient resources available	0	.0%	30	100.0%
11	Student spent enough time treating you	0	.0%	30	100.0%
12	Would you like to see the same student next time	0	.0%	30	100.0%
13	Would you see a student at the chiropractic clinic	6	20.7%	23	79.3%
14	Clinic staff friendly	0	.0%	30	100.0%
15	Treatment easily accessible	0	.0%	30	100.0%
16	Student was concerned about your complaint	1	3.3%	29	96.7%
17	Did your visit address your problems	0	.0%	29	100.0%
18	Advised about other treatment options	4	13.8%	25	86.2%
19	The space was adequate	0	.0%	30	100.0%
20	Student explained self help treatment options	3	10.0%	27	90.0%
21	Student responded to questions	0	.0%	30	100.0%
22	Student took religious concerns into account	15	51.7%	14	48.3%
23	Chiropractic treatment available outside facility	27	90.0%	3	10.0%
24	Student introduced himself to you	4	13.3%	26	86.7%

Question 25 gave the participants opportunity to comment on what they would have liked to see in addition to the service provided by the Chiropractic students. Only two participants responded to this question with the suggestion that the students wear nametags and the construction of a small screen to provide a small amount of privacy during the treatment.

Questions 26 to 39 were on a Likert Scale of 1 to 7, with 7 being the highest score. Question 41 (overall general satisfaction) was on a Likert Scale of 1 to 5, with 5 being the highest. The negatively phrased questions were reversed. Table 4.37 shows the median responses to the questions. The median scores ranged between 4 and 7. The question that received the worst response was question 30

"Willingness to listen to what you had to say was evident" with a median of 4. Several questions had a median of 7. The overall median rating was 5 out of a maximum score of 5, indicating the majority rated the treatment at the highest level.

Table 4.37: Median Response to Likert Scale Questions 26 to 41

Participant questionnaire number		Median
26	Privacy was sufficient	5
27	Interest shown in you was high	5
28	Friendliness was sincere	7
29	Explanations were clear	7
30	Willingness to listen to what you had to say was evident	4
31	Understanding your health problem was apparent	7
32	Answers given to your questions were satisfactory	7
33	Amount of time spent was sufficient	7
34	Cost of care was affordable	7
35	Skill and ability of the student was apparent	7
36	Advice on ways to avoid injury was given	7
37	Ability of student to put you at ease	7
38	Care received overall was good	7
39	Opportunities for follow up treatment were given	6
41	Overall rating of the chiropractic treatment at this facility	5

4.7. Objective Three: To determine any relationships between the various factors (participant demographics and knowledge versus general satisfaction scales) that were documented in the second objective for the purposes of weighing up their contribution to the scale of general satisfaction.

4.7.1. Spearman's Correlation:

Spearman's coefficient (r_s) is used when the data appears to correlate, but not in a linear fashion. If the variables vary "monotonically" i.e. as one variable increases the other variable increases or as one variable increases the other variable decreases consistently, then the Spearman's coefficient may be used. Spearman's correlation coefficient equation is as follows (Campbell and Machin, 1999; Hinton, 2001):

$$r_s = 1 - \left[\frac{6\Sigma D^2}{N^3 - N} \right]$$

4.7.2. Demographic Variables (Table 4.38) versus Scale and Sub-scale Scores (Table 4.39):

The following factors yielded statistically significant differences between scores in Table 4.38 and Table 4.39:

- *General satisfaction*: type of sporting activity (p=0.038)
- *Understanding of the assessment process*: financial status (p=0.005),
- *Satisfaction with prior treatment* (p=0.017)
- *Competence of the Chiropractic student*: financial status (p=0.011)
- *Humaneness of the Chiropractic student*: nothing was significant
- *Communication*: financial status (p=0.006)

- *Demeanour*: nothing was significant
- *Conduct of the Chiropractic student*: financial status (p=0.036)

Table 4.38: Comparison of Median General Satisfaction Scores between Demographic Groups

		General satisfaction	p	Understanding of the assessment process	p	Competence of the student	P	Humaneness of the student	P	Communication between student and participant	P	Demeanour of the student	p	Conduct of the student	p
Sporting activity	Climbing	108	0.038	11	0.792	51	0.210	39	0.066	31	0.290	46	0.089	160	0.088
	Surfing	95		11		48		33		28		40		145	
	Walking	103		11		48		30		30		38		153	
Gender	Male	104	0.703	11	0.395	48	0.641	33	0.899	29	0.582	40	0.966	151	0.966
	Female	106		11		47		35		29		42		155	
Ethnic group	Asian	95	0.350	11	0.382	48	0.451	28	0.064	24	0.090	37	0.128	136	0.171
	Indian	108		10		42		41		24		49		156	
	White	105		11		48		33		29		42		152	
Financial status	Unable to support	96	0.073	10	0.005	44	0.011	30	0.144	25	0.006	37	0.117	139	0.036
	Able to support	106		11		49		34		30		42		153	
Medical aid	Yes	104	0.585	11	0.815	48	0.938	32	0.449	29	0.658	40	0.621	151	0.658
	No	107		11		48		37		27		46		151	
First language	Afrikaans	108	0.438	11	0.275	51	0.603	35	1.00	31	0.094	43	0.931	160	0.576
	English	104		11		48		33		29		40		152	
	Other	105		11		46		33		24		42		145	
Level	Social	108	0.519	11	0.479	54	0.201	35	0.805	31	0.614	43	0.831	163	0.649
	Club	106		11		47		33		29		40		153	
	National	102		11		51		33		30		40		150	
	International	95		11		47		33		28		42		145	

Table 4.39: Comparison of Median General Satisfaction Scores between other treatment factors

		General satisfaction	P	Understanding of the assessment process	P	Competence of the student	P	Humaneness of the student	P	Communication between student and participant	P	Demeanour of the student	p	Conduct of the student	P
Have you injured the region of complaint before?	Yes	106	0.621	11	0.079	48	0.183	33	0.902	29	0.229	42	0.742	154	0.509
	no	104		10		47		33		29		40		151	
Have you consulted with a chiropractor before?	Yes	106	0.307	11	0.052	48	0.112	33	0.703	29	0.268	42	0.899	152	0.641
	no	102		10		47		33		27		40		151	
If yes, were you satisfied with the treatment?	Yes	107	0.534	11	0.017	49	0.125	34	0.962	29	0.307	42	0.962	153	0.471
	no	102		10		47		32		27		38		143	

4.7.3. Correlation between Participant Scale and Sub-scale Scores (Table 4.40):

In order to determine the scales that had significant relationships with one another, a Pearson's correlation between the scales and subscales were run. In addition to this, age was seen as a factor that may bias the statistical results and therefore it was included in the correlation statistics to determine whether this was actually present in the study.

From the results it can be seen that:

- General satisfaction was significantly related to understanding the assessment process (p=0.010).
- Demeanour of the Chiropractic student was significantly related to understanding the assessment process (p=0.034) as well as student competence (p=0.036) and communication (p=0.002) between the Chiropractic student and the participant.
- Communication between Chiropractic student and participant was significantly related to humaneness (p=0.007) of the student.
- Conduct of Chiropractic student was significantly related to understanding the assessment process (p=0.005).

Table 4.40: Spearman's Correlation between the Participant General Satisfaction Scales

Correlations										
			General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and participant	Demeanour of the student	Conduct of the student	age
Spearman's correlation.	General satisfaction	Correlation Coefficient	1.000	.462(*)	.725(**)	.730(**)	.674(**)	.764(**)	.857(**)	.095
		Sig. (2-tailed)	.	.010	.000	.000	.000	.000	.000	.619
		N	30	30	30	30	30	30	30	30
	Understanding of the assessment process	Correlation Coefficient	.462(*)	1.000	.669(**)	.245	.627(**)	.388(*)	.495(**)	-.017
		Sig. (2-tailed)	.010	.	.000	.192	.000	.034	.005	.928
		N	30	30	30	30	30	30	30	30
	Competence of the student	Correlation Coefficient	.725(**)	.669(**)	1.000	.311	.792(**)	.384(*)	.670(**)	.153
		Sig. (2-tailed)	.000	.000	.	.094	.000	.036	.000	.418
		N	30	30	30	30	30	30	30	30
	Humaneness of the student	Correlation Coefficient	.730(**)	.245	.311	1.000	.479(**)	.980(**)	.879(**)	-.050
		Sig. (2-tailed)	.000	.192	.094	.	.007	.000	.000	.795
		N	30	30	30	30	30	30	30	30
	Communication between student and participant	Correlation Coefficient	.674(**)	.627(**)	.792(**)	.479(**)	1.000	.537(**)	.769(**)	.239
		Sig. (2-tailed)	.000	.000	.000	.007	.	.002	.000	.203
		N	30	30	30	30	30	30	30	30
	Demeanour of the student	Correlation Coefficient	.764(**)	.388(*)	.384(*)	.980(**)	.537(**)	1.000	.912(**)	-.076
		Sig. (2-tailed)	.000	.034	.036	.000	.002	.	.000	.688
		N	30	30	30	30	30	30	30	30
	Conduct of the student	Correlation Coefficient	.857(**)	.495(**)	.670(**)	.879(**)	.769(**)	.912(**)	1.000	.100
		Sig. (2-tailed)	.000	.005	.000	.000	.000	.000s	.	.598
		N	30	30	30	30	30	30	30	30
	Age	Correlation Coefficient	.095	-.017	.153	-.050	.239	-.076	.100	1.000
		Sig. (2-tailed)	.619	.928	.418	.795	.203	.688	.598	.
		N	30	30	30	30	30	30	30	30
* Correlation is significant at the 0.05 level (2-tailed).										
** Correlation is significant at the 0.01 level (2-tailed).										

4.8. Objective Four: To determine if any factors affecting general satisfaction levels could be identified by comparing and contrasting the results from the observational study and the self administered questionnaire.

Table 4.41a, b, c, d, e and f show the correlation between the scales and the sub-scales of the observational phase (Phase One) and the participant phase (Phase Two) of the research. The scales and sub-scales were compared as follows:

- General satisfaction (p=0.229).
- Understanding of the assessment process (p=0.661).
- Competence of the Chiropractic student (p=0.136).
- Humaneness of the Chiropractic student (p=0.658).
- Communication of the Chiropractic student (p=0.082).
- Demeanour of the Chiropractic student (p=0.906).

Table 4.41a: Spearman's Correlation of "General Satisfaction" between the Observational Score and the Participant Scale Score.

			Participant General satisfaction	Observational general satisfaction score
Spearman's rho	Participant General satisfaction	Correlation Coefficient	1.000	.226
		Sig. (2-tailed)	.	.229
		N	30	30
	Observational general satisfaction score	Correlation Coefficient	.226	1.000
		Sig. (2-tailed)	.229	.
		N	30	30

Table 4.41b: Spearman's Correlation of the "Understanding of the Assessment Process" between the Observational Score and the Participant Scale Score.

			Participant understanding of the assessment process	Observational understanding
Spearman's rho	Participant understanding of the assessment process	Correlation coefficient	1.000	.083
		Sig. (2-tailed)	.	.661
		N	30	30
	Observational understanding	Correlation coefficient	.083	1.000
		Sig. (2-tailed)	.661	.
		N	30	30

Table 4.41c: Spearman's Correlation of the "Competence of the Chiropractic Student" between the Observational Score and the Participant Sub-scale Score.

			Participant competence of the student	Observational competence
Spearman's rho	Participant competence of the student	Correlation coefficient	1.000	.278
		Sig. (2-tailed)	.	.136
		N	30	30
	Observational competence	Correlation coefficient	.278	1.000
		Sig. (2-tailed)	.136	.
		N	30	30

Table 4.41d: Spearman's Correlation of the "Humaneness of the Chiropractic Student" between the Observational Score and the Participant Sub-scale Score.

			Participant humaneness of the student	Observational humaneness
Spearman's rho	Participant humaneness of the student	Correlation coefficient	1.000	.084
		Sig. (2-tailed)	.	.658
		N	30	30
	Observational humaneness	Correlation coefficient	.084	1.000
		Sig. (2-tailed)	.658	.
		N	30	30

Table 4.41e: Spearman's Correlation of "Communication between the Chiropractic Student and Participant" between the Observational Score and the Participant Sub-scale Score.

			Participant communication between student and participant	Observational communication
Spearman's rho	Participant communication between student and participant	Correlation coefficient	1.000	.322
		Sig. (2-tailed)	.	.082
		N	30	30
	Observational communication	Correlation coefficient	.322	1.000
		Sig. (2-tailed)	.082	.
		N	30	30

Table 4.41f: Spearman's Correlation of "Demeanour of the Chiropractic Student" between the Observational Score and the Participant Sub-scale Score.

			Participant demeanour of the student	Observational student demeanour
Spearman's rho	Participant demeanour of the student	Correlation Coefficient	1.000	.022
		Sig. (2-tailed)	.	.906
		N	30	30
	Observational student demeanour	Correlation Coefficient	.022	1.000
		Sig. (2-tailed)	.906	.
		N	30	30

The above Tables 4.41a, b, c, d, e and f, show that there were no significant correlations made between the scales and the sub-scales between the observers and the participants. However, the sub-scale of communication produced a significant finding between the observers and the participants (p=0.082) as seen in the results of Table 4.41e.

Chapter Five

5.1. Introduction:

This chapter will discuss the results of the data collected and attempts to make inferences as to what factors affect general satisfaction levels. Factors that emerge as significant will be elaborated upon and linked to current literature to contextualize the significance of the findings. Factors, which are found to be insignificant, will be listed, and an attempt to explain why they are insignificant will be made and linked to current literature to discover if they follow a common trend.

5.2. Revision of Data Collection Process:

The data collection process was split into two distinct phases. The first phase (Phase One) of the research design was an observational study performed by the researcher. In this phase the researcher was attempting to observe the treatment process by the Chiropractic students and so to identify factors which may affect participants' levels of general satisfaction. To minimise the effects of researcher bias a second observer was invited to observe the treatment process (Dyer, 1997). The results from both observers were recorded independently (Appendix K), without inter-observer interaction. This ensured minimal observer bias, therefore strengthening the results of the observation phase of the research (Dyer, 1997).

The second phase (Phase Two) in the research process was the distribution of a questionnaire (Appendix F) to the participants, at the same event as the observation phase, post-treatment and enquire as to whether they would be willing to fill out the self-administered questionnaire about treatment received on the particular day.

5.3. Discussion of Objective One (4.5.):

In the context of the discussion it should be noted that “Satisfaction” is acknowledged as multi-factorial concept comprising of many factors, scales and sub-scales (Sitzia and Wood, 1997; May 2000). The questionnaire was designed in such a way, that questions may have addressed more than one factor. This makes it very difficult to discuss every factor in isolation and how that factor may or may not have had an affect on general satisfaction levels when attempting to discuss the results. Thus for the sake of ease of discussion purposes, each section contains questions as they pertain to their scales and/or sub-scales.

The scales in the observer data sheet and participants’ questionnaire were as follows:

- General satisfaction.
- Knowledge and understanding of Chiropractic.
- Understanding of the assessment process.
- Chiropractic student conduct.

The Chiropractic student conduct scale was further sub-divided into the following four sub-scales:

- Student competence.
- Humaneness.
- Communication.
- Demeanour.

The first objective (Objective One) was to determine factors (scale and sub-subscales) commonly identified by observers to the treatment process. The data was collated into seven tables rating the factors from “highly significant items with and without kappa values” to “insignificant items” (Table 5.1a, 5.1b, 5.1c, 5.1d, 5.2, 5.3 and 5.4) as identified by the observers. Furthermore, the most significant scale(s) and sub-scale(s) were extracted and compared to available literature and for comparison to the results in Objective Two.

Tables 5.1a, b, c and d show a highly significant score between the items the two observers observed. This is strengthened by a low p-value score giving the observed items a high probability of being true and not recorded by chance (Bland, 1996; Swinscow, 1996; Wright, 1997; Campbell and Machin, 1999; Hinton, 2001). The tables were grouped according to the p-value, and then were ranked from highest to lowest, according to the Kappa values within each table (where a decreasing Kappa value indicated the scale(s) and /or sub-scale(s) questioned were of less significance).

To facilitate with the ease of discussion and to differentiate from the participants questions that were administered the listed results next to the scale and/or sub-scale(s) have been identified as “O1, O2,…ect.” as “Observers question one” and so on.

Table 5.1a Highly significant items ranked with Kappa values of 1:

Question no:	Question asked:	Percent agree:	Kappa value	P value:
2	Was the student courteous and respectful to the patient?	100%	1	P<0.001
3	Did the student explain the post-treatment complications? (e.g. Pain, stiffness)	100%	1	P<0.001
8	Ability of the student to put the patient at ease was evident?	100%	1	P<0.001
22	Friendliness, warmth and personal manner of the student treating was sincere?	100%	1	P<0.001
28	Skill and ability of the student was apparent?	100%	1	P<0.001

The scales and sub-scales that were found to be most prevalent in Table 5.1a were:

- General satisfaction (O2, O3, O8, O22 and O28 (weighting 5)).
- Humaneness (O2, O3 and O22 (weighting 3)).

Table 5.1b Highly significant items ranked with Kappa values above 0.6:

25	Understanding of the patients health problem was apparent?	97%	0.783	P<0.001
23	Explanations of treatment to the patient were clear?	96.5%	0.782	P<0.001
4	Did the student adequately explain the assessment process to the patient?	93.3%	0.760	P<0.001
9	Advice on ways to avoid injury and stay healthy was given to the patients?	90%	0.664	P<0.001
15	Did the student take time to explain self-help treatments for the patients injury?	96.5%	0.651	P<0.001

Scales and sub-scales in Table 5.1b that were evident were:

- General satisfaction (O25, O23, O4, O9 and O15 (weighting 5)).
- Competence (O25, O23, O4 and O15 (weighting 4)).

Table 5.1c Highly significant items ranked with Kappa values above 0.4:

12	Did the student seem concerned about the patients presenting complaint?	93%	0.474	P<0.002
21	Interest shown in the patient as a person was negligible?	93%	0.474	P<0.002

The following scale and sub-scales were documented in Table 5.1c:

- General satisfaction (O12 and O21 (weighting 2)).
- Humaneness (O12 and O21 (weighting 2)).
- Chiropractic student demeanour (O12 and O21 (weighting 2)).

Table 5.1d Highly significant items ranked with Kappa values above 0.3:

18	Was there chiropractic treatment available outside the chiropractic treatment facility when the patient was unable to leave the field of play?	90%	0.366	p=0.01

The following scale was elicited from Table 5.1d:

- General satisfaction (O18 (weighting 1)).

Table 5.2 Highly significant items without Kappa values:

Question no:	Question asked:	Percent agree:
1	Was the student suitably dressed in their role as a person who is responsible for the patients care?	100%
5	Did the student spend enough time treating the patient?	100%
10	Were the clinical staff friendly and courteous?	100%
11	Was the treatment facility easily accessible to the patients?	100%
14	The space for the treatment facility was adequate?	100%
17	Did the student take the patients religious concerns into account whilst treating?	100%
19	Did the student introduce themselves to the patients?	100%
20	The amount of privacy given to the patient was sufficient?	100%

The following scale and sub-scales were evident in Table 5.2:

- General satisfaction (O1, O5, O10, O11, O14, O17, O19, O20 (weighting 8)).
- Chiropractic student demeanour (O1, O5, O10, O11, O14, O17 and O19 (weighting 7)).
- Humaneness (O10, O11, O14, O17 and O19 (weighting 5)).

Table 5.3 Significant items without Kappa values:

Question no:	Question asked:	Percent agree:
6	Were sufficient resources available for the student to treat the patient effectively?	97%
27	Amount of time spent with the patient sufficient?	97%

General satisfaction was the only scale evident in Table 5.3 as significant (O6 and O27 (weighting 2)).

Table 5.4 Insignificant items with negligible Kappa values:

Question no:	Question asked:	Percent agree:	Kappa value:
7	Care received overall was not good?	90%	P=insignificant
24	Willingness to listen to what the patient had to say was not evident?	90%	P=insignificant
26	Answers given to the patients questions were not satisfactory?	83%	P=insignificant

Table 5.4 showed that general satisfaction was the only scale to be a common theme in the table (O7, O24 and O26 (weighting 3)).

In summary, the above tables (5.1a, b, c, d, 5.2 and 5.3) highlighted the following scale and sub-scales to be significant:

- General satisfaction.
- Humaneness.
- Competence.
- Chiropractic student demeanour.

General satisfaction was the only scale to be found as an insignificant scale (Table 5.4).

It should be noted that in the observational phase, the two observers could only observe the environment and the process of treatment (object), referring to a "Bottom-up" process of observation. However, it should be noted that the observers would use their own experiences and expectations, of the Chiropractic students and the treatment process, to judge the environment and the students' levels of competence and care. Therefore, using their own "Top-down" processing to influence the results of the observation. For this reason, it is imperative to study what the participants' report, so that a comparison can be drawn between what is observed, and by what the participants experience in an attempt to clarify which factors may influence general satisfaction levels. What

follows is the discussion about the participants reported findings (Objective Two: 5.4.)

The available literature discussing satisfaction will be discussed following Table 5.8 (page 95), so that all the factors affecting general satisfaction may be discussed together and not split across the chapter.

5.4. Discussion of Objective Two (4.6.):

The second objective (Objective Two) was to describe the participant demographics, their knowledge about Chiropractic and general satisfaction.

5.4.1. Participant Demographics and other Consultation Details:

Thirty participants took part in the study. The mean age was 35.6 years of age, with a standard deviation of 15.6 years, with the youngest participant being 17 years, and the oldest 64 years of age. The majority of the participants were white (90%. See Table 4.29) male (63.3%. See Figure 4.2) and South African (83.3%. See Table 4.30). This is dissimilar to the Mid-year population estimate as published by Statistics South Africa (2007) which indicated that the majority of the population are African males (39.26%) followed by African females (40.34%), White females (4.61%) and then White males (4.48%), with the remaining population constituting various other ethnic groups.

Furthermore the results of this study are in contrast to the only South African Chiropractic study to report patient demographics which found most of the patient's to be female (Drews, 1995). Reasons for seeing a difference in gender related issues could be that the data collection was taken at sports events in which males were the dominant participants. This also explains the mean average age being lower, as younger participants were more likely to take part in sporting events than their older

counterparts. Fewer females took part in the study, which may allude to the fact that very little privacy was afforded to those being treated at sports events. The issue of privacy was one area of concern to a participant. The effects of gender to general satisfaction levels in this research were not clear, and warrant further investigation.

Ninety percent of participants have English as their first language, and of those who had a second language, 75% speak Afrikaans, 19% speak English, and 6% speak isiZulu (See Tables 4.32 and 4.33). The answer to this result may be found in the inclusion criteria for the questionnaire. One of the major criteria for the participant was to be fluent in reading and understanding English in order to complete the questionnaire correctly and proficiently. For this reason, many participants were excluded from the research based on the inclusion criteria. Therefore, the results show a greater prevalence toward the first language spoken to be English. Furthermore, the sample size for this question was only 16 (n=16). The reason for this was that only 16 of the participants filled in the second language column. It can be assumed that the rest of the participants may have neglected to answer the question or did not speak a second language or did not understand the question).

Eighty percent reported that they were to be able to support themselves. Seventy point four percent of the participants were on a medical aid scheme. Most of the participants were not professional athletes and their occupations were listed in Table 4.31. The level at which they played the sport was shown in Figure 4.3 and they participated in sports mostly at a club level (46.7%).

The ranking of median response to which health professional the participants would consult for an injury were shown in Figure 4.5. Chiropractors, physiotherapists and GPs all ranked the highest with a median score of 4 (on a five point Likert Scale). Homeopaths ranked the

lowest with a median score of 1. This indicated that participants were more likely to seek medical care more often from Chiropractors, physiotherapists and GPs before seeking treatment from orthopaedic surgeons and homeopaths. However, these results should be interpreted carefully. It can be assumed that because Chiropractic students were treating the participants, they may have rated Chiropractors highly due to the Hawthorne effect. The Hawthorne effect may defined as: *"An experimental effect in the direction expected but not for the reason expected; i.e. a significant positive effect that turns out to have no causal basis in the theoretical motivation for the intervention, but is apparently due to the effect on the participants of knowing themselves to be studied in connection with the outcomes measured"* (Draper, 2005).

Figure 4.6 showed that neck complaints (36.7%) were the most common site of injury in participants, followed by lower back (33.3%) and thoracic spine (26.7%). This finding is congruent with what Chiropractors typically treat. In contrast these findings differed slightly from local and international findings. Low back complaints were the most common complaint, followed by neck complaints, and lastly extremity pathologies (Drews, 1995; Hurwitz *et al.*, 1998; Jackson, 2001; Cherkin *et al.,* 2002; Coulter *et al.,* 2002; Mootz *et al.,* 2005). According to the World Health Organisation (2005) a Chiropractor is defined as: "*A health care profession concerned with the diagnosis, treatment and prevention of disorders of the neuromusculoskeletal system and the effects of these disorders on general health. There is emphasis on manual techniques, including joint adjustment and/or manipulation with a particular focus on subluxations.*" This is concurrent with findings of Wardwell (1989), who noted that with patient's who were familiar with what Chiropractors do, believed them to treat neuromusculoskeletal conditions of the back, neck, hips, legs and the shoulders.

In total 43.3% (n=13) had injured the region of complaint before. This result is strengthened by Figure 4.7 which shows the median score for a variety of conditions with the lower the score the more frequently the participants would consult a Chiropractor for each condition. Shoulder and neck pain received a median score of 1, indicating that the majority of participants would always consult a Chiropractor for these conditions. Hip pain, whiplash, back pain, sciatica, low back pain and muscle strain received a median score of 2. This indicated that most participants would often consult a Chiropractor for these conditions, which in turn is re-enforced by the findings in Figure 4.6. Knee pain to headaches were indicated mostly as “sometimes”, and the other conditions including allergies and colic were mostly rated as never, which shows that participants are seeking the correct medical attention most of the time for the various complaints. The results do, however, show that the participants were not aware of the full extent of Chiropractor abilities and skills, as extremity pathologies, and other systemic pathologies, were not been believed to be treated by Chiropractors. This is congruent with Wardwell (1989) and Gaumer and Gemmen (2006), who indicate that Chiropractic patient’s are often not aware of the array of skills and abilities of Chiropractors, thus showing a lack of knowledge and understanding as to what Chiropractors do. This not only has an effect on the choice of practitioner, but may also have an effect on the expectations of treatment and ultimately the levels of satisfaction (Sawyer and Kassak, 1993; Jahng *et al.,* 2005; Gaumer and Gemmen, 2006).

5.4.2. Participant Knowledge about Chiropractic Treatment and Management:

Overall 63.3% had consulted with a Chiropractor before (n=19) and 85.7% of these were satisfied with the Chiropractic treatment they had received. This is congruent with findings in literature, with high satisfaction levels reported in Chiropractic studies investigating levels of satisfaction (Cherkin

and MacCornack, 1989; Sawyer *et al.,* 1993; Coulter *et al.,* 1994; Hurwitz, 1994; Carey *et al.,* 1995; Verhoef *et al.,* 1997; Gemmell *et al.,* 2001; Sigrell, 2002; Jahng *et al.,* 2004; Gaumer, 2006 and Haneline, 2006). However, patient's were less satisfied with Chiropractic care when they reported an adverse reaction to Chiropractic treatment as well as when their expectations were not met. These expectations included perceived improvement in their conditions with limited expense (whether on medical aid cover or in congruence with their lower incomes) (Sawyer and Kassak, 1993; Hurwitz *et al.,* 2004).

Table 4.36 showed the qualifications that participant's thought that Chiropractors received. Only 9.1% were correct. This result is rather confusing, due to the fact that in the letter of information, it clearly states the qualification received by Chiropractors after the completion of their studies. It is required by the Faculty of Health Sciences that the information be furnished on the letter of information. The discrepancy in the responses may be explained by the difference in what is understood by what a "Doctor of Chiropractic" is. Many overseas colleges qualify their graduates as "Doctors of Chiropractic". However this is not a doctorate, but rather an honourary title. Graduates in South Africa receive a Masters degree in Chiropractic, but are still referred to as Doctors in private practice, as a honourary title. For this reason, participants may have perceived the education levels to be higher than they actually are, as the results indicate in Table 4.36 (Vermaak, 2007).

Figure 4.7 shows the median score for a variety of conditions with the lower the score the more frequently the participants would consult a Chiropractor for each condition. Shoulder and neck pain received a median score of 1, indicating that the majority of participants would always consult a Chiropractor for these conditions. Hip pain, whiplash, back pain, sciatica, low back pain and muscle strain received a median score of 2, indicating that most participants would often consult a Chiropractor for

these conditions. Knee pain to headaches were mostly rated as "sometimes", and the other conditions including allergies and colic were mostly rated as never. These results are congruent with those found in Figure 4.6 and the results of both figures reflect what Chiropractors typically treat (Hurwitz *et al.*, 1998; Jackson, 2001; Cherkin *et al.,* 2002; Coulter *et al.,* 2002; Mootz *et al.,* 2005).

Table 4.37 showed that attitudes towards Chiropractic were generally very positive. Only 10.3% thought that Chiropractic did more harm than good and were uncomfortable with it. Eighty-six point seven percent thought that Chiropractors provided excellent care. The median rating of participants' knowledge and understanding of Chiropractic was 3 on a scale of 1 to 5. Thus most participants did not feel very well informed about Chiropractic. The findings were congruent with the findings of Wardwell (1989) who concluded that there are large gaps in the publics knowledge and awareness of Chiropractors, including the range of conditions that Chiropractors have the ability to treat.

5.4.3. Participant General Satisfaction:

The questions in Section C: Consultation Satisfaction of the questionnaire numbers 5 to 41 (The questions in this section of the questionnaire should have been numbered from 1 to 37). This was an over-sight by the researcher and was not corrected before being sent for final printing and distribution) were divided into four categories (scales), namely:

- General satisfaction.
- Knowledge and understanding.
- Understanding of the assessment process.
- Chiropractic student conduct, which was divided into four further sub-scales, as follows:
    - Competence.

- Humaneness.
- Communication
- Chiropractic student demeanour.

The questions in Table 5.5, 5.6 and 5.7 were grouped into their scales and their sub-scales, for the ease of interpreting the findings in each of the tables. This was done for ease of presenting the findings in each of the following tables. Furthermore, the questions are listed with each of the scales and /or sub-scales listed as “P5, P6…ect” as “Participant question five” and so on. The various items were then tabulated according to their significance from “highly significant” to “insignificant” as follows:

Table 5.5 Highly significant items according to the Participants:

Question no:	Question asked:	Percent agree:
5	Was the student suitably dressed in their role as a person who is responsible for your care?	100%
6	Was the student courteous and respectful to you as the patient?	100%
7	Did the student explain the post-treatment complications? (e.g. Pain, stiffness)	100%
9	Did you feel that you understood what was wrong?	100%
10	Were sufficient resources available for the student to treat you effectively?	100%
11	Did the student spend enough time treating you?	100%
12	Would you like to see the same student the next time you received treatment at this facility?	100%
14	Were the clinical staff friendly and courteous?	100%
15	Was the treatment facility easily accessible to you?	100%
17	Did the visit today address the problem(s)for which you attended this facility?	100%
19	The space for the treatment facility was adequate?	100%
21	Did the student respond to your questions and concerns?	100%

The following scale and sub-scale were found to be of significance in Table 5.5:

- General satisfaction (P5, P6, P7, P9, P10, P11, P12, P14, P15, P17, P19 and P21 (weighting 12)).
- Chiropractic student demeanour (P5, P6, P11, P14 and P21 (weighting 5)).

Table 5.6 Significant items according to the Participants:

Question no:	Question asked:	Percent agree:
8	Did the student adequately explain the assessment process?	96.7%
16	Did the student seem concerned about your presenting complaint?	96.7%
20	Did the student take time to explain self-help treatments for your injury?	90%

The following sub-scales were to found to be of significance in Table 5.6:

- General satisfaction (P8, P16 and P20 (weighting 3)).
- Competence (P8 and P20 (weighting 2)).
- Humaneness (P16 and P20 (weighting 2)).

The above results (Table 5.5 and 5.6) show that the following scales and sub-scales were significant to the participants:

- General satisfaction.
- Humaneness.
- Chiropractic student demeanour.
- Competence.

Table 5.7 Insignificant items according to the Participants:

Question no:	Question asked:	Percent agree:
24	Did the student introduce themselves to you?	86.7%
18	Were you advised about other treatment options after this event, by the student?	86.2%
13	Would you see a student at the Chiropractic Day Clinic, following your treatment here?	79.3%
22	Did the student take your religious concerns into account while treating you?	48.3%
23	Was there chiropractic treatment available outside the chiropractic treatment facility when you were unable to leave the field of play?	10%

The following sub-scales were found to be insignificant in Table 5.7:

- General satisfaction (P24, P18, P13, P22 and P23 (weighting 5)).
- Competence (P18 and P22 (weighting 2)).
- Communication (P24 and P18 (weighting 2)).
- Humaneness (P24 and P22 (weighting 2)).
- Chiropractic student demeanour (P24 and P22 (weighting 2)).

Interestingly, according to the results (Table 5.7), general satisfaction, competence, communication, humaneness and Chiropractic student demeanour were ranked as insignificant factors.

5.5. Summary and Discussion of the Results found in Objective One (O1-O28) and Objective Two (P5-P24):

The following table (Table 5.9) shows the weighting scores of the identifiable scales and sub-scales from Objective One and Two. The significant scales and sub-scales were given a positive weighting score and was seen to positively impact on general satisfaction levels, whereas the insignificant scales and sub-scales were given a negative weighting score and were seen to negatively impact on general satisfaction levels. Total scores were then calculated for each of the scales and sub-scales, by subtracting the negative weighting scores (insignificant scales and/or sub-scales) from the positive weighting scores (significant scales and /or sub-scales).

The results of Objective One and Two are presented below in the following table:

Table 5.8 Summary of the identifiable Scales and Sub-scales in Objective One (O1-O28) and Objective Two (P5-P24):

Significant scales and sub-scales (Positive weighting):			
Observers: Objective One:		**Participants: Objective Two:**	
General satisfaction:	23	General satisfaction:	15
Humaneness:	10	Humaneness:	2
Chiropractic student demeanour:	7	Chiropractic student demeanour:	5
Competence:	4	Competence:	2
Insignificant scales and sub-scales (Negative weighting):			
General satisfaction:	3	General satisfaction:	5
		Humaneness:	-2
		Chiropractic student demeanour:	-2
		Competence:	-2
		Communication:	-2
Total scores for the scales and sub-scales:			
General satisfaction:	20	General satisfaction:	10
Humaneness:	10	Humaneness:	0
Chiropractic student demeanour:	7	Chiropractic student demeanour:	3
Competence:	4	Competence:	0
		Communication:	-2

In summary, the two observers observed that the following scales and sub-scales (factors) affected the following positively by general satisfaction, Chiropractic student demeanour, humaneness and competence.

The participants showed that the following scales and sub-scales (factors) had a positive outcome on the following:

- General satisfaction.
- Chiropractic student demeanour.

It should be noted that the “0” scores indicate that humaneness and competence did not impact on the levels of general satisfaction positively or negatively.

Therefore they are not deemed as factors that significantly affect levels of general satisfaction.

Communication was scored negatively by the participants, indicating that communication has a negative affect on the participants perceived levels of general satisfaction. So it would seem that communication was shown to be a significantly different factor between the participants and the two observers. This is supported by the findings indicated in Table 4.41e (page 78).

This outcome could also have had an affect on humaneness, Chiropractic student demeanour and competence scores which were markedly lower. This is possible because the sub-scales that make up the scale of student conduct are all linked to one another. Therefore, a negative or low score in one sub-scale may have the same affect on another sub-scale within the scale. This idea supports that of Gaumer (2006) who stated that evidence about the factors underlying high levels of satisfaction are not consistent, and therefore not well understood.

Results from Table 5.8 shows evidence of the two main scales (factors) that were documented in Phase One and Phase Two of the research were general satisfaction and Chiropractic student conduct (student conduct includes the sub-scales of student demeanour, competence, humaneness and communication). However, the results indicated that only the student demeanour sub-scale had a positive outcome on levels of general satisfaction whereas humaneness and competence did not score adequately to affect general satisfaction levels. Interestingly, the communication sub-scale affected the levels of general satisfaction negatively.

Communication, according to available literature, is shown to have a significant positive outcome on the levels of perceived satisfaction (Gaumer, 2006; Ruiz-Moral *et al.,* 2006; Mast, 2007; Mast *et al.,* 2007). The way a physician acts in a non-verbal way affects patient outcomes, and positive non-verbal communication

are related to higher patient satisfaction levels (Mast, 2007). However, how these non-verbal communications are related to satisfaction levels also depends on the physician gender (Mast, 2007). It has been found that higher levels of satisfaction of care are recorded by female physicians, which may be due to their more caring communicative style (Mast *et al.,* 2007). The researcher did not take cognizance of non-verbal communication between the Chiropractic students and the participants within the study, and therefore could not compare to the findings in the literature. It is therefore recommended that future studies attempt to address the affect of both verbal and non-verbal communication in determining general satisfaction levels with respect to patient care.

Studies discussing the concept of satisfaction levels have consistently found factors (scales) that influence satisfaction to be rather inconsistent (Gaumer, 2006). However, many of the studies have shown that the patient's are often highly satisfied with the treatment received from their Chiropractors. What is evident from the literature is that many factors will detract or enhance the perceived levels of satisfaction (Sawyer and Kassak, 1993; May, 2000; Ford *et al.,* 2002; Evans *et al.,* 2003; Ford *et al.,* 2003 and Faldon, 2004; Jahng *et al.,* 2005; Gaumer and Gemmen, 2006).

Several studies have focused on patient satisfaction levels in the field of Chiropractic showing favourable results in high satisfaction levels (Cherkin and MacCornack, 1989; Sawyer *et al.,* 1993; Coulter *et al.,* 1994; Hurwitz, 1994; Carey *et al.,* 1995; Verhoef *et al.,* 1997; Gemmell *et al.,* 2001; Sigrell, 2002; Jahng *et al.,* 2004; Gaumer, 2006 and Haneline, 2006). However, patient's were less satisfied with Chiropractic care when they reported an adverse reaction to Chiropractic treatment and when their expectations were not met. These expectations included no perceived improvement in their conditions and financial concerns, such as no medical aid coverage and lower incomes (Sawyer and Kassak, 1993; Hurwitz *et al.,* 2004).

Chiropractic student conduct was the second scale to be of importance in the research, which included subscales of competence, humaneness, communication and student demeanour. This was re-enforced by the findings in Table 4.35, which also showed the scales of general satisfaction and student conduct to be the most prevalent. This is once again re-enforced by available literature, as Evans *et al.,* (2003) showed that friendliness, courtesy, concern and competency were seen as important factors when judging the Chiropractic students. Gaumer (2006) demonstrated that communication and empathy by the Chiropractor were important factors when determining satisfaction levels. A study by Gemmell and Hayes (2001) found that patient's were very satisfied when procedures were adequately explained to the patient's, indicating a positive outcome on communication and competence on behalf of the practitioner. Jahng *et al.,* (2005) alludes to the fact that satisfaction may well depend on practitioner competency, humaneness, technical quality of care and the medical costs incurred. Furthermore, Verhoef *et al.,* (1997) and Sawyer and Kassak (1993) showed a positive correlation between practitioner conduct, which comprised of competence and humaneness, and a high general satisfaction score. Sigrell (2002) highlighted the importance of communication between the patient's and the Chiropractors. Once again practitioner attitude, approach to patient's and communication were seen to have a correlation to satisfaction levels (Faldon, 2004). Finally May, (2001) highlighted three key areas influencing satisfaction levels. These were the practitioner's bedside manner and friendliness and sensitivity to the needs of the patient and finally the practitioner's professional approach. These three areas were included into the scale of Chiropractic student conduct.

Similarly, it can be seen from the above discussion that Chiropractic student conduct indeed does have a very important role to play in perceived general satisfaction levels of treatment received. The communication sub-scale was highlighted as an important factor in the literature (Sigrell, 2002), which was reflected in the findings of this research dissertation, however as a negative finding.

5.6. Discussion of Objective Three (4.7.):

The third Objective (Objective Three) was to determine any relationships between the various factors (participant demographics and knowledge versus general satisfaction scales) that were documented in Objective Two for the purposes of weighing up their contribution to the scale of general satisfaction.

The following factors were found to be statistically significant (Table 4.38 and 4.39) and to have an affect on the perceived general satisfaction levels (also see Appendix M for the Mann Whitney and Kruskal Wallis test results):

- *Satisfaction with prior treatment* (p=0.017)

  Participants in this study who previously had Chiropractic treatment were shown to have high general satisfaction levels in this study. This was originally highlighted by Wardell (1989) and is currently supported by Gaumer and Gemmen (2006).

- *General satisfaction* was found to be significantly affected by the type of sporting activity (p=0.038).

  This may have been because the sporting event (e.g. Durban Bouldering competition) was a novelty to the participants and this may have led to increased general satisfaction levels. Studies by Robbins (1996) and Bergh *et al.,* (1999) show that novelty in a perceived object is one such factor that may affect perceptual development. These results indicate that novelty in the perceived object, (viz. Chiropractic treatment), had a positive affect on perceptual development of Chiropractic, therefore leading to high levels of general satisfaction with Chiropractic care.

- *Understanding of the assessment process* (p=0.005) was found to be linked to the financial status. As was *Competence of the Chiropractic student* (p=0.011), *Communication* (p=0.006) and *Conduct of the Chiropractic student* (p=0.036).

Previous studies have shown there to be a fair amount of ambiguity concerning financial issues / status and if it relates to levels of satisfaction (Sawyer and Kassak, 1993). Sawyer and Kassak (1993) demonstrated that payments and insurance cover were unrelated to levels of satisfaction. However, Verhoef, Page and Waddell (1997) indicated that higher financial burdens negatively impinge on satisfaction levels. The results of this study indicate that there are higher general satisfaction levels related to the affordable delivery of care. The Chiropractic students treat sports men and women for no charge, as part of their training. Therefore, it could be assumed that participants would be satisfied with the levels of care, because it is a free service. No conclusive evidence is available to re-enforce this statement, therefore further research would need to be conducted.

5.7. Discussion of Objective Four (4.8.):

The fourth objective (Objective Four) was to compare the observational (O) scores to the participant (P) scores, to determine if any common themes could be identified. Table 4.41a, b, c, d, e, f and Table 5.8 show the results found in Objective One and Objective Two respectively.

The results from the Table 4.41a, b, c, d, e, and f showed that there were no significant factors between the participants and the two observers except for the sub-scale of communication (Table 4.41e p=0.082). However, in Table 5.8, both the observers and the participants identified two main scales. These where general satisfaction and Chiropractic student conduct. However, it should be noted that student conduct is comprised of four sub-scales namely, Chiropractic

student demeanour, humaneness, communication and Chiropractic student competence.

The observers scored the Chiropractic students more on their demeanour, humaneness and their competence (Table 5.8). This may reflect that the observers are familiar with the technical skills that the Chiropractic students require to adequately treat the participants, and are therefore judging the students according to their technical skills as opposed to their inter-personal skills.

On the other hand the participants also judged the Chiropractic students on their conduct. However, the communication sub-scale was rated as very poor, which may have affected the other sub-scales negatively, as previously discussed (See discussion point 5.5.). This result confirmed the results found in Tables 4.41e. The difference between the observers and the participants in terms of communication may lie in the difference between verbal and non-verbal communication between the students and the participants. Participants were in a far greater position to judge both verbal and non-verbal communication skills of the Chiropractic students, whereas the observers were hampered in judging non-verbal communicative skills, which may be responsible for the findings. The observers, in an attempt not to influence the treatment process were unable to judge the non-verbal communication adequately, because the Hawthorne effect could have skewed the results (Draper, 2005). As the students may have noted that they were being observed, they may have altered their approach to their patient's.

However, even with this difference, results still indicated that general satisfaction levels were high, which is congruent with the available literature (Cherkin and MacCornack, 1989; Sawyer *et al.,* 1993; Coulter *et al.,* 1994; Hurwitz, 1994; Carey *et al.,* 1995; Verhoef *et al.,* 1997; Gemmell *et al.,* 2001; Sigrell, 2002; Jahng *et al.,* 2004; Gaumer, 2006 and Haneline, 2006). Furthermore, literature supports the results found in this study, highlighting demeanour, competence,

humaneness and communication as important factors affecting levels of satisfaction (Sawyer and Kassak, 1993; Verhoef *et al.,* 1997; Gemmell and Hayes, 2001; Sigrell, 2002; Evans *et al.,* 2003; Jahng *et al.,* 2005; Gaumer, 2006; Ruiz-Moral *et al.,* 2006; Mast, 2007; Mast *et al.,* 2007).

This study indicates that there are high levels of general satisfaction with the Chiropractic care of sports men and women at sporting events. However, evidence from this research highlights that if one area would to be improved on, it would be that of Chiropractic student communication skills (verbal and non-verbal capacity) towards their patient's.

5.8. Summary of the Objectives in this Study:

5.8.1. The *First Objective*: To determine if there were any common factors identified by the observers to the treatment process:

Table 5.8 summarised the findings of Objective One. The following scales and sub-scales (factors) were identified as significant, to the two observers, in the order of score rating (weighting):

- General satisfaction (weighting=20).
- Humaneness (weighting=10).
- Chiropractic student demeanour (weighting=7).
- Student competence (weighting=4).

Therefore, the two scales identified in Objective One were general satisfaction and Chiropractic student conduct.

5.8.2. The *Second Objective*: To describe the participant demographics, their knowledge about Chiropractic and satisfaction:

Participant demographics revealed that majority of participants were white (90%), male (63.3%), South African (83.3%) with a mean age of 35.6 years of age. Ninety percent spoke English as their first language. Eighty percent of the participants were able to support themselves financially, and a further 70.4% were on a medical aid. Of the participants treated 36.7% had neck complaints, 33.3% had low back pain and 26.7% had thoracic spine complaints.

In terms of participant knowledge about Chiropractic treatment and management, 63.3 % of the participants had consulted a Chiropractor before of which 85.7% of participants were satisfied with the Chiropractic treatment they had received. Only 9.1% of participants knew the qualification Chiropractors received after graduation, however participants still displayed a very good attitude toward Chiropractic, with only 10.3% believing it did more harm than good. Most of the participants did not feel very well informed about Chiropractic, but an overwhelming percent (86.7%) believed Chiropractors provided excellent care.

The following scales and sub-scales (factors) identified in order of score rating (Table 5.8) were general satisfaction (weighting=10), Chiropractic student demeanour (weighting=3), humaneness (weighting=0), Chiropractic student competence (weighting=0) and communication (weighting=-2) for Objective Two mirroring Objective One.

5.8.3. The *Third Objective:* To determine any relationships between the various factors that were documented in Objective Two:

The results from Tables 4.38 and 4.39 revealed the following relationships between the various factors identified in Objective two:

- Satisfaction with prior treatment (p=0.017).

- General satisfaction was related to the type of sporting activity (p=0.038).
- Financial status was found to be related to the understanding the assessment process (p=0.005), Chiropractic student competence (p=0.011), communication (p=0.006) and Chiropractic student conduct (p=0.036).

5.8.4. The *Fourth Objective*: To determine any factors affecting satisfaction levels that could be identified by comparing and contrasting the results from the observational study and the self-administered questionnaire:

The results from Table 5.8 indicate that general satisfaction and Chiropractic student conduct were the two scales that were the common factors that were identified by both the participants and the two observers. However, it should be noted that the sub-scales within the scale of student conduct did differ slightly between the two groups. These differences were first noted in Tables 4.41a, b, c, d, e and f. Communication was shown to be the most significantly different sub-scale between the participants and the two observers, affecting the levels of general satisfaction negatively. These resultant findings were discussed in the summary and discussion of results in 5.5.

Chapter Six

Conclusion and Recommendations

6.1. Conclusion:

The two observers, in Phase One (Objective One), identified that general satisfaction and Chiropractic student conduct were the two main scales. Within the scale of student conduct, the sub-scales of humaneness, student demeanour and competence were of relevance to the observers.

Objective Two showed that majority of participants were white South African English speaking males, who were financially able to support themselves and had medical aid. Majority of the complaints treated by the Chiropractic students included neck, lower back and thoracic spine problems.

Furthermore, it was found that majority of the participants who had previously consulted a Chiropractor were mostly satisfied with the levels treatment. Albeit that participants did not know the level of qualification Chiropractors achieve, they still displayed a positive attitude towards Chiropractic, but did feel that that they were not very well informed about the Chiropractic profession. Still, a significant amount of participants believed Chiropractors to provide excellent care.

The satisfaction scores that the participants reported showed that general satisfaction and Chiropractic student conduct were the two scales that significantly impacted positively on satisfaction levels. However, the sub-scales of student demeanour (positive impact), humaneness (no impact), student competence (no impact) and communication (negative impact) were shown to be vary significantly within the scale of student conduct.

The third Objective showed a significant relationship between the following factors:

- Satisfaction with prior treatment.
- General satisfaction and the type of sporting activity.
- Financial status was found to be related to the understanding of the assessment process and Chiropractic student competence, communication and Chiropractic student conduct.

Finally, the results from Objective Four indicated that general satisfaction and Chiropractic student conduct were the two scales most commonly highlighted by both the participants and the two observers, indicating that they had a significant positive effect. However, the sub-scales within the scale of student conduct did differ slightly between the two groups, as communication was shown to be a significant factor by the participants, possibly negatively impacting on general satisfaction levels.

6.2. Recommendations:

A recommendation of this study is that the data collection sheets, namely the questionnaires, need to expand into different languages in order to capture more accurately the cultural aspects of care.

Although difficult, another recommendation to this study could be to study only one scale or sub-scale and how its role may affect the levels of general satisfaction in a non-clinic as well as the clinic settings.

Future studies should attempt to address the effect of verbal and non-verbal communication in determining general satisfaction levels concerning Chiropractic treatment in patient care. One mechanism could be the use of a video camera analysis to ensure that the evidence could be studied in-depth, so that all verbal and non-verbal aspects can be analysed.

An area of further study would be to address the affects of financial implications of paying for such a Chiropractic treatment would have on the levels of general satisfaction.

Furthermore, a recommendation to the study would be to increase the sample size to ensure that decreased levels of homogeneity are achieved.

A methodological recommendation may be to increase the number of observers from a variety of medical backgrounds, so as to eliminate agreement by chance with respect to the scales and sub-scales. It is however noted, that this type of approach would only be conducive if the practitioner-patient interaction were to be video analysed. This would be to eliminate the effects of the Hawthorne effect. The only limiting factor in achieving the above outcomes is that the environmental factors affecting general satisfaction would be sacrificed in order to optimally assess the other scales and sub-scales.

Lastly, practicing Chiropractors should be made aware of the implications of both verbal and non-verbal communication skills in their interactions with patients and their effect on treatment outcomes and patient satisfaction. Furthermore addressing the issues of the general public's opinion and knowledge of the profession of Chiropractic should not be ignored.

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Appendix A

INFORMED CONSENT FORM

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

DATE:

TITLE OF RESEARCH PROJECT:

A satisfaction survey of sporting competitors treated by chiropractic students at sporting events.

NAME OF SUPERVISOR:
Dr C. Korporaal (0832463562)

NAME OF RESEARCH STUDENT:
Grant Talmage 072 079 8113 / 031 204 2205 (D.U.T)

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

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

Please print in block letters:

Focus Group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

Appendix B

LETTER OF INFORMATION – FOCUS GROUP

Dear Participant,

I would like to thank you and welcome you into participating in the focus group of my study.

The title of my research project is:

A satisfaction survey of sporting competitors treated by chiropractic students at sporting events.

Focus group:

The reason for holding the focus group is to stimulate individuals thinking about the research topic and to encourage them to develop ideas about it (Salant and Dillman, 1994). Focus groups also encourages individuals other than those participating in the research process to support the research by increasing the relevance of the research (Salant and Dillman, 1994).

In order to understand the outcomes required for the focus group it is important to understand the Objectives set out for this study:

The ***first Objective*** is defined as data collection and documentation with respect to:

- Patient demographics
- Satisfaction questions responses
- Perception question responses
- Knowledge questions responses

The ***second Objective*** is defined as the interpretation of the data, to determine any relationships between the various factors documented in Objective one.

Therefore the research would require you as members of the focus group to assist in identifying as many pertinent factors as possible related to patient satisfaction with services rendered as well as factors that would influence the patients frame of reference in which the satisfaction is based.

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

If you have any further questions please feel free to contact me.

Grant Talmage (072 079 8113 / 031 204 2205 (D.U.T)

Appendix C

CONFIDENTIALITY STATEMENT – FOCUS GROUP

DECLARATION

IMPORTANT NOTICE:

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 will be made public in terms of a journal publication, which will in no way identify any participants of this research.
5. Once this form has been read and agreed to, please fill in the appropriate information below and sign to acknowledge agreement.

Member represents	Member's Name	Signature	Contact Details

Appendix D

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. Due respect to be given to every suggestion and comment by any member of the focus group and be debated with reference to the outcomes of the research.

3. The information gathered from this focus group by the researcher will be made public in terms of a mini dissertation and journal publication. The researcher will ensure that any participants in the focus group and research remain anonymous and confidential.

Member represents	Member's Name	Signature	Contact Details

Appendix E: Questionnaire:Focus group

Data collection form:

Section A: Current Demographic data:

Event :

Age: (years)

Gender: Male: 1
Female: 2

Ethnic Group: (Please cross the relevant block.)

Asian	1	
Black	2	
Coloured	3	
Indian	4	
White	5	
Other (specify)	6	

Occupation:

None	1
Manual labour	2
Non-manual labour	3
Retired	4

Financial status:

Financially Dependent	1
Financially Independent	2

Medical aid:

Yes	1
No	2

Languages spoken: (Please cross the relevant block)

		Predominant first language	Predominant second language
1	Afrikaans		
2	English		
3	isiNdebele		
4	isiSwazi		
5	XiTsonga		
6	seTswana		
7	TshiVenda		
8	isiXhosa		
9	isiZulu		
10	Sepedi		
11	SeSotho		
12	Other: (Please specify):		

Country of residence

Sporting level participation:

Social	1
Club level	2
National level	3
International level	4

Other sporting disciplines:

Cycling	1
Running	2
Rugby	3
Surfing	4
Tennis	5
Walking	6
Other: (please specify):	7

Section B: Consultation and consultation satisfaction.

Area treated at this consultation?

Has this area been injured before?

If yes, indicate the type of practitioner.

Indicate from least to most likely which of the following professionals you would generally consult following injury.

	Least likely				Most likely
Biokinetisist	1	2	3	4	5
Chiropractor	1	2	3	4	5
Coach	1	2	3	4	5
General practitioner	1	2	3	4	5
Homoeopath	1	2	3	4	5
Physiotherapist	1	2	3	4	5
Physical therapist	1	2	3	4	5
Orthopaedic surgeon	1	2	3	4	5
Other: (please specify):					
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

Please indicate your response to the question by marking either a YES or NO

Was the student suitably attired in their role as a person who is responsible for your care ?

YES	NO

Was the student courteous and respectful to you as the patient?	YES	NO
Did the student explain the post-treatment implications? (e.g. Pain, stiffness)	YES	NO
Did the student adequately explain the diagnosis?	YES	NO
Did the student adequately explain the assessment process?	YES	NO
Did you feel that you understood what was wrong?	YES	NO
Based on your diagnosis, did the student spend enough time treating you?	YES	NO
Would you like to see the same student the next time you receive treatment at this facility?	YES	NO
Would you see the student at the Chiropractic Day Clinic, following your treatment here?	YES	NO
Were the clinical staff were friendly and courteous?	YES	NO
Did the student seem concerned about your injury?	YES	NO
Did the visit today address all the problems for which you attended this facility?	YES	NO
Was the allocation of time for your treatment sufficient?	YES	NO

Please indicate your response to the question by marking either a YES or NO

Did the student explain the treatment process adequately?	YES	NO
Were you advised as regards other treatment options after this event by the student?	YES	NO
Did the student take time to explain self-help treatments for your injury ?	YES	NO
Did the student respond to your questions and concerns ?	YES	NO
Were sufficient resources available for the student to treat you effectively ?	YES	NO
Did the student take your ethical and/or religious concerns into account while treating you ?	YES	NO
Was the treatment facility easily accessible ?	YES	NO
Was there treatment provided outside the treatment facility when you were unable to leave the field of play?	YES	NO
The space for the treatment facility was adequate.	YES	NO

Please indicate you degree of agreement with the following statements by marking the number that most closely corresponds your level of agreement

	Agree most strongly						**Disagree most strongly**

The amount of privacy you were given was sufficient	1	2	3	4	5	6	7
Interest shown in you as a person was negligible	1	2	3	4	5	6	7
Friendliness, warmth and personal manner of the student who treated you was sincere	1	2	3	4	5	6	7
Explanations of treatment were clear	1	2	3	4	5	6	7
Willingness to listen to what you had to say was not evident	1	2	3	4	5	6	7
Understanding of your health problem was apparent	1	2	3	4	5	6	7
Answers given to your questions were not satisfactory	1	2	3	4	5	6	7
Amount of time spent with you was sufficient	1	2	3	4	5	6	7
Cost of care was affordable to you	1	2	3	4	5	6	7
Skill and ability of the student was apparent	1	2	3	4	5	6	7
Advice on ways to avoid injury and stay healthy was given	1	2	3	4	5	6	7
Ability of the student to put you at ease was perceived	1	2	3	4	5	6	7
Care received overall was not good	1	2	3	4	5	6	7

Please indicate your degree of agreement with the following statements by marking the number that most closely corresponds your level of agreement

	Agree most strongly						**Disagree most strongly**
Opportunities for follow-up treatment were given.	1	2	3	4	5	6	7

Follow-up treatment included referral to:

Biokinetisist	1	2	3	4	5	6	7
Chiropractor	1	2	3	4	5	6	7
General practitioner	1	2	3	4	5	6	7
Homoeopath	1	2	3	4	5	6	7
Physiotherapist	1	2	3	4	5	6	7
Physical therapist	1	2	3	4	5	6	7
Orthopaedic surgeon	1	2	3	4	5	6	7
Other: (please specify):							
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7

How would you rate your overall view of the chiropractic treatment offered at this facility?

High No

Understanding	1	2	3	4	5	understanding

Section C: Knowledge of Chiropractic

What qualification do chiropractors receive at the end of their training ?

Certificate	YES	NO
National Higher Certificate	YES	NO
National Diploma	YES	NO
Degree	YES	NO
Honours	YES	NO
Bachelor's Degree	YES	NO
Postgraduate Certificate	YES	NO
Masters Degree	YES	NO
PhD	YES	NO

Do Chiropractors treat the following conditions ?

	Always	Usually	Sometimes	Never
Allergies	1	2	3	4
Asthma	1	2	3	4
Bacterial infections	1	2	3	4
Depression	1	2	3	4
Diabetes mellitus	1	2	3	4
Disc herniation	1	2	3	4
General back pain	1	2	3	4
High blood pressure	1	2	3	4
Hip pain	1	2	3	4
Insomnia	1	2	3	4
Knee pain	1	2	3	4
Low back pain	1	2	3	4
Low blood pressure	1	2	3	4
Malnutrition	1	2	3	4
Migraine	1	2	3	4
Myalgia	1	2	3	4
Neck pain	1	2	3	4
Nerve root pain	1	2	3	4
Nervous tension	1	2	3	4
Obesity	1	2	3	4
Osteoarthritis	1	2	3	4
Peptic ulcer	1	2	3	4

Rheumatism	1	2	3	4
Sciatica	1	2	3	4
Shoulder pain	1	2	3	4
Tension type headache	1	2	3	4
Viral infections	1	2	3	4
Whiplash	1	2	3	4

Which one of the following statements best reflects your opinion of chiropractic?

	TRUE	FALSE
Chiropractic does more harm than good.		
Chiropractic is classified as a conservative therapy		
Chiropractic is quackery.		
Chiropractic provides excellent care for some musculoskeletal conditions.		
Chiropractors are highly competent.		
Chiropractors are well educated.		
Chiropractors do not work on the spine.		
Chiropractors work only on extremities (e.g. arms and legs).		
I am uncomfortable with it.		
Not informed enough to comment.		

Rate your understanding of chiropractic ?

High Understanding						No understanding
	1	2	3	4	5	

Appendix F: Post-focus group.
Data collection form:
Section A: Current Demographic data:

1 **Date:**	
2 **Event :**	
3 **Sporting activity at this event:**	

4 **Age:** _____ (years)

5 **Gender:**		
	Male:	1
	Female:	2

6 **Ethnic Group:** (Please cross the relevant block.)

Asian	1	
Black	2	
Coloured	3	
Indian	4	
White	5	
Other (specify)	6	

7 **Country of residence:**	
8 **Occupation:**	

9 **Financial status:**		
	Financially unable to support yourself	1
	Financially able to support yourself	2

10 **Medical aid:**		
	Yes	1
	No	2

11 **Languages spoken:** (Please cross the relevant block)

		Predominant first language	Predominant second language
1	Afrikaans		
2	English		
3	isiNdebele		
4	isiSwazi		
5	XiTsonga		
6	seTswana		
7	TshiVenda		
8	isiXhosa		
9	isiZulu		
10	Sepedi		
11	SeSotho		
12	Other: (Please specify):		

12 **Sporting level participation:**

Social	1
Club level	2
National level	3
International level	4

13 **Other sporting disciplines:**

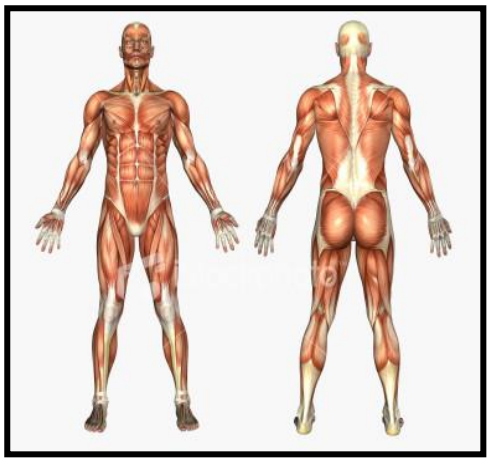
Canoeing	1
Cycling	2
Gyming	3
Hockey	4
Rugby	5
Soccer	6
Surfing	7
Swimming	8
Tennis	9
Walking / Running	10
Other: (please specify):	11

Section B: Consultation details.

1 **Generally speaking which of the following health professionals would you consult following injury.**

	Least likely				Most likely
Biokinetisist	1	2	3	4	5
Chiropractor	1	2	3	4	5
General practitioner	1	2	3	4	5
Homoeopath	1	2	3	4	5
Physiotherapist / Physical therapist	1	2	3	4	5
Orthopaedic surgeon	1	2	3	4	5
Other: (please specify):					
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

2 **Please indicate on the diagram, the region of complaint for which you sought treatment at this consultation**



3 **Have you injured the region of complaint before?** YES NO

4 **If yes, indicate the type of health professional consulted.**

Section C: Consultation satisfaction.

Please indicate your response to the question by marking either a YES or NO

5	Was the student suitably dressed in their role as a person who is responsible for your care ?	YES	NO
6	Was the student courteous and respectful to you as the patient?	YES	NO
7	Did the student explain the post-treatment complications? (e.g. Pain, stiffness)	YES	NO
8	Did the student adequately explain the assessment process?	YES	NO
9	Did you feel that you understood what was wrong?	YES	NO
10	Were sufficient resources available for the student to treat you effectively ?	YES	NO
11	Did the student spend enough time treating you?	YES	NO
12	Would you like to see the same student the next time you received treatment at this facility?	YES	NO
13	Would you see a student at the Chiropractic Day Clinic, following your treatment here?	YES	NO
14	Were the clinical staff friendly and courteous?	YES	NO
15	Was the treatment facility easily accessible ?	YES	NO
16	Did the student seem concerned about your presenting complaint?	YES	NO
17	Did the visit today address the problem(s) for which you attended this facility?	YES	NO
18	Were you advised about other treatment options after this event by the student?	YES	NO
19	The space for the treatment facility was adequate.	YES	NO
20	Did the student take time to explain self-help treatments for your injury ?	YES	NO
21	Did the student respond to your questions and concerns ?	YES	NO
22	Did the student take your religious concerns into account while treating you ?	YES	NO
23	Was there chiropractic treatment available outside the chiropractic treatment facility when you were unable to leave the field of play?	N/A	YES	NO
24	Did the student introduce themselves to you ?	YES	NO

25 What else would you like to have seen at the chiropractic treatment facility ?

Please indicate your degree of agreement with the following statements by marking the number that most closely corresponds your level of agreement

		Strongly Disagree						Strongly Agree
26	The amount of privacy you were given was sufficient	1	2	3	4	5	6	7
27	Interest shown in you as a person was negligible	1	2	3	4	5	6	7
28	Friendliness, warmth and personal manner of the student who treated you was sincere	1	2	3	4	5	6	7
29	Explanations of treatment were clear	1	2	3	4	5	6	7
30	Willingness to listen to what you had to say was not evident	1	2	3	4	5	6	7
31	Understanding of your health problem was apparent	1	2	3	4	5	6	7
32	Answers given to your questions were not satisfactory	1	2	3	4	5	6	7
33	Amount of time spent with you was sufficient	1	2	3	4	5	6	7
34	Cost of care was affordable to you	1	2	3	4	5	6	7
35	Skill and ability of the student was apparent	1	2	3	4	5	6	7
36	Advice on ways to avoid injury and stay healthy was given	1	2	3	4	5	6	7
37	Ability of the student to put you at ease	1	2	3	4	5	6	7
38	Care received overall was not good	1	2	3	4	5	6	7

Please indicate your degree of agreement with the following statements by marking the number that most closely corresponds your level of agreement

		Strongly Disagree						Strongly Agree
39	Opportunities for follow-up treatment were given.	1	2	3	4	5	6	7

40 Follow-up treatment included recommendations / suggestions to follow up with:

Biokinetisist	1	2	3	4	5	6	7
Chiropractor	1	2	3	4	5	6	7
General practitioner	1	2	3	4	5	6	7
Homoeopath	1	2	3	4	5	6	7
Physiotherapist / Physical therapist	1	2	3	4	5	6	7
Orthopaedic surgeon	1	2	3	4	5	6	7
Other: (please specify):							
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7

41 **How would you rate your overall view of the chiropractic treatment *offered at this facility*?**

Low Rating						High Rating
	1	2	3	4	5	

Section D: Knowledge of Chiropractic

1	**Have you ever consulted a chiropractor before ?**	YES	NO
2	**If yes, were you satisfied with the treatment?**	YES	NO

3 **What qualification do chiropractors receive at the end of their training ?**

Certificate	YES	NO
National Higher Certificate	YES	NO
National Diploma	YES	NO
Degree	YES	NO
Honours	YES	NO
Bachelor's Degree	YES	NO
Postgraduate Certificate	YES	NO
Masters Degree	YES	NO
PhD	YES	NO

Will you consult a chiropractor for the following ?

		Always	Often	Sometimes	Never
4	Allergies	1	2	3	4
5	Ankle pain	1	2	3	4
6	Asthma	1	2	3	4
7	Bacterial infections	1	2	3	4
8	Blood presure	1	2	3	4
9	Carpal tunnel syndrome	1	2	3	4
10	Colic	1	2	3	4
11	Constipation	1	2	3	4
12	Depression	1	2	3	4
13	Diabetes mellitus	1	2	3	4
14	Disc herniation	1	2	3	4
15	General back pain	1	2	3	4
16	Headache	1	2	3	4
17	Hip pain	1	2	3	4
18	Insomnia	1	2	3	4
19	Joint sprain	1	2	3	4
20	Knee pain	1	2	3	4
21	Low back pain	1	2	3	4
22	Malnutrition	1	2	3	4
23	Muscle strains / tear	1	2	3	4
24	Myalgia	1	2	3	4
25	Neck pain	1	2	3	4
26	Nervous tension	1	2	3	4
27	Obesity	1	2	3	4
28	Osteoarthritis	1	2	3	4
29	Peptic ulcer	1	2	3	4
30	Period pain	1	2	3	4
31	Plantar fasciitis	1	2	3	4
32	Rheumatism	1	2	3	4
33	Sciatica	1	2	3	4
34	Shoulder pain	1	2	3	4
35	Viral infections	1	2	3	4
36	Whiplash	1	2	3	4

Which one of the following statements best reflects your opinion of chiropractic?
Please indicate a TRUE or FALSE for each statement.

		TRUE	FALSE
37	Chiropractic does more harm than good.		
38	Chiropractic is classified as a conservative therapy		
39	Chiropractic is quackery.		
40	Chiropractic provides excellent care for some musculoskeletal conditions.		
41	Chiropractors are competent.		
42	Chiropractors are well educated.		
43	Chiropractors do not work on the spine.		
44	Chiropractors work only on extremities (e.g. arms and legs).		
45	I am uncomfortable with chiropractic.		
46	I am not informed enough to comment.		
47	Chiropractors provide excellent care		

48 **Rate your understanding and knowledge of chiropractic ?**

Low understanding & knowledge	1	2	3	4	5	High understanding & knowledge

Appendix G: Pilot test evaluation form

Pre-test Evaluation

1	What is your opinion of the subject presented in this questionnaire?	
	(Please mark the most appropriate box)	
	1.1	Extremely interesting
	1.2	Interesting
	1.3	Average
	1.4	Boring
	1.5	Very boring
2	Do you think the topics raised in this questionnaire were adequately covered?	
	2.1	Yes
	2.2	No
3	What is your opinion about the covering letter?	
	(Please mark one box only)	
	3.1	Very clear
	3.2	Clear
	3.3	Adequate
	3.4	Unclear
	3.5	Needs revising
4	How would you describe the instructions accompanying each of the questions?	
	(Please mark one box only)	
	4.1	Very clear
	4.2	Clear
	4.3	Adequate
	4.4	Unclear
	4.5	Needs revising
5	Do you think the questionnaire is too long?	
	5.1	Yes
	5.2	No
6	What is your opinion of the wording of the questionnaire?	
	(Please mark the appropriate box/es)	
	6.1	The meaning of **all questions** is absolutely clear
	6.2	The meaning of **most** questions is clear
	6.3	There is too much chiropractic/ medical jargon
	6.4	The questions will not be understood by lay persons
	6.5	The questionnaire needs to be revised because it is unclear

If you had any difficulty answering any question/s, please write the number/s of the question/s in the space below with a suggestion on how the question/s can be improved?

_____
_____
_____
_____

Thank you for your most valuable time in helping me with my research project.

Please be reminded that the topics discussed above are strictly confidential.

Appendix H

INFORMED CONSENT FORM

DATE:

TITLE OF RESEARCH PROJECT:
An exploratory mixed-methods study to determine factors which may affect satisfaction levels of patients outside of a clinical setting.

NAME OF SUPERVISOR:
Dr C. Korporaal (0832463562)

NAME OF RESEARCH STUDENT:
Grant Talmage 072 079 8113 / 031 204 2205 (D.U.T)

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

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

Please print in block letters:

Respondent: _____ Signature: _____

Witness Name: _____ Signature:_____

Appendix I
Letter of Information

Dear Participant,

I am a student currently pursuing my M.Tech: Chiropractic qualification at the Durban University of Technology.

Study Title:
An exploratory mixed-methods study to determine factors which may affect satisfaction levels of patients outside of a clinical setting.

Objective of Study:
Literature, over the years, has indicated that high satisfaction levels with a treatment process will have a positive outcome for the patient as well as the profession the patient has chosen to be treated by. However, there are many factors that must be taken into consideration, when determining whether treatment received is of a satisfactory level. The objective of this study is to determine which factor(s) would contribute to satisfaction levels after receiving Chiropractic treatment at the sports events. Completion of the questionnaire will allow the researcher to identify certain factors that may affect the outcomes of satisfaction levels of treatment. Following this process, suggestions and improvements will be made to the treatment process and facility, to ensure improved treatment and better quality of service to the general public. By completing this questionnaire, you, as the respondent have the opportunity to help identify these factors, and will provide a helping hand into the improvement of the Chiropractic care given in future sporting events.

Confidentiality:
As with all survey studies, the information you furnish will be treated with the utmost of confidence. Questionnaires will be returned to a Faculty Officer who is acting as the administrative support external to the research (Neutral party), this to attain anonymity.

Your time, opinion, and assistance with this project are invaluable and greatly appreciated.

Yours sincerely,

…….	……
Grant Talmage	Dr. Charmaine Korporaal
Research Student	Supervisor

Appendix J

Notice of research

A study of Satisfaction levels following the Chiropractic treatment given here today is being undertaken.

Those who are interested in participating in the study are kindly requested to speak to the staff and the students on hand, who will be more than willing to provide the necessary information and documentation about the study.

Thank you

Appendix K

Observational Data collection form

1. Was the student suitably dressed in their role as a person who is responsible for the patients care?		YES	NO
2. Was the student courteous and respectful to the patient?		YES	NO
3. Did the student explain the post-treatment complications? (e.g. Pain, stiffness)		YES	NO
4. Did the student adequately explain the assessment process to the patient?		YES	NO
5. Did the student spend enough time treating the patient?		YES	NO
6. Were sufficient resources available for the student to treat the patient effectively ?		YES	NO
7. Care received overall was not good?		YES	NO
8. Ability of the student to put the patient at ease was evident?		YES	NO
9. Advice on ways to avoid injury and stay healthy was given to the patients?		YES	NO
10. Were the clinical staff friendly and courteous?		YES	NO
11. Was the treatment facility easily accessible to the patients?		YES	NO
12. Did the student seem concerned about the patients presenting complaint?		YES	NO
13. Did the student advise the patient about other treatment options following this event?		YES	NO
14. The space for the treatment facility was adequate?		YES	NO
15. Did the student take time to explain self-help treatments for the patients injury?		YES	NO
16. Did the student respond to the patients questions and concerns?		YES	NO
17. Did the student take the patients religious concerns into account whilst treating?		YES	NO
18. Was there chiropractic treatment available outside the chiropractic treatment facility when the patient was unable to leave the field of play?	N/A	YES	NO
19. Did the student introduce themselves to the patients?		YES	NO
20. The amount of privacy given to the patient was sufficient?		YES	NO
21. Interest shown in the patient as a person was negligible?		YES	NO
22. Friendliness, warmth and personal manner of the student treating was sincere?		YES	NO
23. Explanations of treatment to the patient were clear?		YES	NO
24. Willingness to listen to what the patient had to say was not evident?		YES	NO
25. Understanding of the patients health problem was apparent?		YES	NO
26. Answers given to the patients questions were not satisfactory?		YES	NO
27. Amount of time spent with the patient sufficient?		YES	NO
28. Skill and ability of the student was apparent?		YES	NO

Appendix L

DVD of the Focus group meeting.

The DVD has been removed from the final dissertation to ensure confidentiality of the various participants in the Focus group.

If the DVD needs to be viewed, please contact:

Mrs Ireland

Department of Chiropractic

Appendix M

Mann Whitney and Kruskal-Wallis test results for Objective Three.

Test Statistics(b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Mann-Whitney U	95.500	84.000	93.000	101.000	91.000	103.500	103.500
Wilcoxon W	285.500	150.000	159.000	291.000	157.000	169.500	293.500
Z	-.388	-1.027	-.499	-.152	-.594	-.043	-.043
Asymp. Sig. (2-tailed)	.698	.304	.618	.879	.553	.965	.966
Exact Sig. [2*(1-tailed Sig.)]	.703(a)	.395(a)	.641(a)	.899(a)	.582(a)	.966(a)	.966(a)
a Not corrected for ties.							
b Grouping Variable: gender							

Test Statistics(a,b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Chi-Square	2.102	1.926	1.591	5.509	4.813	4.118	3.535
df	2	2	2	2	2	2	2
Asymp. Sig.	.350	.382	.451	.064	.090	.128	.171
a Kruskal Wallis Test							
b Grouping Variable: Ethnic group							

Test Statistics(a,b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Chi-Square	6.522	.465	3.118	5.425	2.477	4.844	4.861

df	2	2	2	2	2	2	2
Asymp. Sig.	.038	.792	.210	.066	.290	.089	.088
a Kruskal Wallis Test							
b Grouping Variable: Sport							

Test Statistics(a,b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Chi-Square	3.210	7.711	6.419	2.138	7.595	2.457	4.415
df	1	1	1	1	1	1	1
Asymp. Sig.	.073	.005	.011	.144	.006	.117	.036
a Kruskal Wallis Test							
b Grouping Variable: Financial status							

Test Statistics(b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Mann-Whitney U	65.000	71.500	74.000	61.500	67.500	66.000	67.000
Wilcoxon W	255.000	261.500	264.000	251.500	103.500	256.000	257.000
Z	-.585	-.270	-.107	-.776	-.461	-.535	-.478
Asymp. Sig. (2-tailed)	.558	.787	.915	.438	.645	.592	.633
Exact Sig. [2*(1-tailed Sig.)]	.585(a)	.815(a)	.938(a)	.449(a)	.658(a)	.621(a)	.658(a)
a Not corrected for ties.							
b Grouping Variable: Medical aid							

Test Statistics(a,b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Chi-Square	.602	1.192	.271	.000	2.805	.008	.313
df	1	1	1	1	1	1	1
Asymp. Sig.	.438	.275	.603	1.000	.094	.931	.576
a Kruskal Wallis Test							
b Grouping Variable: First language							

Test Statistics(a,b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Chi-Square	2.268	2.480	4.635	.983	1.806	.877	1.645
df	3	3	3	3	3	3	3
Asymp. Sig.	.519	.479	.201	.805	.614	.831	.649
a Kruskal Wallis Test							
b Grouping Variable: Level							

Test Statistics(b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Mann-Whitney U	98.500	68.500	78.000	107.500	81.500	102.000	94.500
Wilcoxon W	251.500	221.500	231.000	260.500	234.500	255.000	247.500
Z	-.503	-2.047	-1.370	-.126	-1.241	-.359	-.670
Asymp. Sig. (2-tailed)	.615	.041	.171	.899	.215	.720	.503
Exact Sig. [2*(1-tailed Sig.)]	.621(a)	.079(a)	.183(a)	.902(a)	.229(a)	.742(a)	.509(a)
a Not corrected for ties.							

b Grouping Variable: Have you injured the region of complaint before

Test Statistics(b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Mann-Whitney U	80.000	59.000	67.500	95.000	78.000	101.000	93.000
Wilcoxon W	146.000	125.000	133.500	285.000	144.000	291.000	159.000
Z	-1.056	-2.280	-1.604	-.412	-1.166	-.152	-.495
Asymp. Sig. (2-tailed)	.291	.023	.109	.680	.244	.879	.620
Exact Sig. [2*(1-tailed Sig.)]	.307(a)	.052(a)	.112(a)	.703(a)	.268(a)	.899(a)	.641(a)

A Not corrected for ties.

b Grouping Variable: d1consulted

Test Statistics(b)

	General satisfaction	Understanding of the assessment process	Competence of the student	Humaneness of the student	Communication between student and patient	Demeanour of the student	Conduct of the student
Mann-Whitney U	20.000	4.500	11.500	26.500	16.000	26.000	19.500
Wilcoxon W	26.000	10.500	17.500	197.500	22.000	32.000	25.500
Z	-.706	-2.851	-1.576	-.051	-1.135	-.101	-.755
Asymp. Sig. (2-tailed)	.480	.004	.115	.960	.257	.919	.450
Exact Sig. [2*(1-tailed Sig.)]	.534(a)	.017(a)	.125(a)	.962(a)	.307(a)	.962(a)	.471(a)

a Not corrected for ties.

b Grouping Variable: d2satisfied