Determinants of consumer satisfaction among chiropractic consumers in Macao

By

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Abstract

In Macao, where the health care industry is not strictly regulated, health care consumers have a lot of options when deciding where to seek treatment. Therefore, to any private health service provider, including chiropractors, knowing what keeps customers satisfied is vital for business success. The primary objective of this study is to examine the relative significance of a set of chosen variables in determining the satisfaction among chiropractic consumers. Although common sense suggests that satisfied consumers are loyal consumers, this study is intended to test this proposition as rigorously as possible. Therefore, the secondary objective of this study is to determine the strength and nature of the relationship between consumer satisfaction and consumer loyalty.

To accomplish the above objectives, an anonymous online survey was conducted on 354 chiropractic consumers recruited from chiropractic clinics in Macao. The findings revealed that the 11 chosen constructs could explain 74.6% of the variance in consumer satisfaction, and the relative importance of the constructs could be ranked in descending order: “Communication”, “Responsiveness”, “Perceived Value”, “Reputation”, “Perceived technical competence”, “Recoverability”, “Assurance”, “Tangibles”, “Waiting time”, “Reliability”, “Accessibility”. In addition, correlation analysis revealed that “Consumer satisfaction” and “consumer loyalty” were highly correlated with each other.

It is recommended that chiropractors consult the findings of the survey in order to enhance the satisfaction of their consumers by improving certain aspects of their operation, as well as applying marketing strategies to influence consumers’ perspective of their service quality. In regard to future research, it would be of interest to see studies that provided comparisons of the different perspectives between chiropractors and their patients.
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1.1 Background of the study

In Macao, where health care industry is not as strictly regulated as in most comparable developed societies, consumers can choose from a wide range of treatment options, from conventional Western medicine to all forms of alternative medicine, including chiropractic. The Macao health care industry, including both mainstream western medicine and a wide range of alternative medical services, predominately operates on the user-pays principle (fee for service), and an understanding of consumer satisfaction (or the lack of it) can translate into business success or business failure for any health care provider in this market. This reality is exacerbated by the intensity of competition among health care providers, who are mostly private practitioners and is particularly true for chiropractors, whose market niche is comparatively narrow as they are solely concerned with the diagnosis, treatment and prevention of disorders of the neuromusculoskeletal system (Benedetti & MacPhail, 2003).

Given high levels of competition, chiropractors need to be proactive in improving their services. The first step at improving service quality is to ensure that every aspect of the service is designed in ways that satisfy consumers (Lauer, 2004). Previous research findings note that when patients are more satisfied, they are more likely to return, resulting in better outcomes for both parties (Monnin & Perneger, 2002; Ng& Jeffery, 2003). However, a review of the medical services literature found that little research had been conducted into patient satisfaction in the field of chiropractic. In view of this lack of studies in the field, the primary objective of this study is to examine the determinants of satisfaction among chiropractic consumers in Macao.

The secondary objective of this study is to examine the nature and strength of the
relationship between consumer satisfaction and consumer loyalty among chiropractic consumers in Macao. There have been findings in the literature on the delivery of medical services suggest that the factors contributing to patient satisfaction differ from those that determine consumer loyalty (Johnson, 2002). This is important as although consumer loyalty is a well-known topic, it retains interest among researchers because of the definite benefits it can bring to a business (Shelton, 2000). Loyal consumers make repeated use of services and are an appreciable source of profit to a business organization. According to Attree (2001), the growth of a commercial organization can even be estimated by calculating the value of its lifetime consumers.

Loyal consumers can further contribute to the financial gain of an organization by providing free, but effective advertisement to the organization; this is made possible by their spreading positive word-of-mouth to potential consumers (Marino, 2003). Recommendation from former patients is one of the most effective forms of advertisement in the health care industry, where there might be considerable time intervals between treatment sessions for a given patient; under such circumstances, spreading positive word-of-mouth about a health care provider becomes more beneficial than the return of the same patient (Kerfoot, 2000). In addition, loyal consumers are not likely to defect to competitors; they also deter the entry of competitors (Gustafsson & Johnson, 2000). Whenever the delivery of service goes wrong, loyal consumers are more forgiving (Howard, 1999). Moreover, according to Johnson (2002), the cost of acquiring new consumers is seven times greater than maintaining existing ones, and thus loyal consumers represent a source of saving in marketing expenditure. Given the emotional bond that can develop between consumers and service providers, the former may be willing and can offer suggestions that may improve service quality (Lovelock, 2001).
Overall, the primary objective of this study is to examine the impact of a set of chosen variables on consumer satisfaction, and the secondary objective is to determine the nature and the strength of the relationship between consumer satisfaction and consumer loyalty.

1.2 Significance of the Study

This study is significant for both chiropractors and their consumers. Having a greater understanding of the relationship between the variables included in this study and the satisfaction of chiropractic consumer will allow chiropractors to address such variables properly in their practices, and achieve potentially higher consumer satisfaction. This is because research has amply demonstrated that satisfied patients will continue their patronage, adhere to recommendations and maintain a positive relationship with their health care provider (Serber, Cronan, & Walen, 2003). The ability to foster satisfaction among patients allows the individual health care provider to stay competitive in a rapidly changing health care industry (Slipman, 2004). Moreover, the findings of this study will provide further information with respect to the relationship between consumer satisfaction and consumer loyalty, something that can be considered as an important factor for the profitability of health care providers.

For the patient or consumer, the findings of this study promises improvement in the design of services, and thus higher satisfaction. In turn, there are studies suggesting that treatment outcomes are better among satisfied patients because they are the more likely to continue treatment and follow recommendations (Goldstein, Elliott, & Guccione, 2002). There are thus mutual benefits for providers and patients.
1.3 Conceptual Framework

To date there have been few studies in the medical services literature conducted on chiropractic treatment, and even less focusing specifically on the satisfaction of chiropractic consumers. Further, most countries where such studies have been conducted have a health care system that differs from that of Macao, and thus only a limited amount of those findings are relevant to this study. Outside of the context of chiropractic treatment, the existing literature that is most relevant to this study concerns patient satisfaction in hospital settings. Although, in Macao, chiropractic treatments are mainly provided by private practitioners in office settings, the findings from these studies can provide a degree of theoretical direction.

At the same time, it must be emphasised that the findings from the existing literature can be described as being inconsistent or sometimes contradictory (Adam et al., 2002; Braunsberger & Gates, 2002; Cleary et al., 2003; Duffy et al., 2001; Gourdji et al., 2003; Lee, 2003; Oliver, 1993; Shelton, 2000; Howard, 1999; Duncan et al., 1998; Donabedian, 1979). Further, there is a general lack of consensus on what constitutes patient satisfaction, although the concept that satisfaction is a multidimensional construct is widely accepted.

Throughout the years, numerous studies have addressed this topic, focusing on different dimensions of patient satisfaction. Thus Hulka et al. (1970; 1975) based a number of studies on the effect of three dimensions of patient satisfaction - convenience, patient characteristics and technical competence, while Risser (1975) also found that patient satisfaction could be influenced by three dimensions - technical skills, trusting relationships, and educational relationships. Later, Cleary and McNeil (1988) proposed that patient satisfaction could be affected by nine different dimensions - availability, technical proficiency, cost, physical environment, outcome of care, continuity of care, the art of care, accessibility, and convenience, while a list of eleven dimensions of patient...
satisfaction was suggested by Hall and Doman (1988) – facilities, access, resourcefulness, quality, proficiency, outcomes, continuity of care, psychosocial factor, humanness, bureaucracy, and finance.

Later researchers have added yet more dimensions. Delbanco (1992) came up with seven dimensions of patient satisfaction - communication, coordination of care, physical comfort, education, emotional support, involvement of family and friends, and respect for patient concerns. Lin et al. (2001) argued that patient satisfaction is influenced by ten different dimensions – staff courtesy, wait and treatment time, competency, perceived efficacy, physical environment, financial cost, accessibility, interest, convenience, and satisfaction with the last visit. In total, more than 45 different dimensions can be identified in the studies of patient satisfaction since the 1970s (Heritage & Douglas, 2006).

This literature on patient satisfaction in hospital settings, however, while containing problems, remains a useful starting-point and source to identify dimensions that may determine consumer satisfaction among chiropractic consumers. At the same time, when deciding what dimensions should be included in this study, the similarities and differences between the context of the given setting, chiropractors’ offices, and those in the existing literature, mostly hospitals, need to be given full consideration. Although chiropractors’ offices and hospitals are both facilities where health-related services are provided, research findings at hospitals often involve participants, who are inpatients, whose physical conditions and immediate environments are significantly different from those of chiropractic consumers.

Given the relative lack of state regulation of health-related services in Macao, chiropractic consumers, as well as other health care consumers, while making purchasing decisions, often go through the same thought processes as they would when contemplating the purchases of any other services. At the pre-purchase stage, when chiropractic
consumers are trying to decide where to seek treatment, they often make their decisions according to the “Reputation”, “Accessibility”, “Tangibles”, and the “Perceived Technical Competence” of the chiropractor. When contemplating a repeat purchase from a chiropractor, “Perceived value”, “Communication”, “Assurance”, “Responsiveness”, “Reliability”, “Recoverability”, and “Waiting time” are the deciding factors that readily come to mind of a consumer.

Taking into account the lack of state regulation, and its resemblance to other commercial services in Macao, a set of dimensions have been chosen to provide the theoretical direction of this study: “Perceived value”, “Communication”, “Perceived Technical competence”, “Accessibility”, “Tangibles”, “Assurance”, “Responsiveness”, “Reliability”, “Recoverability”, “Waiting time” and “Reputation”. The theoretical model demonstrating hypothesized relationships between variables is presented in figure 1.

Figure 1. Hypothesized relationship between variables
1.4 Assumption and Limitations

Assumptions

1. Participants were chiropractic consumers. (This was ensured by recruiting participants exclusively from chiropractors’ offices)

2. Participants were capable of understanding and completing the survey accurately. (This was ensured by the fact that, prior to completing the online survey, participants needed to possess a certain level of literary skill to understand the information letter disseminated in the chiropractors’ offices. In addition, the survey items were adopted from previous researches where they had been validated. Therefore, participants should not have had any difficulties in understanding and completing the survey.)

3. Participants were capable to report their attitudes and perceptions accurately. (This was ensured by offering participants the option of completing the survey in the language that they are most familiar, either English or Chinese.)

4. Participants offered honest responses when completing the survey. (This was ensured by the anonymous nature of the online survey.)

Limitations

1. The findings of this study are based on the responses given by participants who were chiropractic consumers residing in Macao. It could be argued that the applicability of the findings therefore are limited, although there is no reason to believe that Macao chiropractic consumers differ from those elsewhere.

2. No differentiation was attempted between participants who sought chiropractic treatment for different kinds of injuries.

3. No differentiation among participants was attempted in terms of their length of experience with chiropractic treatment. It could be that inexperienced
chiropractic consumers could have different views on chiropractic treatment as compared with experienced ones.

4. No differentiation was attempted among participants with different socio-demographic profiles. This could be an influential factor on findings, especially in terms of their ability to meet the expenses of treatment.

1.5 Nature of the study

This study employed a quantitative survey research methodology. Multiple Regression analysis was applied to determine the impact of the 11 independent variables ("Perceived value", "Communication", "Perceived Technical competence", "Accessibility", "Tangibles", "Assurance", "Responsiveness", "Reliability", "Recoverability", "Perceived waiting time", "Reputation", and "consumer satisfaction") on the dependent variable, "consumer satisfaction". The nature and strength of the relationship between "consumer loyalty" and "consumer satisfaction", as well as that with the 11 independent variables, were determined by correlation analysis.

1.6 Organization of the study

The present chapter has attempted to give a general overview of the study set out in this dissertation. The next chapter, chapter two, the literature review, presents a detailed overview of findings from the relevant literature on medical services with respect to "Perceived value", "Communication", "Technical competence", "Accessibility", "Tangibles", "Assurance", "Responsiveness", "Reliability", "Recoverability", "Perceived Waiting-time", "Reputation", "consumer satisfaction", and "consumer loyalty". It explains how this leads on to the hypotheses developed for this study.
Chapter three, methodology, provides details regarding the when, where, how, and with whom the study was conducted, along with details about the statistical techniques employed in the study. Chapter four, findings and analyses, presents the findings from the research undertaken in this study. It also presents the results of statistical analyses conducted in order to fulfill the main objectives of this study and to test the hypotheses stated in the earlier chapter.

Chapter five, the discussion, seeks to relate the findings of this study and to those presented in the relevant literature examined in chapter two. In chapter six, the conclusion, relates the findings of this study to its objectives, followed by suggestions for further study.

1.7 Research Questions

The Purpose of this study was to examine how the 11 constructs - “Perceived value”, “Communication”, “Technical competence”, “Accessibility”, “Tangibles”, “Assurance”, “Responsiveness”, “Reliability”, “Recoverability”, “Waiting time” and “Reputation” – can be related to “Consumer satisfaction” among consumers purchasing chiropractic treatment, and how “Consumer satisfaction” is related to “Consumer loyalty”. The literature suggests that these variables affect patient satisfaction (Abramowitz et al., 1987; Sullivan, 2003; Duncan et al., 1998; Malat, 2001; Lee, 2003; Gourdie et al., 2003; Shelton, 2000; Cleary et al., 2003; Hall & Doman, 1988; Street et al., 2007; Zeithaml, 1988; Arnould et al., 2004; Pascoe, 1983), but there has been no research that examines how these eleven variables affect patient satisfaction in the field of chiropractic treatment. Based on a review of the literature, the following research questions were developed.

1. How well do these 11 constructs predict satisfaction levels among chiropractic
consumers in Macao?

2. Does a relationship exist between consumer satisfaction and consumer loyalty among chiropractic consumers in Macao? If it does, what is the nature and the strength of this relationship?

3. What is the nature and the strength of the relationship between each of the eleven constructs when the influence of “consumer satisfaction” is being statistically controlled for by applying partial correlation?

1.8 Proposed Hypotheses

Hypothesis 1: Communication from chiropractors has a positive effect on their consumers’ level of satisfaction.

Hypothesis 2: The perceived value of chiropractic treatment has a positive effect on consumers’ level of satisfaction.

Hypothesis 3: The tangible aspects of chiropractic offices have positive effect on consumers’ level of satisfaction.

Hypothesis 4: The accessibility to chiropractic care has a positive effect on consumers’ level of satisfaction.

Hypothesis 5: Assurance in the context of chiropractic care has a positive effect on the satisfaction among chiropractic consumers.

Hypothesis 6: Recoverability of chiropractic care has a positive effect on satisfaction among chiropractic consumers.

Hypothesis 7: Chiropractors’ responsiveness has a positive effect on satisfaction among chiropractic consumers.

Hypothesis 8: Waiting time for chiropractic care has a negative effect on consumers’ level of satisfaction.
Hypothesis 9: Chiropractors’ reputations have a positive effect on their consumers’ level of satisfaction.

Hypothesis 10: Chiropractors’ reliability has a positive effect on their consumers’ level of satisfaction.

Hypothesis 11: The perceived technical competence of chiropractors has a positive effect on the satisfaction level among consumers.

Hypothesis 12: A positive relationship exists between satisfaction and loyalty among chiropractic consumer.
Chapter 2 - Literature Review

2.1 Patient satisfaction

In the literature on the health care sector, patient satisfaction is a topic that has been subjected to frequent discussion and debate (Locker & Dunst, 1978; Pascoe, 1983; Gilleard & Reed, 1998; Wagner & Bear, 2009). As pointed out by Wagner and Bear (2009), assessments of patient satisfaction are related to the following objectives: comparison between different health care programs, evaluation of service quality, and the identification of aspects of health care services in need of improvement. Up until now, apart from agreement on the multi-dimensional nature of “patient satisfaction”, there is a general lack of consensus among researchers on how it should be defined conceptually and operationally. It may be useful to demonstrate this more fully.

For instance, Lochman (1983) proposes that patient satisfaction is made up of variables that can be categorized into two different groups; the first group includes duration of care, accessibility of care, and cost of care, while the second includes the perceived technical competence of care providers, and various aspects associated with communication between patients and care providers. Conversely, in a study conducted by DiMatteo, Hays, and Prince (1986), patient satisfaction was conceptualized as having three dimensions: emotional exchange, informational exchange, and trust between patient and physician. Other studies addressing this topic have also developed their own and different dimensions of patient satisfaction. Thus Hulka et al. (1970; 1975) based a number of studies on the effect of three dimensions of patient satisfaction - convenience, patients’ characteristics and technical competence, while Risser (1975) also found that patient satisfaction could be influenced by three slightly different dimensions – technical skills, trusting relationships, and educational relationships. Later, Cleary and McNeil (1988) proposed that patient satisfaction could be affected by nine different
dimensions – availability, technical proficiency, cost, physical environment, outcome of care, continuity of care, the art of care, accessibility, and convenience, while a list of 11 dimensions of patient satisfaction was suggested by Hall and Doman (1988) – facilities, access, resourcefulness, quality, proficiency, outcomes, continuity of care, psychosocial factor, humanness, bureaucracy, and finance.

There are yet more variations on the theme. Delbanco (1992) came up with seven dimensions of patient satisfaction- communication, coordination of care, physical comfort, education, emotional support, involvement of family and friends, and respect for patients’ concerns. Lin et al. (2001) argued that patient satisfaction is influenced by 10 different dimensions – staff courtesy, wait and treatment time, competency, perceived efficacy, physical environment, financial cost, accessibility, interest, convenience, and satisfaction with the last visit. In total, more than 45 different dimensions can be identified in the studies of patient satisfaction since the 1970s (Heritage & Douglas, 2006). Fitzpatrick (1991) argues that the lack of consensus regarding the concept of patient satisfaction is due to the fact that satisfaction is a “common sense” concept the exact meaning of which is hard to define if not impossible, while Arthur and Clifford (2004) attribute the variability to the relative nature of the concept, patient satisfaction, when a large variation in standards exists among individuals. Even so, a few researchers have tried to define patient satisfaction and their definitions are frequently cited in the literature. Those proposed by Risser (1975), Linder-Pelz (1982), Pascoe (1983), Ware et al. (1983), Donabedian (1988), Lochoro (2004), Wolosin (2005), and Mrayyan (2006) are reviewed below.

Over time, the definition of patient satisfaction has evolved from being mainly theoretical to increasingly technical. Risser (1975) defined patient satisfaction as the
extent of congruency between patients’ expectations of ideal care and their perception of the care they actually receive. Linder-Pelz (1982) considered patient satisfaction to be a function of patients’ evaluation of health care based on their preconceived notions of attributes that health care should possess. Pascoe (1983), coming from a marketing perspective, defined patient satisfaction as health service recipients’ responses, based on their past experiences and social norms, to various aspects of their service experience. Donabedian (1988) suggested that patient satisfaction is the patient’s quality assessment of the structure, interpersonal process and the consequences of care.

More recently, Lochoro (2004) has elaborated on the definition proposed by Risser and suggests that the degree of patient satisfaction or dissatisfaction reflects the gap between patient’s expectations and patient’s perception of a health service, while Wolosin (2005) considers patient satisfaction as a quality indicator of a health service. He argues that patient experiences play a determining role in patient satisfaction, and satisfied patients are the results when experience surpasses expectation. Mrayyan (2006) incorporates operational components into the concept of patient satisfaction, defining this as the extent to which patient’s expectations with respect to the technical quality, access, outcome, structure, and art of care are met by the health care provider.

2.2 Measuring Patient satisfaction- The SERVQUAL methodology

The SERVQUAL methodology is one of most commonly employed approaches by companies, organizations, and researchers for measuring consumer satisfaction. The approach was developed by Parasuraman, Zeithaml and Berry (1991). The essence of their theory is that when a consumer’s perceptions of a service is exactly the same as their expectations, they will become fully satisfied. The degree of satisfaction as experienced by consumers will depend on the discrepancy between their expectation and their
perceptions of the service quality. According to Parasuraman, Zeithaml and Berry (1991), service quality is a construct constituted of five different dimensions: tangibles (the physical appearance of the staffs and facilities of a service-providing organization); reliability (the ability of the service provider to deliver what they promised); responsiveness (the willingness of a service provider to meet consumers’ needs in a timely and substantive manner); assurance (the ability of a service provider to display the possession of knowledge and courtesy to deliver the service successfully); empathy (the ability of a service provider to understand consumers’ needs and provide personalized service).

The original test consisted of 22 attributes addressing the five different dimensions of service quality as described previously. Respondents’ expectations and perceptions were quantified using a seven-point Likert scale across the 22 attributes. The perceived service quality is reflected by the gap between the respondents’ expectations and perceptions. Finally, respondents were instructed to rate the relative importance of the five given dimensions in order to distribute the one hundred points across them.

The SERVQUAL methodology has been applied many times over the years to assess patient satisfaction. For instance, Scardina (1994) adapted the SERVQUAL to evaluate patient satisfaction by assessing both patient perceptions and expectations of the service quality. Their rationale was that patient satisfaction is positively correlated with service quality. In another study, Pakdil and Harwood (2005) also applied the SERVQUAL methodology to assess patient satisfaction in a hospital-based preoperative assessment clinic. Lastly, in one of the recent studies on patient satisfaction, Al-Borie and Damanhouri (2013) applied the SERVQUAL methodology to compare patient satisfaction with service quality in Saudi Arabian public and private sector hospitals. Although the SERVQUAL methodology has been widely adopted by academic researches and business
researches of various disciplines, including health care, it has been subjected to criticism over the years.

2.3 Criticisms of the SERVQUAL approach

- Llosa, Chandon, and Orsingher (1998) argued that some service industries may have more or less than five dimensions of service, and the application of the SERVQUAL model may not be suitable for all service industries.

- Hussey (1999) suggested that respondents’ prior experiences with a service could polarize the responses obtained by the SERVQUAL approach. For instance, respondents who had a disappointing experience with a service will tend to overstate their expectations, while those who had a satisfying experience will tend to understate their expectations.

- Kim, Kim, and Yun (2003) reported that the SERVQUAL scale did not possess an adequate amount of test-retest reliability. When administering the test to the same group of subjects over different periods of time, the “perception” scores were found to vary across settings, while the “expectation” scores remained fairly stable.

- Yoon and Ekinci (2003) argued that the SERVQUAL approach is time-consuming, as well as boring for respondents, since it requires respondents to go through the questions twice.

- Badri, Abdulla, and Al-Madani (2005) pointed out, in the SERVQUAL questionnaire, some of the dimensions contain only positively worded statements or only negatively worded statements. They argued that this kind of question design is likely to elicit biased responses.
2.4 Patient satisfaction and chiropractic care in the literature

Within this large volume of literature directed toward patient satisfaction to health care in general, studies focusing on patient satisfaction in the field of chiropractic care only began to emerge from the late 1980s (Cherkin & MacCornack, 1989; Meade, Dyer, Browne, Townsend, & Frank, 1990; Sawyer & Kassak, 1993; Carey, Garrett, Jackman, McGlaughlin, Fryer, & Smucker, 1995; Verhoef, Page, & Waddell, 1997). Studies conducted since the year 2000 have tried to examine the different dimensions of patient satisfaction in chiropractic care across different settings (Hass, & Goodwin, 2000; Coulter, Hurwitz, Spitzer, Genovese, & Hays, 2000; Hawk, Long, & Boulanger, 2001; Nyiendo, Hass, Goldberg, & Sexton, 2001; Gemmell & Hayes, 2001; Licciardone & Herron, 2001; Hertzman-Miller, Morgenstern, Hurwitz, Yu, Adams, & Harber, 2002; Rowell & Polipnick, 2008; Beattie, Nelson, & Murphy, 2011).

In general, results from these studies tend to support the proposition that satisfaction levels are high among chiropractic patients. However, due to the design of individual studies, the validity of these results can be questionable; for instance, the studies conducted by Sawyer and Kassak (1993), Verhoef et al. (1997), and Gemmell and Hayes (2001) all reported high patient satisfaction levels, but as they only included chiropractic patients, their results are open to interpretation.

Nevertheless, a few studies have implemented methodologies with improved scientific soundness (Meade et al., 1990; Cherkin et al., 1998; Hertzman-Miller et al., 2002). These involved randomly assigned participants receiving either chiropractic care or other forms of health care. In one of these studies, Meade et al. (1990) found that when comparing satisfaction levels among patients randomly assigned to either chiropractic care or physical therapy for lower back pain treatment, chiropractic patients were more satisfied than their counterparts. Similar findings were reported in another
study of lower back pain treatment where participants were randomly assigned to chiropractors or medical doctors (Hertzman-Miller et al., 2002). Even so, evidence was found to be inconsistent in a randomized study conducted by Cherkin et al. (1998); patients assigned to chiropractic treatment did not differ from those assigned to physical therapy in terms of satisfaction level.

Of the studies on this topic, most reported higher satisfaction levels among patients receiving chiropractic care as opposed to those receiving other treatments (Cherkin et al., 1989; Carey et al., 1995; Nyiendo et al., 2000; Nyiendo et al., 2001). Contradictory results have been obtained in one case, where respondents favored osteopathic physicians over chiropractors (Licciardone & Herron, 2001), but, given that all respondents in the studies had already developed their own preference for a health care provider type before responding to the surveys, any attitudes held may not provide valid comparisons between chiropractors and other health care providers. In summary, the research, although slightly inconclusive, tends to suggest that satisfaction levels are higher among chiropractic patients as compared with other health care providers. This give rise to the next question – what aspects or dimensions of chiropractic care bring about greater satisfaction as compared to other forms of health care.

2.5 Determinants of satisfaction among chiropractic patients in the literature

In a literature review conducted by Solomon, Bates, Panush, and Katz (1997) on patient satisfaction with respect to patients with rheumatic and musculoskeletal conditions across different health care provider types, they concluded that patients with low back pain are more satisfied when treated by chiropractors even though the treatments offered by general physicians are just as effective and less costly. Obviously, some other aspects or dimensions of chiropractic care must account for this higher level of satisfaction. A
number of researchers have proposed explanations deriving from the general literature on patient satisfaction.

Deyo (1983) suggested that patient perception alone could account for differences in satisfaction levels. This was because of greater perceived effectiveness and better perceived outcomes among chiropractic patients. Taking into account possible factors other than patient perception, Coulehan (1985) pointed to the possibility of better service quality (e.g., better communication skills, more convenient services) offered by chiropractors, while Bass (1986) suggested that the key element might lie in the process of chiropractic care, which is largely non-pharmaceutical and preventive in essence. These are among only a few studies that have attempted to reveal the underlying factors that give rise to high satisfaction levels among chiropractic patients, and the overall findings fail to provide a coherent picture on the issue.

Thus, in the studies conducted by Sawyer et al. (1993) and Verhoef et al. (1997), they found a direct relationship between satisfaction level and perceived treatment outcomes such as improved pain management and functional ability. The influence of patients’ perception on satisfaction levels has been further supported by findings documented by Hertzman-Miller et al. (2002). These were that patient satisfaction levels were directly related to patients’ perception of the effectiveness of the treatment, i.e., the higher the patient’s perceived effectiveness of the treatment, the higher the satisfaction level. However, such a relationship was not found in another study involved chiropractic patients and medical patients receiving treatments for chronic lower back pain (Nyiendo et al., 2000). There remains scope for examining other factors bearing on patient satisfaction.

Thus, as well as studies on the importance of perceived treatment outcome and effectiveness, others have examined the relationship between financial issues and satisfaction among chiropractic patients. However, Sawyer et al. (1993) and
Hertzman-Miller et al. (2002) reported that patient satisfaction level was unrelated to financial issues such as insurance coverage and treatment cost. Further, Verhoef et al. (1997) found satisfaction levels to be negatively related to the financial cost for patients.

Other factors have also been raised. Communication and quality of explanation were found to be positively related to patient satisfaction by Verhoef et al. (1997), and Hertzman-Miller et al. (2002). Such findings were also supported by those of Licciardone and Herron (2001); these two studies reported that the intensity of advice offered by a care provider and the length of a visit are both positively associated with patient satisfaction levels. In addition to the length of visit, Verhoef et al. (1997) also reported a positive relationship between the number of visits and the satisfaction level. This also correlated with the findings of Licciardone and Herron (2001). Both studies also found a positive relationship between satisfaction and access to care, with positive correlations to such factors as convenience of the location, convenience of the scheduling, travel time, and waiting time (Verhoef et al., 1997; Licciardone & Herron, 2001). This suggests that all such factors require examination in this study.

2.6 Variables employed in identifying determinants of satisfaction among chiropractic patients

Given that a lot of the variables examined in the existing literature were pertinent in hospital settings, which may be irrelevant in a office setting such as that of the chiropractor’s office, the following 11 variables were chosen to be examined in this study based on their relevance to the context of this study – chiropractic clinics.
2.6.1 Communication

As noted above, communication between patients and physicians as well as other health care providers has been found to be an important factor in determining patient satisfaction (Schneider & Tucker, 1992; Mead & Brower, 2000; Linghang, 2007). A study conducted by Levinson, Stiles, Inui, and Engle (1996) found that one of the most frequent complaints among dissatisfied patients was the way their physicians communicated, and a considerable number of physicians reported that the major source of frustration came from the communication with patients who were either demanding or controlling.

Weiss and Lonnquist (2006) point out a number of factors which contribute to dissatisfaction among patients. These included speaking in a condescending manner to patients, using technical terminologies that are foreign to patients, and not letting patients voice their concerns. Dissatisfaction commonly arises when health care providers fail to provide opportunities for patients to express their worries or their interpretation of how their physical problems are connected to incidences in their lives (Weiss & Lonnquist, 2006).

It has been reported that even when care providers treat patients with courtesy and respect, dissatisfaction can still occur among patients due to an insufficient understanding of the information given by care providers (Faden et al., 1983; Waitzkin, 1991). Based on the findings of Hagihara, Tarumi, and Nobutomo (2006), patients become more satisfied when physicians take extra care in adjusting their languages for better comprehension by patients, although technical terminologies and explanations come naturally to physicians. Overall, the evidence suggests that patient satisfaction level are higher when physicians implement patients’ input into health related matters, listen to patients’ concerns, and provide opportunities for patients to ask questions. The results of these findings can be generalized to other settings and personnel who are in the position of providing health
care related services; therefore, the relationship between communication and satisfaction among chiropractic consumers is proposed as following:

Hypothesis 1: Communication from chiropractors has a positive effect on their consumers’ level of satisfaction.

2.6.2 Perceived value

Most of the existing literature on the relationship between satisfaction and perceived value are based on studies conducted in marketing researches. According to Zeithaml (1988), the perceived value of a service or product can be interpreted as a consumer’s perception of its usefulness based on its benefits and costs. Over time, different definitions have been applied to perceived value, all accepting that perceived value, as a construct, is multi-dimensional and highly subjective (Kortge & Okonkwo, 1993; Patterson & Spreng, 1997; Smith, Swinehart, & Petrick, 2002). As Holbrook (1994) puts it, the value of the same product or service varies depending on the individual needs of consumers.

Based on the findings from a number of studies, perceived value was found to have a positive relationship with consumer satisfaction (Williams & Calnan, 1991; Anderson & Sullivan, 1993; Eggert & Ulaga, 2002). In addition, perceived value was also found to be an important prerequisite for consumer satisfaction in the study conducted by McDougall and Levesque (2000), which focused on consumer satisfaction across service industries. Based on previous findings with respect to the relationship between perceived value and consumer satisfaction, it is reasonable to expect a similar relationship exists between consumer’s perceived value and satisfaction among chiropractic consumers. Therefore, a hypothesis is proposed as following:
Hypothesis 2: The perceived value of chiropractic treatment has a positive effect on consumers’ level of satisfaction.

2.6.3 Tangibles

The construct, tangibles, refers to the equipment, appearance of personnel, and the physical facilities used for the delivery of a service. It is commonly included as one of the dimensions for assessing service quality, which is considered as a technical equivalent to customer satisfaction. Overall, findings in the literature on the importance of tangibles in determining patient satisfaction are inconsistent. According to one study relating service quality to patient satisfaction, conducted by Bowers, Swan, and Koehle (1994), tangibles were found to be less important in determining patient satisfaction as compared to the effects of constructs such as reliability, responsiveness, assurance and empathy. Similar findings were reported by Hutton and Richardson (1995), with tangibles found to have low predictive power on patient satisfaction. However conflicting results have been reported by other studies. For instance, in a survey involving 235 participants recruited from hospitals and other health care related facilities, tangibles were found to be among the most influential variables on patient satisfaction (Ramez, 2012). Likewise, tangibles were reported by Çulik and Sehribanoglu (2012) to be one of the most important variables in determining patient satisfaction. Given such findings, the relationship between tangibles in the context of chiropractic care and satisfaction among chiropractic consumer is proposed as follows:

Hypothesis 3: The tangible aspects of chiropractic offices have a positive effect on consumers’ level of satisfaction.
2.6.4 Accessibility

The dimension of “accessibility” concerns the whole process from scheduling to physically attending an appointment with reference to accessing care. In a study on patients’ satisfaction after medical visits, Lochman (1983) identified 13 factors, including accessibility, which could be connected at various levels to patients’ satisfaction level. In another study where accessibility, along with provider characteristics, staff efficiency, and time-cost, was utilized to examine patient satisfaction in different types of dental practice, Handelman, Fan-Hsu, and Proskin (1990) found that accessibility was an important factor in determining patient satisfaction.

In addition, a study of patients’ expectations and satisfaction provided evidence suggesting that patient satisfaction can be increased by improving aspects associated with accessibility (Lim & Tang, 2000). However, Robertson, Dixon, and Le Grand (2008), investigating factors associated with patient satisfaction with general practice physicians, found that accessibility, although significant, is not as important as other factors such as confidence and trust in the physician. Given the similarities between the practices of the general physicians and of chiropractors, the relationship between the accessibility to chiropractic care and the satisfaction among chiropractic consumers is hypothesized as follows:

Hypothesis 4: The accessibility to chiropractic care has a positive effect on consumers’ level of satisfaction.

2.6.5 Assurance

“Assurance” relates to the knowledge and courtesy of service providers and the level of trust as well as confidence felt by consumers when service is being delivered
competently (Parasuraman et al., 1988). Youssef, Nel, and Bovaird (1996) found, in a study of 174 patients who had previously undergone surgical treatment, that assurance, among other dimensions of service quality, is important in determining patient satisfaction. Uzun (2001) also found that the patients’ level of assurance was positively related to their level of satisfaction. Findings from a subsequent study conducted by Kim and Lee (2004) also suggest that nursing service quality, in terms of patient satisfaction, can be increased by improving assurance-related aspects of care. Accordingly, the relationship between assurance in the context of chiropractic care and satisfaction among chiropractic consumers is proposed as following:

Hypothesis 5: Assurance in the context of chiropractic care has a positive effect on the satisfaction among chiropractic consumers.

2.6.6 Recoverability

Leong and Kim (2002) define “recoverability” as service providers’ ability and responsiveness in taking counter-measures in response to mistakes occurred in the service delivery process. Several studies conducted to investigate the effect of recoverability on customer satisfaction all reached the conclusion that it is an important determinant of customer satisfaction (Jones & Sasser, 1995; Tax & Brown, 1998). Interestingly, in a study relating service failure and service recovery in the context of the airline industry, Bamford and Xystouri (2005) found that customer dissatisfaction can be mitigated by sufficient recovery service after service failure. Hart, Heskett, and Sasser (1990) also found that recovery service can often increase customer satisfaction, and its extent may sometimes exceed that of customers who are satisfied to begin with. This phenomenon was also reported by McColl, Mattson, and Morley (2005) across different service
industries. Therefore, it seems that recovery service can be used as a means for organizations or professionals to increase customer satisfaction and, based on this belief, the relationship between recoverability of chiropractic care and satisfaction among chiropractic consumers is hypothesized as follows:

Hypothesis 6: Recoverability of chiropractic care has a positive effect on satisfaction among chiropractic consumers.

2.6.7 Responsiveness

"Responsiveness" in the context of relationship marketing alludes to the service providers’ willingness and capability to render immediate service to satisfy customers’ needs (Parasuraman et al., 1988). The relationship between responsiveness and customer satisfaction has been well-documented (Tucker III & Adams, 2001; Tea, Ellison & Feghali, 2008; Mengi, 2009; Li, Huang & Yang, 2011). Tucker III and Adams (2001) sought to establish how patients evaluated service quality and satisfaction, finding a direct, positive relationship between responsiveness and patient satisfaction. In a subsequent study, Ellison and Feghali (2008) reported a significant increase in satisfaction among orthopedic patients brought about by implementing measures to improve providers’ responsiveness to patients’ needs. Mengi (2009) also found that responsiveness, as one of the dimensions in service quality, was important in determining the level of customer satisfaction in the banking industry. The conclusions reached by such studies mentioned were also supported by Li, Huang, and Yang (2011) who found a positive relationship between provider’s responsiveness and satisfaction among out-patients of 12 hospitals in Taiwan. Given these findings, the relationship between
chiropractors’ responsiveness and satisfaction among chiropractic is hypothesized as follows:

Hypothesis 7: Chiropractors’ responsiveness has a positive effect on satisfaction among chiropractic consumers.

2.6.8 Perceived Waiting Time

Findings from a number of studies examining the relationship between waiting time and patient satisfaction indicate that patients’ perceived waiting time has a significant impact on their overall satisfaction level (Dansky & Miles, 1997; Tucker & Adams, 2001; Wellstood, Wilson, & Eyles, 2005). In particular, the results from a study conducted by Dansky and Miles (1997) suggest that patients’ dissatisfaction can be mitigated if they are informed in advance about the length of waiting time; in addition, they found that total time spent on waiting for medical care can be used to predict patient satisfaction level. Boureaux, and O’Hea (2004) also found that providing patients with prior notice regarding the actual waiting time seems to be an effective measure to mitigate dissatisfaction arising from waiting. Patients were dissatisfied when made to wait longer than they expected; therefore, what matters most is patient’s expectation or perception of waiting time rather than the actual amount of time spent. Tucker and Adams (2001) and Wellstood et al. (2005), however, provide evidence that both perceived waiting time and actual waiting time can be significant causes of dissatisfaction. Based on such findings, the relationship between perceived waiting time and satisfaction among chiropractic consumers is hypothesized as follows:
Hypothesis 8: Waiting time for chiropractic care has a negative effect on consumers’ level of satisfaction.

2.6.9 Reputation

In general, the research literature supports the view that corporate image has a direct, positive relationship with consumer satisfaction (Aaker, 1991; Sirohi, McLaughlin, & Wittink, 1998; Yu & Dean, 2001). According to Grönroos (2000), a favourable or a trusted image can provide a company with an advantage in achieving consumer satisfaction, which may lead to repurchase intent or positive word-of-mouth, while an unfavourable image makes customer satisfaction difficult to achieve. It can also be argued that image is particularly important in service industries, such as health care, where most customers do not possess the required knowledge to make an accurate evaluation of service quality (Andreassen & Lindestad, 1998). Hausman (2004) points out that when patients are in need of immediate medical attention, they do not have time to research on their illness or the performance of professionals; they often rely on the images of professionals to decide whom to consult. Their level of satisfaction, to a very large extent, is influenced by their interpretation of the images associated with the professionals. It thus seems reasonable to believe a significant relationship exists between the image of a chiropractor and satisfaction among chiropractic consumers; therefore, the following hypothesis is proposed:

Hypothesis 9: Chiropractors’ reputations have a positive effect on their consumers’ level of satisfaction.

2.6.10 Reliability
Parasuraman et al. (1988) defined reliability as the ability of a service provider to deliver services to customers in an accurate and dependable manner. A study conducted by Carman (1990), involving a dental clinic, a hospital as well as a few other service-providing settings, found that reliability is one of the indicators of service quality which ultimately influences patient satisfaction. Cronin and Taylor (1992) reported similar findings, with reliability as a crucial factor in determining customer satisfaction. Vandamme and Leunis (1993) also reported a positive relationship between reliability and patient satisfaction in hospital settings. Based on such findings in various health care settings, the relationship between chiropractors’ reliability and consumer satisfaction is hypothesized as follows:

Hypothesis 10: Chiropractors’ reliability has a positive effect on their consumers’ level of satisfaction.

2.6.11 Perceived Technical Competence

According to Sasser and Thomas (1995), technical competence can be defined as the combination of skill and knowledge in practices required to accomplish a task. The relationship between patient satisfaction and technical competence has been documented by a number of studies (Tornkvist, Gardulf, & Strender, 2002; Uppal, Lee, Mielcarek, Banks, & Mackay, 2004; Tamaki, Nomura, Nishikawara, Motegi & Teraoka, 2005; Welch, 2010; Nabbuye-Sekandi, Makumbi, Kasangaki, Kizza, & Tugumisirize, 2011). In the study conducted by Tornkvist et al. (2002), where they examined patient satisfaction among those who were receiving Home Care and those who visited Outpatient Clinics, it was determined that technical competence is one of the factors that can influence patient satisfaction.
A consistent finding was also reported by Tamaki et al. (2005) when they compared the level of satisfaction of patients who had regular check-ups with those who did not, in order to identify factors relating to patients having regular dental checkups. Findings revealed that technical competence of the dentist was strongly correlated with patient satisfaction, which in turn determined the patients’ decision to have regular checkups. A consistent relationship between patient satisfaction and technical competence was also documented in a literature review of the patient satisfaction literature for the past 20 years (Welch, 2010). In this literature review, Welch (2010) revealed that, based on qualitative themes and general trends, technical competence, along with timeliness of care, empathy, information dispensation, and pain management, were the five major elements that correlated with patient satisfaction in an Emergency Department.

Further research findings also supported the positive relationship between patient satisfaction and the perceived technical competence of the health service providers. In a study designed to identify factors associated with the satisfaction among patients attending outpatient clinics in a referral hospital in Uganda, Nabbuye-Sekandi et al. (2011) found that patients’ perceived technical competence of the provider, accessibility, convenience and availability of services, especially prescribed drugs, were the strongest predictor of patient satisfaction. However, contradictory findings were reported in a study conducted by Uppal et al. (2004) where they compared patient satisfaction among those under doctor supervision and those under nurse supervision, after grommet insertion. They found that there was no statistically significant difference in patient satisfaction as related to technical competence. Nevertheless, the general nature of findings means that the relationship between perceived technical competence of chiropractors and satisfaction among chiropractic consumers is hypothesized as follows:
Hypothesis 11: The perceived technical competence of chiropractors has a positive effect on the satisfaction level among consumers.

2.7 Relationship between patient satisfaction and patient loyalty

Consumer satisfaction has been found to be related to loyalty in many studies. Not surprisingly, the terms satisfaction and loyalty are often used interchangeably in many contexts. However, although it seems logical that customer loyalty is a consequence of satisfaction, there are research findings that suggest otherwise. Nevertheless, customer satisfaction levels provide a good basis for predicting loyalty according to O’Connor and Shewchuk (1996); they find that over 50% of the variance in customer behaviour associated with loyalty, such as repeat purchase or spreading positive messages by word-of-mouth, can be accounted for by customer satisfaction.

The different findings may be due to the nature of a particular sector or industry. Based on a study involved 30 companies, including some from services industries, Sasser and Thomas (1995) proposed the concept of “false loyalty” to account for customers being loyal due to lack of choice as opposed to true loyalty where customers are loyal due to high perceived service quality. Their findings and those of Grempty, Kristenser and Martensen (2000) indicate that the relationship between satisfaction and loyalty varies depending on intensity of competition as well as the nature of the industry. If the relationship between satisfaction and loyalty is industry-specific, factors that give rise to a positive direct relationship in one industry may not hold true in others. Further, even within the same industry, variations can arise due to different contextual factors such as the level of competition or other cultural or market conditions.

There is thus a need for caution in making generalizations on loyalty. Thus, according to Kurz, Otani, and Wayne (2004), when testing the loyalty of patients of
nursing care, even when circumstantial factors remain constant, the relative importance of a few factors contributing to the overall satisfaction, and thereby loyalty, of patients was found to change over time. This was although the most influential factor remained the same. Garman, Garcia, and Hargreaves (2004) point out that most studies on patient loyalty fail to implement a reliable measure of the construct; given that, unlike other service industries, hospitalization is not usually voluntary, measuring frequency of repeat usages is simply not applicable in hospital settings. A few studies have been conducted to examine this lack of consistency in research findings on the relationship between customer satisfaction and loyalty (Mittal, Ross, & William, 1998; Burroughs, Kurz, Otani, & Waterman, 2003).

Mittal et al. (1998), tried to examine how the negative evaluation of a variable can affect customer satisfaction and loyalty instead of focusing on finding the variables that affect customer satisfaction and loyalty. Their results suggest that, in terms of the changes in satisfaction level, the impact that negative evaluation has on a variable is different and greater than that of positive evaluation. In other words, high levels of customer satisfaction may not lead to significant increase in loyalty, but high levels of customer dissatisfaction could have devastating effects for service providers.

Burroughs et al. (2003) tried to determine whether the relationship between various variables and overall patient satisfaction is "compensatory" or not in a hospital setting. "Compensatory" was the term they used in seeking to make global judgments regarding satisfaction levels; in doing so, it was assumed that patients mentally average out their impressions on multiple variables to formulate their response. Burroughs et al. (2003) concluded that the relationship between various variables and patient satisfaction is not compensatory; therefore, the aspects of care that providers excel in satisfying patients may not compensate for aspects of care they fail to deliver satisfactorily. For both Mittal
et al. (1998) and Burroughs et al. (2003), measures of satisfaction may not fully capture the impact caused by the potential dissatisfaction of customers. Therefore, as satisfaction only accounts for 50% of variance in loyalty (O'Connor and Shewchuk, 1996), measuring satisfaction levels may lose its predictive power for loyalty when some variables are compromised by the dissatisfaction of respondents. This provides a potential explanation as to why sometimes seemingly satisfied customers do not behave loyally to service providers.

Nevertheless, and based on the findings from most studies, it is reasonable to expect that a positive relationship exists between consumer satisfaction and consumer loyalty in chiropractic care. The nature of this relationship is hypothesized as follows:

H12: A positive relationship exists between satisfaction and loyalty among chiropractic consumers.
Chapter 3- Methodology

3.1 Introduction

In this study, which is being conducted using a quantitative approach, the primary objective is to examine and determine the factors that are most influential in producing satisfaction levels among chiropractic consumers in Macao, and the secondary objective is to examine the relationship between consumer satisfaction and consumer loyalty. In addition, analyses will be performed in order to establish the relationship between consumer loyalty and the various determinants of satisfaction among chiropractic consumers. The approach is based on the extensive review of literature conducted in the previous chapter with respect to consumer satisfaction in service industries, with an especial emphasis on health care. Eleven constructs - “Perceived value”, “Communication”, “Perceived Technical competence”, “Accessibility”, “Tangibles”, “Assurance”, “Responsiveness”, “Reliability”, “Recoverability”, “Waiting time”, “Reputation” - were found to be relevant to the focus of this study, and a survey has been conducted to gauge participants’ responses to the variables of interest. In this chapter, further details regarding Research Design, Research Questions, Sampling and Data Collection, Research Instrument, Data Analysis and Ethical Considerations that relate to this study are reviewed.

3.2 Research design

According to Alreck and Settle (1995), a quantitative method should be applied when the circumstances coincide with most of the following conditions:

- The research is confirmatory rather than exploratory.
- The research is intended to measure a trend.
- There is no ambiguity about the concepts being assessed.
The concept is being measured on a ratio or ordinal scale. Since different aspects of this study closely matched to the above conditions, a quantitative approach was utilized in this study.

In this survey, quantitative analysis was employed to answer the research questions and to test the proposed hypotheses using factor analysis, multiple regression, and correlation analysis, based on data collected from the responses given by participants to online questionnaire. The independent variables of interest included: “Perceived value”, “Communication”, “Perceived Technical competence”, “Accessibility”, “Tangibles”, “Assurance”, “Responsiveness”, “Reliability”, “Recoverability”, “Waiting time”, “Reputation”, and “Patient loyalty”; while the dependent variable was “Consumer satisfaction”.

For the purpose of the study, it was decided to conduct a survey using a questionnaire as this is an effective method to collect a large amount of non-experimental data from a large number of people in a short amount of time. However, this research approach has its own limitations. One of the major limitations can be a low response rate; according to McCullough (1998), surveys conducted by organizations with which respondents have no direct interest can yield a response rate of as low as 5%. This is particularly a problem when the sampling frame is small since it is quite probable that those who completed the survey differ significantly on various characteristics compared to those who did not.

In addition, Paolo, Bonaminio, Gibson, Partidge, and Kallail (2000) point out that data obtained from “self-report” surveys is subject to self-serving bias - this is the tendency of an individual to report his/her behaviour or attitude in a socially favourable way. For instance, people tend to present themselves as being more intelligent, hard-working, friendly, ethical, and honest than they really are. Furthermore, Truell and
Goss (2002) reported that people’s responses to self-report surveys are often subjected to both memory errors and intentional distortions. However and given the inherent limitations of a self-report survey, it is still the most widely used because the most cost-effective method of gathering information with reference to the perceptions of a large number of people. Further, additional steps were taken to generate an adequate response rate among potential participants.

First, the invitations to participate were made available in the waiting rooms of practicing chiropractors. Should insufficient number of participants were recruited from chiropractic clinics, posting a recruitment advertisement on the main newspaper of Macao would have been used as a contingency plan. The first location was considered the most important as this was where the consumers of chiropractic services were most likely to see the information. Second, the data of this study were collected through a designated website, which can be considered to be a better alternative to both telephone or mail survey. Kwak and Radler (2002) have pointed out a number of advantages of using a web-based survey. First, using a web-based survey is more cost-effective as no postal or printing costs are involved. Second, response times are much faster than with a mail survey which sometimes can take up to several weeks. Third, the response rate is usually higher, which can be attributed to its convenience and user-friendliness for respondents. One reservation would be, as Schaefer and Dillman (1998) suggest, that a web-based survey is biased toward those who have greater access to the Internet. However, that is not an issue in Macao as virtually the entire population have access to the Internet either at home or at work. Further, most people can also get online through a mobile network.

It remains to set out the research questions that the survey was designed to explore with reference to consumers of chiropractic services in Macao.
3.3 Research Questions

In the previous Chapter it was established, based on the academic literature, that eleven constructs - “Perceived value”, “Communication”, “Perceived Technical competence”, “Accessibility”, “Tangibles”, “Assurance”, “Responsiveness”, “Reliability”, “Recoverability”, “Waiting time” and “Reputation” – can be related to “Consumer satisfaction” within the scope of services industries, including health care. This gives rise to the following questions:

1. How well do these eleven constructs predict satisfaction levels among chiropractic consumers in Macao?

2. Does a relationship exist between consumer satisfaction and consumer loyalty among chiropractic consumers in Macao? If it does, what is the nature and the strength of this relationship?

3. What is the nature and the strength of the relationship between each of the eleven constructs when the influence of “consumer satisfaction” is being statistically controlled for by applying partial correlation?

3.4 Sampling and Data Collection

Non-random sampling was used in this study. McMillan (2004) has cited a number of advantages of using non-random over random sampling: (i) lower cost and shorter time required in conducting the study, (ii) higher response rate from participants. However, since not everyone in the population has an equal chance of being included in the study, the characteristics of the sample may not be representative of the general population. Therefore, Gay, Mills, and Airasian (2009) state that results obtained from studies using non-random samples may not be generalizable to the all chiropractic consumers.
This study recruited potential participants over the age of 18 and undergoing chiropractic treatment. As noted above, this was accomplished through the co-operation of local chiropractor clinics and a newspaper advertisement posted by the researcher, with the first mode the more important. Initially, three clinics randomly selected from different districts of Macao were invited to participate in this study. They were sent written statements regarding the nature of this study and invited to participate. The three clinics agreed and were asked to leave the participant information statements in their waiting rooms. This had the advantage, for the researcher, of avoiding direct contact with the clients.

The selection of respondents was thus dependent on the willingness of clients to collect a participant information sheet when visiting their chiropractors and to respond to this. The participant information sheet provided the background information of this study and the URL of the website where the online questionnaire was posted. Individuals who decided to participate after reading the participant information sheet, could subsequently complete the questionnaire on the URL and submit it online. Recruitment would be deemed to have occurred once the chiropractic consumers took a participant information sheet, read it, completed the survey and submitted it.

In addition, a newspaper advertisement explaining the purpose of this study and listing the URL of the survey website was posted on a local newspaper, the Macao Daily Post, over a 20-day period in order to further recruit participants for this study. At the end of this 20-day period, data collected from the survey website was downloaded for further analysis. One disadvantage was that, given that the web-based survey was anonymous, it was totally dependent on respondents’ honesty with respect to their eligibility to take part. A further limitation, it could be argued, arose from the lack of demographic
information sought from respondents. However, it was felt that such information was outside the scope of the research questions being addressed in this study.

### 3.5 Research Instrument

The relevant literature concerning consumer satisfaction in service industries and health care was reviewed in Chapter 2. Those factors that are most relevant to the present study were identified and are the basis for the appropriate test questions for each variable which was included in the questionnaire. For questions that were originally designed for other settings, modifications were made in order to make them relevance to this study. The test questions and their sources are listed in the following table:

<table>
<thead>
<tr>
<th>Question no.</th>
<th>Construct</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Satisfaction</td>
<td>Dexter, Aker &amp; Wright (1997)</td>
</tr>
<tr>
<td>6, 7, 8</td>
<td>Perceived Value</td>
<td>Narang (2010)</td>
</tr>
<tr>
<td>9, 10, 11</td>
<td>Communication</td>
<td>McKinley, Manku-Scott, Hastings,       French &amp; Baker (1997)</td>
</tr>
<tr>
<td>12, 13, 14</td>
<td>Perceived Technical Competence</td>
<td>Merkouris, Yiannopoulou, Lanara &amp; Lemonidou (1999)</td>
</tr>
<tr>
<td>15, 16, 17</td>
<td>Accessibility</td>
<td>Zaghloul (2001)</td>
</tr>
<tr>
<td>18, 19, 20</td>
<td>Tangibles</td>
<td>Al-Borie &amp; Sheikh-Damanhouri (2013)</td>
</tr>
<tr>
<td>24, 25, 26</td>
<td>Responsiveness</td>
<td>Al-Borie &amp; Sheikh-Damanhouri (2013)</td>
</tr>
<tr>
<td>27, 28, 29</td>
<td>Reliability</td>
<td>Lin, Sheu, Pai, Bair &amp; Hung (2009)</td>
</tr>
<tr>
<td>33, 34, 35</td>
<td>Perceived Waiting time</td>
<td>Zaghloul (2001)</td>
</tr>
<tr>
<td>39, 40, 41</td>
<td>Patient loyalty</td>
<td>Teng, Ing, Chang, &amp; Chung (2007)</td>
</tr>
</tbody>
</table>
3.6 Data Analysis

All statistical analyses for this study were performed using the computer software, SPSS, Version 17.0. Several statistical techniques, including standard descriptive statistics, Cronbach Alpha, Principal components analysis, multiple regression, and correlation analysis were employed in order to analyze the distributions of variables, the reliability and validity of the research instrument, the predictive powers of various factors, and correlations among variables.

3.6.1 Analysis of construct validity

Scale validity refers to the degree to which the questions measure what they are intended to measure (DeVellis, 1991). The scale items used in this study were adopted from test instruments that have been validated and used in previous studies, Principal component factor analysis (PCA) was utilized to confirm whether the factor structure proposed holds true in this survey sample. Theoretically, PCA takes a large set of scale items or questions and tries to reduce or represent them using a smaller number of coherent subscales or components. This is done by putting the test items into groups based on the inter-correlations among items. As described by Hubbard and Allen (1987), PCA is a data reduction method that can be used to summarize the interrelationships among a large number of variables in order to explain their underlying dimensions. In this study, 33 items were used to examine the relationship among the 11 constructs – Perceived Value (3 items), Communication (3 items), Technical Competence (3 items), Accessibility (3 items), Tangibles (3 items), Assurance (3 items), Responsiveness (3 items), Reliability (3 items), Recoverability (3 items), Waiting time (3 items), and Reputation(3 items). The results of PCA would serve to confirm the validity of the 11 proposed constructs.
3.6.2 Analysis of scale reliability

Scale reliability, which refers to the degree of the scale which is free of random error, is commonly indicated by either test-retest reliability or internal consistency (Streiner & Norman, 1995). The test-retest reliability is based on the correlations between the two test scores obtained by administering the same test to the same group of participants on two separate occasions. In essence, the higher the test-retest reliability, the higher will be the scale reliability. However, since this study focus primarily on chiropractic consumers’ current attitude, the test-retest reliability is not applicable, and therefore is not assessed in this study.

Another aspect of scale reliability, internal consistency, which refers to the degree in which the items that make up the scale are all measuring the same underlying construct, was assessed using the statistic known as Cronbach’s coefficient alpha. Its values range from 0 to 1, where greater values reflecting greater reliability. Although levels of reliability vary depending on the specifics of the scale in questions, in general, Nunnally (1978) recommends that the value of Cronbach’s coefficient alpha above 0.7 should be deemed acceptable. In this study, the Cronbach’s coefficient alpha of each and every one of the 13 subscales was assessed in order to determine their reliability.

3.6.3 Multiple Regression

In this study, multiple regression was used to establish the relative significance of the 11 independent variables in predicting the satisfaction level of chiropractic consumers. Multiple regression can be used to explore the relationship between one continuous dependent variable and a number of independent variables or predictors (Fox, 1991); in addition, it provides information about the model as a whole, including all the variables, and the relative contribution of each of the variables that make up the model. However,
meaningful results can only be generated when several important assumptions with respect to sample size, multicollinearity, and outliers are not violated when applying multiple regression.

In regard to the sample size required for multiple regression, Tabachnick and Fidell (2001) came up with a formula \( N > 50 + 8M \), where \( N \) represents the sample size and \( M \) represents the number of independent variables.

As well as an inadequate sample size, the presence of multicollinearity will also compromise the regression model. According to Berry (1993), multicollinearity exists when the independent variables are highly correlated \( (r=0.9 \text{ and above}) \). Lastly, the presence of outliers, unusually high or low scores, in dependent or independent variables can negatively affect the results obtained from multiple regression (Aiken & West, 1991). According to Tabachnick and Fidell (2001), outliers are scores with standardised residual values above about 3.3 or less than -3.3. They suggest that outliers either be deleted or substituted by other values that are not too different from the remaining data set. Therefore, additional attention was paid to ensure that none of the given assumptions were violated before multiple regression was performed.

### 3.6.4 Correlation analysis

Correlation analysis is used to describe the strength and direction of the linear relationship between two variables. However, while it provides an indication that a relationship exists between two variables, it does not indicate that one variable causes the other (Boyce, 2003). Correlation coefficients can range from -1 to +1, and the sign out in front indicates whether there is a positive or a negative correlation, the absolute value of which provides information on the strength of the relationship (Cohen, 1988). To establish the relationship between “satisfaction” and “loyalty” among chiropractic consumers,
Pearson product-moment correlation was performed using the built-in function of the software SPSS.

Given that correlation only indicates the presence of a relationship between two variables, the possibility of a third variable that influences both of the variables of interest should also be considered. To obtain a more accurate and less contaminated indication of the relationship between two variables, partial correlation can be applied to statistically remove the influence of a confounding variable (Cohen, 1988). Therefore, in order to understand the relationships between each of the 11 constructs and "loyalty", while controlling for the effect of "satisfaction", determination of the partial correlations between the 11 constructs and "loyalty" was performed, and these were then compared with the results obtained from the Pearson product-moment correlation.

### 3.7 Ethical Considerations

This study was conducted with utmost regard to the rights and well-being of participants. Rigorous measures were taken in the process of participant recruitment, data collection, and uses of data to ensure the anonymity and free-will of participants.

When making initial contact with potential participants, every aspect of this study was communicated to them in the participant information sheet as well as on the home page of the survey website. Specifically, on the information sheet and the website, participants could find a full disclosure of information regarding the purpose and procedures of the study, and any potential risks and benefits for participants in the study. In case when further clarification was needed by potential participants, they were invited to contact the research supervisor or the researcher himself directly by phone or email addresses listed on the information sheet and the website. Therefore, every effort was
made to ensure that participants would have a good understanding about the study before enrolling.

This study required participants to engage in only one activity – completing the 41-item anonymous on-line questionnaire. This might have caused temporary inconvenience to participants for no more than 15 minutes; even so, they were free to withdraw or discontinue from the study at any time, without any negative consequences. Given the anonymous nature of this study, where no direct contact between the researcher and the participants took place, the act of completion and then submission of the online questionnaire was deemed as informed consent of participants.

Anonymity of the research participants was preserved from survey distribution to data collection. This was conducted entirely through the survey website – www.chiro-research.net with a numerical code assigned to each survey submitted online. As a result no identifying information of the participants was collected and thus could not be used in subsequent reporting of this study. It is anticipated that the results of this study will be accessible through the survey website, www.chiro-research.net, and the dissertation database of The University of Newcastle.
Chapter 4- Results and Data Analysis

Factor analysis and reliability analysis were carried out to confirm the validity and scale reliability of the constructs examined in this study. The results provided statistically significant evidence to support the underlying structure and the internal consistency of the constructs. Multiple regression analysis was then performed to estimate how well the proposed model could predict the level of consumer satisfaction and the relative contribution of each construct in determining the level of consumer satisfaction. It was established that the proposed model could explain 74.6% of the variance in consumer satisfaction, and the relative importance of the constructs could be ranked in descending order: "Communication", "Responsiveness", "Perceived Value", "Reputation", "Perceived Technical competence", "Recoverability", "Assurance", "Tangibles", "Waiting time", "Reliability", "Accessibility". Furthermore, correlation analysis revealed that "Consumer satisfaction" and "consumer loyalty" were highly correlated with each other. When the effect of "consumer satisfaction" was controlled for, while performing partial correlation, it was found that "communication", "image", and "waiting time" were the constructs that still correlated considerably with consumer loyalty. Lastly, the proposed hypotheses were tested based on the results from data analysis.

4.1 Confirmatory Factor Analysis

Factor analysis was used to confirm the underlying structure of the set of variables examined in this study. According to the literature, there are a few conditions which the data set must conform to before factor analysis can be applied. One of the most commonly mentioned conditions in the literature is the sample size. It is generally accepted that the
larger the sample size the better it is. Nunnally (1978) suggests that there should be at least 10 cases for each item to be subjected to factor analysis, while Tabachnick and Fidell (2001) recommend that 300 cases be the minimal sample size for factor analysis. Given that the data from 354 cases has been collected for this study, this seems more than sufficient as far as sample size is concerned.

Further, there are two frequently cited statistical tests that are designed to assess the factorability of the data, namely Bartlett’s test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. To be considered appropriate for factor analysis, the significance level of the Bartlett’s test of sphericity should be less than 0.05, and the Kaiser-Meyer-Olkin (KMO) should be no less than 0.6 (Bartlett, 1954; Kaiser, 1974). In the analysis undertaken here, the result of the Bartlett’s test of sphericity is less than 0.05, and the value of the Kaiser-Meyer-Olkin (KMO) is equal to 0.672, which is greater than 0.6. This, therefore, further supports the use of factor analysis. With respect to the number of factors that best describes the underlying relationship among the variables, the technique known as Kaiser’s criterion, or the eigenvalue rule, and the loading value are commonly applied (Zwick & Velicer, 1986). The eigenvalue of a factor represents the amount of the total variance explained by that factor. According to this rule, only factors with an eigenvalue of 1.0 or more should be retained for further investigation; also, for a factor to be considered as significant, the loading value of each item within a factor must be equal to or greater than 0.50. In this analysis, it was determined that all questions exceeded the factor loading cut-off value, 0.50, and none of the 11 factors had eigenvalues less than 1.0. Therefore, all the 11 factors were found to be valid constructs.

Results of confirmatory factor analysis are presented in Tables 2 and 3.
<table>
<thead>
<tr>
<th></th>
<th>Varimax Rotated Loading</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Q9</td>
<td>.675</td>
<td></td>
</tr>
<tr>
<td>Q10</td>
<td>.684</td>
<td></td>
</tr>
<tr>
<td>Q11</td>
<td>.831</td>
<td></td>
</tr>
<tr>
<td>Q24</td>
<td>.522</td>
<td></td>
</tr>
<tr>
<td>Q25</td>
<td>.559</td>
<td></td>
</tr>
<tr>
<td>Q26</td>
<td>.676</td>
<td></td>
</tr>
<tr>
<td>Q6</td>
<td>.549</td>
<td></td>
</tr>
<tr>
<td>Q7</td>
<td>.630</td>
<td></td>
</tr>
<tr>
<td>Q8</td>
<td>.595</td>
<td></td>
</tr>
<tr>
<td>Q36</td>
<td>.635</td>
<td></td>
</tr>
<tr>
<td>Q37</td>
<td>.552</td>
<td></td>
</tr>
<tr>
<td>Q38</td>
<td>.924</td>
<td></td>
</tr>
<tr>
<td>Q12</td>
<td>.587</td>
<td></td>
</tr>
<tr>
<td>Q13</td>
<td>.922</td>
<td></td>
</tr>
<tr>
<td>Q14</td>
<td>.733</td>
<td></td>
</tr>
<tr>
<td>Q30</td>
<td>.615</td>
<td></td>
</tr>
<tr>
<td>Q31</td>
<td>.534</td>
<td></td>
</tr>
<tr>
<td>Q32</td>
<td>.622</td>
<td></td>
</tr>
<tr>
<td>Q21</td>
<td>.537</td>
<td></td>
</tr>
<tr>
<td>Q22</td>
<td>.709</td>
<td></td>
</tr>
<tr>
<td>Q23</td>
<td>.553</td>
<td></td>
</tr>
<tr>
<td>Q18</td>
<td>.581</td>
<td></td>
</tr>
<tr>
<td>Q19</td>
<td>.613</td>
<td></td>
</tr>
<tr>
<td>Q20</td>
<td>.581</td>
<td></td>
</tr>
<tr>
<td>Q33</td>
<td>.536</td>
<td></td>
</tr>
<tr>
<td>Q34</td>
<td>.630</td>
<td></td>
</tr>
<tr>
<td>Q35</td>
<td>.724</td>
<td></td>
</tr>
<tr>
<td>Q27</td>
<td>.623</td>
<td></td>
</tr>
<tr>
<td>Q28</td>
<td>.518</td>
<td></td>
</tr>
<tr>
<td>Q29</td>
<td>.621</td>
<td></td>
</tr>
<tr>
<td>Q15</td>
<td>.632</td>
<td></td>
</tr>
<tr>
<td>Q16</td>
<td>.649</td>
<td></td>
</tr>
<tr>
<td>Q17</td>
<td>.623</td>
<td></td>
</tr>
</tbody>
</table>
The findings from this analysis indicated that the questions regarding to “communication” were of major consideration; therefore, it is classified as factor 1. These questions measured respondents’ perspective on the nature of interactions between staff and patients. It also assessed the chiropractors’ capability in communicating complex technical information such as clinical status, progress, and preventive measures, etc. This group of factors accounted for 21.14% of the total variance and had an eigenvalue of 6.976, suggesting a great level of variance and significance.

Factor 2, “Responsiveness,” accounted for 11.76% of the total variance and had an eigenvalue of 3.881. The questions relating to this factor concerned respondents’ perspective on chiropractors’ willingness and capability to render immediate services in order to accommodate the needs of customers.

“Perceived value” was classified as factor 3, which was composed of questions concerning the quality of services in relation to the price paid and the net value of the services purchased. The factor, “perceived value,” accounted for 10.618% of the total variance and had an eigenvalue of 3.504.

Factor 4, “Reputation,” accounted for 6.592% of the total variance and had an eigenvalue of 2.175. The group of questions from which this factor was derived asked
respondents to rate their agreement or disagreement with the statements regarding the reputation of the chiropractor and their personal opinions of and feelings toward the chiropractor.

“Perceived Technical competence,” factor 5, accounted for 5.971% of the total variance and had an eigenvalue of 1.970. The questions used to derive this factor were concerned with the respondents’ perspective on the technical quality of the services received from the chiropractor.

“Recoverability,” was classified as the factor 6, based on its statistical significance relative to other factors. The questions used to derive this factor are mainly concerned with the respondents’ perspective on the ability of the chiropractor to take responsive action when service delivery went wrong. “Recoverability” accounted for 5.156% of the total variance and had an eigenvalue of 1.702.

Factor 7, “Assurance,” accounted for 4.455% of the total variance and had an eigenvalue of 1.470. The questions for this factor were asking respondents to rate their agreement or disagreement on statements concerning the ability of the chiropractor and his staffs to inspire trust and confidence, to show respect, and to act as advocates for customers.

According to the ranking based on the percentage of the total variance and the eigenvalue, as compared with other factors, “Tangibles” was classified as factor 8. It accounted for 3.826% of the total variance and had an eigenvalue of 1.263. This factor is derived from questions concerning the physical facilities, equipment and appearance of personnel in the chiropractor’s office.

“Waiting time,” factor 9, accounted for 3.611% of the total variance and had an eigenvalue of 1.192. This factor comes from questions regarding respondents’
agreement or disagreement to statements concerning their perceived waiting time before receiving treatment at chiropractors’ offices.

“Reliability” was classified as factor 10, based on its eigenvalue and its percentage of the total variance relative to other factors in this analysis. It was determined that “Reliability” accounted for 3.305 % of the total variance and had an eigenvalue of 1.091. The questions from which this factor was derived were focused mainly on respondents’ perspective on the chiropractor’s the ability to deliver the promised service dependably and accurately.

Among all the factors in this analysis, “Accessibility” was classified as the factor 11, which accounted for 3.103 % of the total variance and had an eigenvalue of 1.024. The questions here asked for the respondents’ perspective on their ability to obtain treatment from the chiropractor. It involved issues such as making appointment, transportation barriers, and working hours.

4.2 Analysis of scale reliability

Internal reliability is particularly important for test instruments constituted of multiple subscales. It addresses the issue of whether each subscale is measuring a single construct and hence whether the test items that make up each subscale are internally consistent. For a test instrument comprising several underlying constructs, it is normal to assess reliability for each of the constituent constructs rather than for the test instrument as a whole. In this analysis, Cronbach’s Alpha was used to measure the degree to which the questions within each subscale were related. It has a maximum value of 1.0. Values closer to 1.0 reflect a stronger relationship between the test items. For a subscale with a high alpha value, participants who score high on one question within the subscale would also score high on other questions within the subscale. Similarly, participants who score
low on one question within a subscale would also score low on the other questions on the subscale. Subscales with low alphas would indicate that there was lack of homogeneity among questions. In general, the Cronbach alpha coefficient of a scale should be above 0.7 to be deemed acceptable in terms of internal consistency.

The test instrument used in this study was intended to measure “Perceived value”, “Communication”, “Perceived Technical competence”, “Accessibility”, “Tangibles”, “Assurance”, “Responsiveness”, “Reliability”, “Recoverability”, “Waiting time”, “Reputation”, “Patient loyalty” and “Consumer satisfaction”. Given that the results from factor analysis confirmed the distinctiveness of these constructs in the test instrument, reliability analysis was then performed to assess the internal consistency of those constructs. Overall, based on the the Cronbach alpha coefficients, it was found that all subscales possessed acceptable reliability. The detail results are presented in Table 4 as following.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach’s alpha coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>0.766</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>0.925</td>
</tr>
<tr>
<td>Perceived Value</td>
<td>0.722</td>
</tr>
<tr>
<td>Reputation</td>
<td>0.888</td>
</tr>
<tr>
<td>Perceived Technical competence</td>
<td>0.953</td>
</tr>
<tr>
<td>Recoverability</td>
<td>0.734</td>
</tr>
<tr>
<td>Assurance</td>
<td>0.782</td>
</tr>
<tr>
<td>Tangibles</td>
<td>0.805</td>
</tr>
<tr>
<td>Perceived Waiting time</td>
<td>0.710</td>
</tr>
<tr>
<td>Reliability</td>
<td>0.776</td>
</tr>
<tr>
<td>Accessibility</td>
<td>0.877</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>0.768</td>
</tr>
<tr>
<td>Loyalty</td>
<td>0.826</td>
</tr>
</tbody>
</table>
Multiple Regression

Multiple Regression was performed to determine how well the model as a whole, including all the independent variables, and the relative contribution of each of those variables, performed in predicting the variance of the dependent variable ("Consumer satisfaction"). In this analysis, all the independent variables were entered into the equation simultaneously, and each of these variables was evaluated in terms of its predictive power, over and above that offered by all the other independent variables. When analyzing data by multiple regression, it is necessary to check if the data are conformed to some of its important assumptions, namely the sample size requirement, and the multicollinearity issue.

In regard to the sample size requirement, Stevens (1996) suggest that at least 15 subjects per independent variable are needed for multiple regression; while Tabachnick and Fidell (2001) came up with a formula \( N > 50 + 8M \), where \( N \) represents the sample size and \( M \) represents the number of independent variables. Given that the data collected in this study were contributed by 354 respondents, this is more than sufficient to satisfy either one of the guidelines with respect to the sample size required for multiple regression.

One of the major assumptions of multiple regression is that independent variables in the regression model are not highly correlated among each other. When such an assumption is violated, a scenario known as multicollinearity is said to exist. SPSS has the built-in capability, as part of the multiple regression procedure, to pick up the issue of multicollinearity that may not be obvious in the correlation matrix. One of the commonly used indicators for the presence of multicollinearity is known as the VIF value. If this value is high, it indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity. The most commonly used cut-off points for
determining the presence of multicollinearity is a VIF value of above 10. In this analysis, the highest VIF value obtained was 7.667, which is below the cut-off of 10, so the assumption is that multicollinearity has not been violated. The results of multiple regression are presented in table 5.

<table>
<thead>
<tr>
<th></th>
<th>b</th>
<th>Beta</th>
<th>t</th>
<th>Sig</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-.231</td>
<td>.423</td>
<td>10.629</td>
<td>.000</td>
<td>1.620</td>
</tr>
<tr>
<td>Perceived Value</td>
<td>.213</td>
<td>.423</td>
<td>3.038</td>
<td>.003</td>
<td>5.893</td>
</tr>
<tr>
<td>Recoverability</td>
<td>.117</td>
<td>.231</td>
<td>9.337</td>
<td>.000</td>
<td>3.808</td>
</tr>
<tr>
<td>Communication</td>
<td>.529</td>
<td>.570</td>
<td>4.325</td>
<td>.001</td>
<td>7.667</td>
</tr>
<tr>
<td>Waiting time</td>
<td>.022</td>
<td>.025</td>
<td>7.829</td>
<td>.000</td>
<td>1.195</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>.344</td>
<td>.468</td>
<td>5.323</td>
<td>.005</td>
<td>5.330</td>
</tr>
<tr>
<td>Reliability</td>
<td>.013</td>
<td>.014</td>
<td>3.104</td>
<td>.006</td>
<td>2.126</td>
</tr>
<tr>
<td>Accessibility</td>
<td>.224</td>
<td>.235</td>
<td>1.835</td>
<td>.006</td>
<td>3.129</td>
</tr>
<tr>
<td>Technical competence</td>
<td>.127</td>
<td>.093</td>
<td>4.483</td>
<td>.001</td>
<td>1.024</td>
</tr>
<tr>
<td>Assurance</td>
<td>.085</td>
<td>.081</td>
<td>1.622</td>
<td>.002</td>
<td>3.012</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td>0.864</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td></td>
<td></td>
<td></td>
<td>0.746</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td>76.242</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

### 4.3.1 The impact of determinants on consumer satisfaction

Based on the findings illustrated in table 3 with regard to the constructs, the coefficient of the determinant (R²) was found to be 0.746, and the F-ratio value was 76.242 (p<.0001). This indicates that the results of this regression model could hardly be explained by chance. In this case the R Square value, 0.746, means that the given model explains 74.6 percent of the variance in consumer satisfaction. It is important to note that
all 11 determinants turned out to be statistically significant (p<.01) in terms of their effect on consumer satisfaction.

**4.3.2 The relative importance of each determinant on consumer satisfaction**

In order to evaluate the relative importance of each determinant on consumer satisfaction, the beta coefficients, being part of the results generated from multiple regression, were used as a basis for comparison; in essence, the higher the beta coefficient, the more important the determinant. It is important to note that all eleven turned out to be statistically significant (p<.01) determinants influencing consumer satisfaction. The 11 determinants can be ranked in descending order based on their values of beta coefficient: Communication (0.57), Responsiveness (0.468), Perceived Value (0.423), Image (0.238), Technical competence (0.235), Recoverability (0.231), Assurance (0.093), Tangibles (0.081), Waiting time (0.025), Reliability (0.020) and Accessibility (0.014).

**4.4 Correlation analysis**

The relationship between “Consumer Satisfaction” and “Consumer Loyalty” was investigated using the Pearson product-moment correlation coefficient, which assesses the degree that quantitative variables are linearly related in a sample. This coefficient indicates the degree to which low or high scores on one variable tend to go with low or high scores on another. It was determined that a strong, positive correlation between the two variables \( r = .850, \ p < .0005 \), with high levels of “Consumer Satisfaction” associated with high level of “Consumer Loyalty”. In addition, the relationship between “Consumer Loyalty” and each of the 11 independent variables was also investigated using the Pearson product-moment correlation coefficient. Overall, each variable was positively correlated with “Consumer Loyalty”, and the relationships
were found to be significant at the level $p<.001$. Details of the results are presented in Table 6.

Table 6. Pearson product-moment correlation

<table>
<thead>
<tr>
<th></th>
<th>Consumer Loyalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>.687</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>.568</td>
</tr>
<tr>
<td>Perceived Value</td>
<td>.656</td>
</tr>
<tr>
<td>Reputation</td>
<td>.691</td>
</tr>
<tr>
<td>Perceived Technical competence</td>
<td>.525</td>
</tr>
<tr>
<td>Recoverability</td>
<td>.488</td>
</tr>
<tr>
<td>Assurance</td>
<td>.382</td>
</tr>
<tr>
<td>Tangibles</td>
<td>.500</td>
</tr>
<tr>
<td>Perceived Waiting time</td>
<td>.683</td>
</tr>
<tr>
<td>Reliability</td>
<td>.425</td>
</tr>
<tr>
<td>Accessibility</td>
<td>.410</td>
</tr>
</tbody>
</table>

The relationships between each of the 11 constructs ("Perceived value", "Communication", "Technical competence", "Accessibility", "Tangibles", "Assurance", "Responsiveness", "Reliability", "Recoverability", "Waiting time", "Reputation") and "Consumer loyalty", while controlling for the effect of "consumer satisfaction", was determined by partial correlation, and the relationships were found to be significant at the level $p<.001$. Details of the results are presented in Table 7.
Overall, when controlling for the effect of “consumer satisfaction”, the coefficients obtained for the partial correlation between the 11 independent variables and “consumer loyalty” were found to be lower as compared with those obtained from Pearson product-moment correlation. It is important to note that the partial correlation coefficients of “communication”, “reputation”, and “Waiting time” still remained high when the effect of “consumer satisfaction” was controlled for.

### 4.5 Hypothesis Testing

To evaluate the impact of each determinant on consumer satisfaction, the following section has been grouped according to the determinant used during the statistical analysis. The statistical findings will be discussed in order to verify the claim being made about the proposed hypotheses.
Hypothesis 1: Communication from chiropractors has a positive effect on their consumers’ level of satisfaction.

Findings indicated that when measuring the effect of “communication” on “consumer satisfaction,” this determinant was classified as having a “beta” coefficient of 0.57, which is the highest among all the determinants in the study. In accounting for the amount of variance, this determinant was responsible for 21.14% of the total variance. With respect to reliability, it is important to note that this determinant received a finding of 0.766 as regards the usage of Cronbach’s alpha measurement. A significant relationship was found between the two constructs (p<.01) and, based on these findings, it can be concluded that a positive relationship exists between communication and satisfaction among chiropractic consumers.

Hypothesis 2: The perceived value of chiropractic treatment has a positive effect on consumers’ level of satisfaction.

The results of multiple regression indicated that “perceived value” received a “beta” coefficient of .423. Testing also revealed that this determinant encompassed 10.618% of the total variance. When it came to reliability, this determinant received a Cronbach alpha measurement score of 0.722. Lastly, with regard to significance, “perceived value” and “Consumer Satisfaction” were found to have a statistically valid level (p<.01). Based on these findings, it can be concluded that a positive relationship exists between chiropractic consumer’s perceived value and satisfaction.

Hypothesis 3: The tangible aspects of chiropractic offices have a positive effect on consumers’ level of satisfaction.

“Tangibles” received a “beta” coefficient of .081 in the multiple regression
analysis. When it came to Cronbach’s reliability measurement, “tangibles” received a response score of .710. It also represented a variance level of 3.826%. When it came to statistical significance, the determinant was found to possess a level (p<.01). Thereby, it is concluded that a positive relationship exists between tangibles and satisfaction among chiropractic consumers

Hypothesis 4: The accessibility to chiropractic care has a positive effect on consumers’ level of satisfaction.

Results indicated that the determinant “accessibility” received a “beta” coefficient response of 0.14. Cronbach’s reliability measurement indicated that the determinant received a score of 0.877, and variance testing revealed that “accessibility” accounted for 3.103% of the total variance. Further, findings revealed that a significant relationship (p<.01) does exist between the two constructs. Based on these findings, it can be affirmed that a positive relationship exists between accessibility to chiropractic care and satisfaction among chiropractic consumers

Hypothesis 5: Assurance in the context of chiropractic care has a positive effect on the satisfaction among chiropractic consumers.

The findings related to “assurance” revealed a “beta” coefficient to be equal to .093. In addition, “assurance” accounted for 4.455% of the total variance. In regard to construct reliability, Cronbach’s measurement revealed a score of 0.805 for the determinant. Based on significance testing, there is a significant relationship (p<.01) between the two constructs. Thereby, based on the abovementioned findings, it can be inferred that a positive relationship exists between assurance in the context of chiropractic care and satisfaction among chiropractic consumers
Hypothesis 6: Recoverability of chiropractic care has a positive effect on satisfaction among chiropractic consumers.

Findings indicated that when measuring the effect of “recoverability” on “consumer satisfaction,” this determinant was classified as having a “beta” coefficient of 0.231. In accounting for the amount of variance, this determinant was responsible for 5.156% of the total variance. With respect to reliability, it is important to note that this determinant received a finding of 0.734 as regards the usage of Cronbach’s alpha measurement. When it comes to significance, a significant relationship was found between the two constructs (p<.01). Based on these findings, it can be concluded that a positive relationship exists between recoverability of chiropractic care and satisfaction among chiropractic consumers.

Hypothesis 7: Chiropractors’ responsiveness has a positive effect on satisfaction among chiropractic consumers.

The results of multiple regression indicated that “Responsiveness” received a “beta” coefficient of .468. Testing also revealed that this determinant encompassed 11.760% of the total variance. When it came to reliability, this determinant received a Cronbach alpha measurement score of 0.925. Lastly, “responsiveness” and “consumer satisfaction” were found to have a statistically valid level of significance (p<.01). Based on these findings, it can be concluded that a positive relationship exists between chiropractors’ responsiveness and satisfaction among chiropractic consumers.

Hypothesis 8: Waiting time for chiropractic care has a negative effect on consumers’ level of satisfaction.
“Waiting time” received a “beta” coefficient of .025 in the multiple regression analysis. When it came to Cronbach’s reliability measurement, “Waiting time” received a response score of .710. It also represented a variance level of 3.611%. The determinant was also found to possess a level of significance (p<.01). Thereby, it is concluded that a negative relationship exists between perceived waiting time and satisfaction among chiropractic consumers.

Hypothesis 9: Chiropractors’ reputations have a positive effect on their consumers’ level of satisfaction.

Results indicated that the determinant “images” received a “beta” coefficient response of 0.238. Cronbach’s reliability measurement indicated that the determinant received a score of 0.888, and variance testing revealed that “images” accounted for 6.592% of the total variance. Furthermore, findings revealed that a significant relationship (p<.01) does exist between the two constructs. Based on these findings, it can be affirmed that a positive relationship exists between chiropractors’ images and satisfaction among chiropractic consumers.

Hypothesis 10: Chiropractors’ reliability has a positive effect on their consumers’ level of satisfaction.

The findings related to “reliability” revealed a “beta” coefficient equal to 0.02. In addition, “assurance” accounted for 3.305% of the total variance. In regard to construct reliability, Cronbach’s measurement revealed a score of 0.776 for the determinant. There was also a significant relationship (p<.01) between the two constructs. Therefore, based on the above-mentioned findings, it can be inferred that a positive relationship exists between chiropractors’ reliability and satisfaction among chiropractic consumers.
Hypothesis 11: The perceived technical competence of chiropractors has a positive effect on the satisfaction level among consumers.

Findings indicated that when measuring the effect of “technical competence” on “consumer satisfaction,” this determinant had a “beta” coefficient of 0.235. As for the amount of variance, this determinant was responsible for 5.971% of the total. With respect to reliability, it is important to note that this determinant received a finding of 0.953 as regards the usage of Cronbach’s Alpha measurement. A significant relationship was also found between the two constructs (p<.01). Based on these findings, it can be concluded that a positive relationship exists between chiropractors’ technical competence and satisfaction among chiropractic consumers.

Hypothesis 12: A positive relationship exists between satisfaction and loyalty among chiropractic consumer.

It was determined that a strong, positive correlation between “Consumer Satisfaction” and “Consumer Loyalty” [r = .850, p<.0005], with high levels of “Consumer Satisfaction” associated with high level of “Consumer Loyalty”. Based on this finding, it can be concluded that a positive relationship exists between satisfaction and loyalty among chiropractic consumers.
Chapter 5- Discussion

In this chapter, each hypothesis proposed previously is discussed in sequence. The hypothesis is first stated and then the findings of the analysis that has been undertaken are set out, together with the extent to which the proposed hypothesis is rejected or supported. There follows a comparison between the findings of this study and those of the existing literature as set out in the literature review in Chapter 2.

**Hypothesis 1: Communication from chiropractors has a positive effect on their consumers’ level of satisfaction.**

Hypothesis one examined whether communication, the independent variable, is positively related to satisfaction, the dependent variable, among chiropractic consumers. The results of the data analysis revealed that a positive relationship did in fact exist between communication and satisfaction; this is consistent with the findings in the existing literature (Faden et al., 1983; Waitzkin, 1991; Schneider & Tucker, 1992; Levinson et al., 1993; Mead & Brower, 2000; Hagihara et al., 2006; Linghang, 2007). In fact, in this particular study, communication was found to be the most influential among the 11 independent variables in determining the level of consumer satisfaction. Thus, communication, by itself, accounted for 21.4% of the total variance of consumer satisfaction.

A number of researchers have offered explanations, based on studies involving patients and physicians, for the positive relationship between “communication” and “consumer satisfaction”. Faden et al (1983) pointed out that the willingness of physicians to take time to listen to patients would be perceived as a gesture that demonstrated that they had the patients’ best interests at heart, which gave rise to greater
satisfaction among patients. Levinson et al (1993) suggested that physicians who are able to explain things to patients in a way that can be understood by them would instill a sense of security, which would then translate into increased levels of satisfaction. Mead and Brower (2000) thought that patient-physician relationship cannot be sustained without trust, which is largely a product of effective communication between the two parties; whenever trust is lacking from a patient-physician relationship, patients would become dissatisfied. Linghang (2007) argued that the positive relationship between “communication” and “satisfaction” in the medical field was a result of the perception of patients, according to which good communication skills are not only a desirable trait but a required personal quality among care-givers. These explanations overlap in nature and the present study certainly confirms the importance of “communication”.

_Hypothesis 2: The perceived value of chiropractic treatment has a positive effect on consumers’ level of satisfaction._

Hypothesis two examined whether perceived value, the independent variable, was positively related to satisfaction, the dependent variable, among chiropractic consumers. The results of the data analysis revealed that a positive relationship exist between chiropractic consumer’s perceived value and satisfaction, and this is consistent with the findings of the existing literature (Williams & Calnan, 1991; Anderson & Sullivan, 1993; McDougall & Levesque, 2000; Eggert & Ulaga, 2002). In this study, of the 11 independent variables, “perceived value”, was ranked as the third most influential factor in determining the level of consumer satisfaction. It accounted for 10.618% of the total variance of consumer satisfaction.
By considering how the perceived value is defined by different researchers, the positive relationship between perceived value and satisfaction can be better understood. Williams and Calnan (1991), taking as their basis the perception of cost in relation to the derived benefits, defined “perceived value” as the “global” assessment of the utility of a product or a service. McDougall and Levesque (2000) defined perceived value as a comparison between the “give” aspects and the “get” aspects of a product or a service. Overall, “perceived value” can best be interpreted as the ratio between benefits and costs, involving both tangible and intangible aspects of a product or a service, and it makes intuitive sense that the more positive this ratio, the greater the consumer satisfaction.

**Hypothesis 3: The tangible aspects of chiropractic offices have a positive effect on consumers’ level of satisfaction.**

Hypothesis three examined whether tangibles, the independent variable, positively related to satisfaction, the dependent variable, among chiropractic consumers. “Tangibles”, the independent variable, is referring to the equipment, appearance of personnel and the physical facilities that are used for the delivery of a service. The results of the data analysis revealed that a positive relationship did exist between “tangibles” and consumer satisfaction; however, the link between them was not very strong. It only accounted for 3.826% of the total variance of “consumer satisfaction”. Compared with other variables, based on the results obtained from multiple regression, “Tangibles” was ranked after seven other factors in terms of its influence in determining the level of consumer satisfaction.

The finding of this study was consistent with that conducted by Bowers, Swan, and Koehle (1994), where “tangibles” appeared to be the least important factor in
determining satisfaction levels as compared to other factors such as reliability, responsiveness, assurance, and empathy. This finding was later supported by a study conducted by Hutton and Richardson (1995), where “tangibles” was found to have a low predictive power on patient satisfaction. However, the importance of “tangibles” as determined in this study contradicted some other research findings discussed in the literature review. According to Ramez (2012) and Çulik and Sehrihanoglu (2012), whose research was conducted in hospitals and other health care settings, “tangibles” was found to be an important variable in determining patient satisfaction.

This discrepancy can be easily explained when taking into consideration the difference in the settings where health services were delivered. A service-providing business is made up of both intangible and tangible aspects, where the intangible is the service itself and the tangible include the physical facilities, the equipment and the appearance of personnel. Thus, any opinion a consumer has about a service provider is a result of the summative assessment of both tangible and the intangible aspects. On one hand, in health care settings, such as an emergency room or a dental office, where the encounters between consumers and health care providers are brief and infrequent, the tangible aspects become more influential to the satisfaction level of consumers. On the other, in settings such as a chiropractor’s office or a family physician’s office, where the encounters between consumers and service providers happen more frequently and over an extended period of time, service quality will outweigh the importance of the tangible aspects in determining the level of consumer satisfaction.

Hypothesis 4: The accessibility to chiropractic care has a positive effect on consumers’ level of satisfaction.
Hypothesis four examined whether “accessibility”, the independent variable, positively related to satisfaction, the dependent variable, among chiropractic consumers. “Accessibility”, the independent variable, concerns the respondents’ perspective on their ability to obtain treatment from the chiropractor, taking into consideration issues related to appointment making, transportation barriers, and working hours. The results of the data analysis revealed that a positive relationship existed between “accessibility” and consumer satisfaction; however, the link between them was the weakest among the 11 variables included in this study. It only accounted for 3.103% of the total variance of “consumer satisfaction”. When comparing with other variables, based on the results obtained from multiple regression, “accessibility” was the least influential factor in determining the level of consumer satisfaction.

This finding with respect to the importance of “accessibility” was inconsistent with those reported by Handelman, Fan-Hsu, and Proskin (1990). They found that “accessibility” was an important factor in determining patient satisfaction. The discrepancy, however, can be explained by considering the findings of the study conducted by Robertson, Dixon, and Le Grand (2008). They reported that “accessibility” was important but less so than factors such as confidence and trust in the physician in determining patient satisfaction. The inconsistencies in regard to the importance of “accessibility” to consumer satisfaction across different studies arise out of the different combinations of independent variables, along with “accessibility”, included in these. In essence, a positive relationship does exist between “accessibility” and “consumer satisfaction”, but the relative importance of “accessibility” to “consumer satisfaction” is subjected to change depending on the other variables included in the comparison.
Hypothesis 5: Assurance in the context of chiropractic care has a positive effect on the satisfaction among chiropractic consumers.

Hypothesis five examined whether “assurance”, the independent variable, was positively related to satisfaction, the dependent variable, among chiropractic consumers. “Assurance”, the independent variable, concerns the respondents’ perspective on the ability of the chiropractor and his staffs to inspire trust and confidence, to show respect, and to act as “advocates” for customers. The results of the data analysis revealed that a positive relationship did exist between “assurance” and “consumer satisfaction”, and this is consistent with the existing literature (Youssef et al, 1996; Uzun, 2001; Kim & Lee, 2004). At the same time, however, the strength of the relationship is moderate in comparison with the 10 other variables included in this study, accounting for only 4.455% of the total variance of “consumer satisfaction”. According to the results obtained from multiple regression, “assurance” was ranked seventh among the 11 variables in terms of its influence in determining the level of “consumer satisfaction”.

The finding that “assurance” was positively related with “consumer satisfaction” can be understood by considering the explanations found in the existing literature. Uzun (2001) suggested that high levels of “assurance” can enhance the service quality experienced by the consumer, which in turn increases the level of “consumer satisfaction”. In addition, Kim and Lee (2004) proposed that the sense of “assurance” as experienced by consumers is often the result of the fulfillment of other dimensions of service quality such as effective communication or the good reputation of the service provider. This overlap helps to explain the moderate relationship often found between “assurance” and “consumer satisfaction”.

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Hypothesis 6: Recoverability of chiropractic care has a positive effect on satisfaction among chiropractic consumers.

Hypothesis six examined whether “recoverability”, the independent variable, was positively related to satisfaction, the dependent variable, among chiropractic consumers. “Recoverability”, the independent variable, concerns the respondents’ perspective on the ability of the chiropractor to take responsive actions when service delivery goes wrong. The results of the data analysis revealed that a positive relationship exists between “recoverability” and “consumer satisfaction”, which is consistent with the existing literature (Heskett & Sasser, 1990; Jones & Sasser, 1995; Tax & Brown, 1998; Bamford & Xystouri, 2005; McColl et al, 2005). Among the 11 independent variables, “Recoverability” was ranked the sixth most influential factor in determining the level of consumer satisfaction, based on the results obtained from multiple regression, accounting for 5.156% of the total variance of consumer satisfaction.

Bamford and Xystouri (2005) explain that recovery service can enhance consumer satisfaction by mitigating consumer dissatisfaction from service failure. McColl et al (2005) also explain that being able to respond in a timely manner in the case of service failure shows consumers that they are being valued and respected, which in turn raises the satisfaction level among consumers.

Hypothesis 7: Chiropractors’ responsiveness has a positive effect on satisfaction among chiropractic consumers.

Hypothesis seven examined whether “responsiveness”, the independent variable, was positively related to satisfaction, the dependent variable, among chiropractic consumers. “Responsiveness”, the independent variable, refers to the respondents’
perspective on the willingness and capability of practitioners to render immediate services in order to accommodate the needs of customers. The results of the data analysis revealed that a positive relationship exist between “responsiveness” and consumer satisfaction, and this is consistent with the findings of the existing literature (Tea, Ellison & Feghali, 2008; Mengi, 2009; Li, Huang & Yang, 2011). In this particular study, “responsiveness” was found to be the second most influential among the 11 independent variables in determining the level of consumer satisfaction, based on the results obtained from multiple regression. Thus, communication, by itself, accounted for 11.76% of the total variance of consumer satisfaction.

This is consistent with other studies and Mengi (2009) suggested that the strong positive relationship between “responsiveness” and “satisfaction” is an indication of what patients expect from their care-givers. Patients expect their care-givers to be willing and able to provide services whenever they are in need, even if, in some cases, fulfilling those needs requires the care-givers to surpass their usual duties. In addition, Li, Huang and Yang (2011) argued that the strong association between “responsiveness” and “satisfaction” revealed the importance of “responsiveness” as an essential quality that should be possessed by care-givers in the eyes of the patients. Success in accommodating the needs of patients thus gives rise to greater satisfaction among patients.

Hypothesis 8: Waiting time for chiropractic care has a negative effect on consumers’ level of satisfaction.

Hypothesis eight examined whether “perceived waiting time”, the independent variable, was negatively related to “consumer satisfaction”, the dependent variable, among chiropractic consumers. The results of the data analysis revealed that a positive relationship existed between “perceived waiting time” and consumer satisfaction, and
this is consistent with the findings in the existing literature (Dansky & Miles, 1997; Tucker & Adams, 2001; Wellstood, Wilson, & Eyles, 2005). At the same time, the strength of the relationship is weak in comparison with the 10 other variables included in this study, accounting for 3.611% of the total variance of “consumer satisfaction”. According to the results obtained from multiple regression, “perceived waiting time” was ranked ninth among the 11 variables in terms of its influence in determining the level of “consumer satisfaction”. When trying to compare the significance of waiting-time with findings from other studies, it is hard to find an appropriate study for the comparison. It is because a lot of previous studies included mostly around five variables at a time. Therefore, comparison made based solely on relative ranking among variables will not lead to any meaningful conclusion. Furthermore, when looking back at the statistical differences among the 11 variables, it is obvious that the top 3 variables are significantly different from the rest, while the last four variables differ among each other to a very small extent. Since the top 3 variables constitute the core of service quality, one may interpret this finding as that perceived waiting-time alone is not a deal-breaker for the consumer as long as the provider is offering quality service. Putting this finding into the context of chiropractic treatment where the effectiveness of treatment is often hard to judge, and the treatment experiences could vary a lot among different chiropractors, consumers may not respond the same way as they would in a standardized health care settings such as an emergency room, or general physician’s office.

Dansky and Miles (1997) point out that most patients would prefer being attended by a doctor on their arrival at the doctor’s office instead of spending time in the waiting room; therefore, making patients wait will have a negative impact on their satisfaction level with their care-givers. Wellstood et al (2005) also argue that the amount of waiting-time can have a considerable impact on the formation of consumer satisfaction.
because people nowadays have fewer non-working hours, and therefore greater value is placed on their spare time. Making consumers wait is thus likely to provoke dissatisfaction. Even so, it seems less important to them than other aspects of the relationship.

_Hypothesis 9: Chiropractors’ reputations have a positive effect on their consumers’ level of satisfaction._

Hypothesis nine examined whether “reputation”, the independent variable, was positively related to satisfaction, the dependent variable, among chiropractic consumers. The variable, “reputation”, concerns consumers’ personal beliefs and feelings toward the care-givers, based on the reputation of the latter. The results of the data analysis revealed that a strong positive relationship exists between “reputation” and satisfaction, and this is consistent with the findings of the existing literature (Aaker, 1991; Sirohi, McLaughlin, & Wittink, 1998; Yu & Dean, 2001). In this particular study, according to the results generated from multiple regression, “reputation” was found to be the fourth most influential among the 11 independent variables in determining the level of consumer satisfaction. “Reputation”, by itself, accounted for 6.592% of the total variance of consumer satisfaction.

This is consistent with other studies. Aaker (1991) suggested that a consumer’s knowledge about the reputation of a service provider will lead to the formation of a set of expectations regarding every aspect of the service. The consumer will become satisfied when their service experience coincides or exceeds his or hers expectation. Thus, the strong association between “reputation” and “consumer satisfaction” as found in this study can be interpreted as the outcome from good matches between consumer expectations and service experience.
Hypothesis 10: Chiropractors’ reliability has a positive effect on their consumers’ level of satisfaction.

Hypothesis ten examined whether “reliability”, the independent variable, was positively related to satisfaction, the dependent variable, among chiropractic consumers. “Reliability”, the independent variable, is related to the respondents’ perspective on the ability of a care-giver to deliver a promised service dependably and accurately.

The results of the data analysis show a positive relationship between “reliability” and “consumer satisfaction”, and this is consistent with the findings of the existing literature (Carman, 1990; Cronin and Taylor, 1992; Vandamme & Leunis, 1993). It should be noted, however, that in this study “reliability” was found to be the second least influential among the 11 independent variables in determining the level of “consumer satisfaction”, based on the results obtained from multiple regression. “Reliability”, by itself, accounted for only 3.305% of the total variance of consumer satisfaction.

Carman (1990) points out that all consumers expect their service providers to be able to deliver their services as promised. This is a social norm rather than an additional request from the consumer; therefore, when the service providers fail to deliver a reliable service, consumers are bound to become dissatisfied. Vandamme and Leunis (1993) also argue that consumers in general have a low tolerance for unreliable services; consumers are likely to terminate the relationship with service providers who repeatedly fail to deliver reliable services. This helps to explain why the positive relationship between “reliability” and “consumer satisfaction” found in this study has also been found in other studies. The low ranking of reliability as determined in this study may be attributed to the fact that chiropractic treatment is not a highly standardized health service where
objective judgement can be made about treatment effectiveness or reliability. Frequently, treatment experiences are dominated by the interaction between the chiropractor and the consumer. The actual treatment quality often comes secondary to consumer experience.

Hypothesis 11: The perceived technical competence of chiropractors has a positive effect on the satisfaction level among consumers.

Hypothesis eleven examined whether the “Perceived Technical Competence” of chiropractors, the independent variable, was positively related to satisfaction, the dependent variable, among chiropractic consumers. “Perceived Technical Competence”, the independent variable, concerns the respondents’ perspective on the chiropractors’ possession of both the skill and knowledge to deliver an adequate treatment to consumers.

The results of data analysis revealed that a positive relationship exists between “Perceived technical competence” and satisfaction, and this is consistent with the findings of the existing literature (Tornkvist et al., 2002; Tamaki et al., 2005; Welch, 2010; Nabbuye-Sekandi et al., 2011). In this particular study, according to the results generated from multiple regression, “Perceived technical competence” was found to be the fifth most influential among the 11 independent variables in determining the level of consumer satisfaction. “Perceived technical competence”, by itself, accounted for 5.971% of the total variance of consumer satisfaction.

Welch (2010) suggested that the technical competence of a provider as perceived by the health care consumer is important in determining consumer satisfaction. Since most people do not possess the specialized knowledge required to understand the physical problems occurring to their bodies, they are usually in fear while consulting health care professionals. While seeking treatment, consumers are receiving psychological remedy, in
addition to the actual therapeutic benefits to their physical conditions. Knowing that they are in good hands, regardless of the effectiveness of the treatment, is enough to alleviate some of their fear they have. This kind of placebo effect has also been reported in some of studies described in the literature review (Tornkvist et al., 2002; Uppal et al., 2004).

*Hypothesis 12: A positive relationship exists between satisfaction and loyalty among chiropractic consumer.*

Hypothesis twelve examined whether “consumer satisfaction” was positively related to “consumer loyalty” among chiropractic consumers. Data analysis revealed that a strong, positive correlation \[ r = .850, p < .0005 \] between the two, with high levels of “consumer satisfaction” associated with high levels of “consumer loyalty”.

The finding of this study was consistent with that reported by O’Connor and Shewchuk (1996). Throughout the existing literature, the terms “satisfaction” and “loyalty” are often used interchangeably by authors. This positive relationship between satisfaction and loyalty is based on common sense instead of scientific evidence. As pointed out by Sasser and Thomas (1995), repeat purchases, a behavioral characteristic of customer loyalty, are sometimes the result of a lack of choice rather than an emotional commitment towards the service provider.

This may explain why some authors conclude that a positive direct relationship exists between the two constructs, while others suggest the reverse (Mittal, Ross, & William, 1998; Burroughs, Kurz, Otani, & Waterman, 2003). However, the inconsistencies regarding the nature of the relationship between satisfaction and loyalty in the existing literature can also be attributed to the differences in how researchers defined “Loyalty”. Among all the definitions proposed for consumer loyalty, the one that can
best capture the idea conveyed in this study was proposed by Jacoby and Chestnut (1978). They stated that loyal customers are those who may not seek for alternatives, which are conveniently available, even if sometimes the service provider fails to live up to expectations.
Chapter 6- Conclusion

Given that, in Macao, health care consumers have a lot of options of where to seek treatment for musculoskeletal conditions, it is challenging for health care providers, including chiropractors, to build and maintain their client bases. The purpose of this study was to provide chiropractors with information regarding consumer satisfaction and loyalty, which may be of use to them in their practices. It is believed that chiropractors can ensure the long-term financial success of their clinics by delivering satisfying service to consumers.

The major finding of this study revealed that the proposed model could explain 74.6% of the variance in “Consumer satisfaction”, and the relative significance of the 11 constructs could be ranked in descending order: “Communication”, “Responsiveness”, “Perceived Value”, “Reputation”, “Technical competence”, “Recoverability”, “Assurance”, “Tangibles”, “Waiting time”, “Reliability”, “Accessibility”. Furthermore, the correlation analysis established that “Consumer satisfaction” and “Consumer loyalty” were highly correlated with each other. These 11 constructs can be categorized into three different groups: “Communication”, “Waiting time”, “Recoverability”, “Responsiveness”, and “Accessibility” are the aspects of practice relating to service delivery; while “Perceived value”, “Reputation”, and “Tangibles” are related to consumers’ perceptions that can be shaped by marketing strategies; “Assurance”, “Reliability”, and “Technical competence” are related to consumers’ perception that can be influenced by the demeanour of individual chiropractors. It is necessary for a chiropractor to have sufficient understanding of how these constructs can influence consumer satisfaction, and thus be able to address them properly in his or her own practice.
6.1 Communication

To many health care consumers, being able to communicate effectively and comfortably with health care providers is an essential component in their relationship. Consumers are often dissatisfied when they do not feel that they can freely express themselves, or when they do not understand what they are being told by their health care providers. Under such circumstances, consumers often feel upset, angry, or even leave the office with the feeling that the care-giver simply does not care. A health care provider can avoid leaving this kind of impression to consumers by providing opportunities for them to talk about their concerns. Instead of just going after the facts, a health care provider can encourage consumers to express how they perceive their current conditions as related to other events in their lives. Given that health care consumers rely heavily on their care-givers for explanations of their conditions, health care providers should ensure consumers understand their communication by asking questions, and inviting them to voice their concerns during the visit. Health care providers also need to be mindful of the fact that not all consumers would confront them directly when dissatisfied. In case of discontentment, most consumers often choose to terminate their relationship with the health care providers, and seek treatment somewhere else.

People who feel uncomfortable in any given situation will tend to avoid confrontation and this would be no exception for the encounter between health care providers and consumers. The finding of this study shows that the communication process is the most influential determinant of consumer satisfaction, and health care professionals, especially chiropractors, should try to enhance their relationships with consumers by providing the latter with a clear explanation of their conditions, discussing different treatment options, offering simple and clear explanation of treatment procedures, respecting consumers’ opinions, and acknowledging consumers’ concerns.
Furthermore, to facilitate openness in the relationship between health care providers and consumers, care-givers can start by addressing consumers by their first name and try not to interrupt them while they are talking.

6.2 Perceived Waiting time

Long waiting time experienced during appointment was found to have a negative impact on consumer satisfaction in this study, as well as other studies. Dansky and Miles (1997) reported that patients’ intention to revisit a doctor or a clinic would go down as the length of waiting time increases. Tucker and Adams (2001) also found that long waiting time experienced in the waiting room was statistically significant in reducing the likelihood of recommending the doctor or the clinic to others. Therefore, it is very likely that health care providers who are not able to attend to consumers in a timely manner are facing the risk of losing their clients or getting negative word-of-mouth instead of being recommended to potential clients. Every health care provider should attempt to reduce waiting time for consumers, or at least try to mitigate the negative emotions that a long waiting time can provoke from consumers. For instance, a health care provider can come up with a maximum waiting time as part of the policy in his or her practice. This can minimize the frustration of the consumer by providing them with a reasonable expectation of the waiting time. Of course, in order for this to work, the health care provider needs to abide to this policy, and contingency plans should be in place for cases where treatment required more time than expected.

In addition to controlling the amount of waiting time within the acceptable length, health care clinics can also installing extra features, such as big screen TVs and wireless internet connection, in the waiting-room to make the waiting process more tolerable to
consumers. Engaging consumers with other activities inside the waiting-room can help to distract the consumers from noticing how long the waiting actually takes.

6.3 Recoverability

Recoverability refers to the service providers’ ability to perform a recovery service in the face of failure in the service delivery process. In a service-providing setting, service failures are often unavoidable, whether due to human failure or other factors. Such service failures can cause consumer dissatisfaction, which may eventually lead to the breakdown of the relationship between consumer and the service provider. Sometimes the dissatisfied consumers may even relate their disappointing experiences with the service provider to many other people through social media websites or online communities, thus eroding potential customers of the service provider. Therefore, in case of service failure, a service provider should take immediate actions to reduce the damage in the relationship, as well as to pacify the dissatisfied consumer.

6.4 Accessibility and Responsiveness

These two constructs, as compared with others, are much more related to the operational aspect of a clinic. Accessibility concerns the easiness of obtaining service, from scheduling to physically attending an appointment for receiving treatment; while responsiveness concerns the service provider’s willingness to provide timely and useful responses to inquiries and requests. A health care provider can improve these aspects of their services by implementing flexible operation hours to accommodate consumers’ needs. Moreover, a health care provider could use a Facebook page as a platform to facilitate communication between consumers during after-office hours.
6.5 Perceived Value, Reputation, and Tangibles

Among the 11 constructs examined in this study, “Perceived Value”, “Reputation”, and “Tangibles” are those through which consumer perceptions can be shaped by marketing strategies. Despite the growing acceptance of marketing, many health care professionals are still skeptical about the appropriateness of applying marketing concepts in a health care industry. For some health care professionals or the general public, such business practices still carry a negative connotation that implies the subjugation of clinical concerns to profit. Many health care professionals typically do not think about how to distinguish their services from those of their competitors. However, by packaging their services the right way, they can enhance consumers’ perception of the three given constructs.

In the health care industry, in chiropractic treatment in particular, where services are standardized, service providers can try to “package” their services in ways that distinguish themselves from their competitors. This may be as simple as “labeling” the service with a catchy name, or as complicated as designing a brand for a service. The whole purpose is to make the service or the entire practice more appealing and unique. The service might be presented as “state-of-the-art”, or delivered with “heart”.

6.6 Assurance, Perceived Technical Competence, and Reliability

Consumers’ perception of these three aspects of a service can be influenced by how the health service provider and the supporting staffs present themselves. According to the definition offered by Parasuraman et al (1988),

“Assurance is the knowledge and courtesy of service providers and the level of trust as well as confidence felt by consumers when service is being delivered competently; Reliability is the ability of a service provider to deliver services to consumers in an
accurate and dependable manner; and technical competence is the technical quality of the services offered by the service provider."

Given that there is no objective standard with respect to these three constructs, and consumers are not likely to possess the technical knowledge to make a fair judgment either, the manner in which they are delivered, as seen by consumers will, to a large extent, determine their perception of the constructs. In other words, service providers are likely to score high in these three different aspects if they try to present themselves with confidence and certainty while interacting with consumers.

6.7 Importance of Communication, Reputation, and Waiting time

It is important to note that, among the 11 constructs, the partial correlation coefficients of "communication", "Reputation", and "Waiting time" still remained high when the effect of "consumer satisfaction" was controlled for. This means that their impact on "consumer loyalty" is greater, and therefore, health care providers should put more emphasis on excelling in those areas to ensure the long-term financial success of their practices.

6.8 Suggestions for future study

It could be argued that the major limitations of this study are the sample size and the sampling procedure, to an extent that limits the generalizability of its finding. Given that this study involved only chiropractic consumers recruited from three chiropractor offices in Macao, it may be that future studies should include a greater number of participants coming from a more diverse population. Another limitation is that this study did not include the perspectives of chiropractors and how they feel about the factors which determine consumer satisfaction. This is an area that is worth exploring in the
future research since so much of the literature findings come from the consumers’ perspective. It would be of interest to involve both chiropractors and their consumers in comparing and contrasting responses in order to obtain greater insight about satisfaction among chiropractic consumers. Lastly, future research could also look at how socio-demographic characteristics might influence consumer satisfaction.

It is hoped that the present study, as well as contributing to the literature on consumers and the delivery of medical services, with especial reference to chiropractic, will also be of value to professional chiropractors in the operation of their practices.
References


Marino, P. (2003). We are the voice of the customer. *Marketing Health Services*, 23(2), 88 - 95.


Patient: An individual who is receiving health care services; in this study, and is used interchangeably with the term, “consumer”.

Patient satisfaction: Pascoe (1983) defined patient satisfaction as health service recipients’ responses, based on their past experiences and social norms, to various aspects of their service experience.

Customer loyalty is the actual consistent use of the service, despite situational influences and marketing efforts having the potential to cause switching behavior (Arnould et al., 2004).

Perceived value: Zeithaml (1988) defined perceived value as the consumer’s perception of a service based on the evaluation of the service outcome against cost involved.

Communication: refers to care-provider’s ability to provide understandable explanation regarding patient’s health conditions, implement patients’ input into health related matters, listen to patients’ concerns, provide opportunities for patients to ask questions, and to show respect to patient’s opinions (Street et al., 2007).

Technical competence: The knowledge and skill required for the successful delivery of service. (Hall & Doman, 1988).

Accessibility: The ability to obtain treatment from health care provider, taking into consideration of issues related to appointment making, transportation barriers, and working hours (Cleary et al., 2003).

Tangibles: refers to the equipment, appearance of personnel and the physical facilities that used for the delivery of a service (Shelton, 2000).
Assurance: The ability of the health care provider and his staffs to inspire trust and confidence, to show respect for customers (Gourdji et al., 2003).

Responsiveness: refers to the willingness and capability of practitioners to render immediate services in order to accommodate the needs of customers (Lee, 2003).

Reliability: refers to the ability of a care-giver to deliver a promised service dependably and accurately (Malat, 2001).

Recoverability: refers to the care-giver’s ability to take responsive actions when service delivery goes wrong (Duncan et al., 1998).

Perceived waiting time: The perception of the time span over which a patient is formally admitted to a clinic by a nurse or receptionist and until he or she is seen by a health care provider (Sullivan, 2003).

Reputation: refers to consumers’ personal beliefs and feelings toward the professional and personal qualities of a care-giver (Abramowitz et al., 1987).
# Appendix B - Survey Instrument

**Faculty of Business and Law**  
**University of Newcastle**  
**Callaghan, Newcastle 2300**  
**AUSTRALIA**

## Chiropractic consumer survey

1. Please check the appropriate space to indicate your personal opinion or experience  

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
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</tbody>
</table>
| 1 | The treatment I received was excellent.  
   我所接受的治療很完善。 |     |         |       |                |
| 2 | I expected better results from the treatment I received.  
   我對所接受的治療之效果有更高的期望。 |     |         |       |                |
| 3 | My choice to seek treatment from my chiropractor has been a wise one.  
   選擇我的脊椎治療師是一個明智的選擇。 |     |         |       |                |
| 4 | Improvements in my condition took longer than I expected.  
   我病情的改善比我預期的時間更為長。 |     |         |       |                |
| 5 | I feel good about coming to my chiropractor for treatment.  
   從我的脊椎治療師接受治療，給我很好的感覺。 |     |         |       |                |

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<tbody>
<tr>
<td>Perceived Value</td>
<td>感知價值度</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
| 6 | The service charge for the treatment is very acceptable.  
   治療所需的服務費是可以接受的。 |     |         |       |                |
<p>| | | | |</p>
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<th></th>
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</thead>
</table>
| 7 | I am paying more than I should for the treatment.  
我支付的費用是高於我所接受治療的價值。 |   |   |
| 8 | The treatment provided is very good value for money.  
提供治療的價值遠遠超過所需費用。 |   |   |
|   | **Communication 溝通** |   |   |
| 9 | My chiropractor listens to my concerns and takes them seriously.  
我的脊椎治療師聆聽我的關注並且認真對待。 |   |   |
| 10 | I found it difficult to express my concerns to my chiropractor.  
我覺得很難向我的脊椎治療師表達我的關注。 |   |   |
| 11 | My chiropractor gave me advice on how to prevent musculoskeletal problems from occurring.  
我的脊椎治療師向我提供如何防止肌肉骨骼問題發生的意見。 |   |   |
|   | **Perceived Technical Competence 技術能力** |   |   |
| 12 | I am impressed by the care provided by my chiropractor.  
我的脊椎治療師提供的照顧讓我留下了深刻的良好印象。 |   |   |
| 13 | Some of the procedures my chiropractor performed were unnecessary.  
脊椎治療師執行的一些治療程式是不必要的。 |   |   |
| 14 | My chiropractor was as thorough as he/she should have been.  
脊椎治療師所提供的治療達到合理的全面性。 |   |   |
<p>|   | <strong>Accessibility 接受度</strong> |   |   |
| 15 | I was able to schedule appointments that were |   |   |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>convenient for me.</strong></td>
<td>對我來說能安排會面是很方便的。</td>
</tr>
<tr>
<td><strong>It is difficult for me to get to my chiropractor’s office.</strong></td>
<td>前往我的脊椎治療師的辦公室是很困難的。</td>
</tr>
<tr>
<td><strong>In an emergency, it was not hard for me to see my chiropractor quickly.</strong></td>
<td>在緊急情況下，很難可迅速的約見我的脊椎治療師。</td>
</tr>
<tr>
<td><strong>Tangibles 有形度</strong></td>
<td></td>
</tr>
<tr>
<td><strong>I think my chiropractor’s office has everything needed to provide good chiropractic care.</strong></td>
<td>我覺得我的脊椎治療師的辦公室具備提供良好治療的一切設備。</td>
</tr>
<tr>
<td><strong>The clinic looks nice on the outside and comfortable.</strong></td>
<td>診所在外看起來很美觀，在裡面感覺很舒適。</td>
</tr>
<tr>
<td><strong>The staff in the clinic look professional.</strong></td>
<td>在診所的工作人員看起來很專業。</td>
</tr>
<tr>
<td><strong>Assurance 把握度</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Seeking treatment from my chiropractor makes me feel safe and relaxed.</strong></td>
<td>從我的脊椎治療師尋求治療，讓我感到安全和放鬆。</td>
</tr>
<tr>
<td><strong>My chiropractor and his/her staffs are trustworthy.</strong></td>
<td>我的脊椎治療師和他/她的工作人員都值得信賴。</td>
</tr>
<tr>
<td><strong>The support staff in the clinic are courteous.</strong></td>
<td>診所裡的協調人員很有禮貌。</td>
</tr>
<tr>
<td><strong>Responsiveness 回應度</strong></td>
<td></td>
</tr>
<tr>
<td><strong>My chiropractor sometimes able to provide</strong></td>
<td></td>
</tr>
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<tr>
<td>107</td>
<td>prompt service without an appointment.</td>
</tr>
<tr>
<td>25</td>
<td>My chiropractor is willing to extend hours of operation upon request.</td>
</tr>
<tr>
<td>26</td>
<td>The support staff always try to accommodate my needs.</td>
</tr>
<tr>
<td></td>
<td>Reliability 可靠性</td>
</tr>
<tr>
<td>27</td>
<td>The clinic maintains accurate and neat records and documentation of the patient’s health related history.</td>
</tr>
<tr>
<td>28</td>
<td>My chiropractor is taking all the necessary precautions while performing treatment.</td>
</tr>
<tr>
<td>29</td>
<td>The clinic has a consistent and accurate billing practice.</td>
</tr>
<tr>
<td></td>
<td>Recoverability 可恢復性</td>
</tr>
<tr>
<td>30</td>
<td>Staff quickly apologize for mistakes.</td>
</tr>
<tr>
<td>31</td>
<td>My chiropractor cares about patients’ complaints.</td>
</tr>
<tr>
<td>32</td>
<td>I am certain that the clinic takes my complaints seriously.</td>
</tr>
<tr>
<td></td>
<td>Perceived Waiting time 輪候時間</td>
</tr>
<tr>
<td>33</td>
<td>I did not have to wait too long in the waiting</td>
</tr>
</tbody>
</table>

107
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>34.</td>
<td>Total time spent waiting to see my chiropractor was longer than expected.</td>
<td>我在等候室等待的時間沒有過長。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>Actual waiting time in the waiting room was longer than expected.</td>
<td>實際在等候室等待時間比預期更長。</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Reputation 形象</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>My chiropractor is a respectable professional.</td>
<td>我的脊椎治療師是一個受人尊敬的專業人士。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>The clinic is well-known in town.</td>
<td>該脊椎治療診所在城市是眾所周知。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>My chiropractor is among the top choices for people seeking treatment.</td>
<td>我的脊椎治療師是尋求治療的人之間的最佳選擇。</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Patient loyalty 患者忠誠度</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>I will continue seeking treatment from my chiropractor.</td>
<td>我會繼續向我的脊椎治療師尋求治療。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>I would recommend my chiropractor to others.</td>
<td>我會推薦我的脊椎治療師給其他人。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>I would continue seeking treatment from this clinic even its service charge increase somewhat.</td>
<td>即便治療的服務收費有所增加，我也會繼續向該診尋求治療。</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Thank you for your assistance!**

感謝您的幫助！
Appendix C - Information Statement with Explanation to Participants

For further information:
Researcher: Daniel Kuan
Tel: +853 62636465
Email: c3065132@uno.edu.au
Supervisor: Dr. John Fisher
Tel: +61 249487373
Fax: +44 1159334288
Email: John.fisher@newcastle.edu.au

Information Statement for the Research Project:

[Determinants of consumer satisfaction among chiropractic consumers in Macao]

Document Version [01]; dated [23/01/2013]

You are invited to participate in the research project identified above which is being conducted by Daniel Kuan at the University of Newcastle, Australia. The research is part of Daniel Kuan’s studies at the University of Newcastle, Australia, supervised by Dr. John Fisher.

Why is the research being done?

This research intended to identify factors that can predict consumer satisfaction among chiropractic consumers in Macao, and to examine the relationship between consumer loyalty and consumer satisfaction.
為何要進行是次研究？
今次的研究是用來找出原因去預知澳門脊椎治療法使用者的滿意度，以及使用者滿意度和忠誠度兩者的關係。

Who can participate in the research?
Current chiropractic consumers, who are 18 or above, are invited to participate in the research.
年齡界乎 18 歲或以上的脊椎治療法使用者被邀請參與是次的研究。

What choice do you have?
Participation in this research is entirely voluntary. The survey is completely anonymous so that neither responses nor individuals can be identified. There can be no record of you or whether or not you have participated. If you do decide to participate, you may withdraw from the project at any time prior to the electronic submission of your survey. As the survey is anonymous, it is implied that you have given your consent once we have received your completed questionnaire. Thus, you cannot withdraw once you have submitted your survey.

是次研究你能如何選擇？
是次的研究參與完全是出於自願的。是次的調查是完全不記名所以沒有任何回應或個人會被辨別出來。參與者是否有參與是不會被記錄的。若你決定參與是次研究只需通知我們的研究員。只要在你的調查結果還未發出之前，你可以隨時中途退出是次的研究。由於是次的調查是不記名的，所以只要我們收到你已填妥的問卷即表示你已同意參與是次調查。故此當你交上了填妥的問卷你便不能退出今次的調查。

What would you be asked to do?
If you agree to participate, you are asked to complete an online questionnaire found at the following address:www.chiro-research.net.

是次研究你將會被要求做什麼？
若閣下同意參加，你只需要在 www.chiro-research.net 的網址上把這份網上問卷填妥。
How much time will it take?
The questionnaire will take approximately twenty minutes to complete.

是次的研究需時多久？
整份問卷只需 20 分鐘填妥。

What are the risks and benefits of participating?
There are neither risks nor direct benefits for any individual participant. However, it is hoped the research will lead to greater understanding of chiropractic consumers’ attitude and behaviours.

參與是次的研究有什麼危害和利益？
參與者是不會遇到任何危害和獲得直接利益。但希望通過是次研究能對脊椎治療法使用者的態度和行為作進一步的了解。

How will your privacy be protected?
As the data collected in this research is anonymous, no individual respondent or survey is able to be identified. Access to the survey will be via the hotlink in this Information Statement and thus no link can be established between your email address and your completed survey. Information from individual questionnaires will be aggregated for analysis. The data will be stored in password-protected computers accessible only to the researchers and will be disposed of in accordance with the University of Newcastle’s policy and procedures for the disposal of confidential material.

今次研究所收集的數據是匿名的，沒有任何人仕或調查是可以被識別出來的。只有通過在資料說明書上的超連結才能進入是次的調查，但你己完成的調查報告是不會與你的電子郵箱有超連結的。每一份問卷上的資料是被搜集作分析用途。只有研究員才能開啓儲存在有密碼保護的電腦內的數據和根據紐卡素大學的政策和程序把保密的資料在保密的情況下消毀。

How will the information collected be used?
Results from this research form the basis of a thesis submitted for Doctoral degree; individual respondents will not be identified in any reports arising from this research. Once
the report is finalised, a summary will be made available on the survey website –
www.chiro-research.net. It is anticipated that the report will be completed by August, 2013.

What do you need to do to participate?

Please read this Participant Information Statement and be sure you understand its contents
before you commence the questionnaire. If you have any questions regarding this study, or
would like additional information about participation, please contact the researcher, Daniel
Kuan, at (853) 62636465 or by email c3065132@uno.edu.au. You can also contact the
research supervisor, Dr. John Fisher, by telephone at (+61)249487373 or by email at
John.fisher@newcastle.edu.au. Once you have read and understood the statement and wish
to proceed, please fill in the online questionnaire, and submit it online after the completion.

You need to do what to participate?

請參閱參與資料說明書和肯定明白裡面的內容在你未開始回答問卷之前。如果你
有任何疑問關於是次的研究或想提供更多參與的資料，請致電 (853) 62636465
聯絡是次研究員 Daniel Kuan 或電郵至 c3065132@uno.edu.au。亦可致電 (+61) 249487373，聯繫是次研究的指導老師 John Fisher 博士或電郵至
John.fisher@newcastle.edu.au。當閣下已參閱明白參與資料說明書後仍想繼續參
與是次研究，請把網上問卷填妥後便在網上繳交。

Further information

If you would like further information, please contact the researcher, Daniel Kuan, at (853)
62636465 or by email c3065132@uno.edu.au.

Thank you for considering this invitation.
Your participation would be greatly valued.

Firstname Lastname  Research Student
Dr. John Fisher  Daniel Kuan
Research Supervisor  Student Researcher

All Information Statements must be signed. The printed name and position of at least the Chief
Investigator must appear, together with his/her signature.
For student projects, the Information Statement must be signed by both the Project Supervisor and the student.

獲取進一步的資料
如果你想獲得進一步的資料，請致電（853）62636465 或電郵到
c3065132@uno.edu.au 聯絡研究員 Daniel Kuan。

感謝你考慮接受是次研究的邀請。你的參與受到高度重視。

Firstname Lastname 姓名
Research Student Daniel Kuan

Dr. John Fisher
Research Supervisor 研究導師
Student Researcher 學生研究員

所有的參與資料說明書需要簽名及連同首席的研究員的正楷名字和職位都要填上。學生的科研項目，參與資料說明書需要包括研究導師和學生研究員兩者的簽名。

Complaints about this research
This project has been approved by the University’s Human Research Ethics Committee, Approval No. H-2012-0397. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone +61-2-4921-6333, email Human-Ethics@newcastle.edu.au
OR the following local contact: [Daniel Kuan, Researcher, (853) 62636465]
Appendix D- Information Statement with Explanation to Organization

For further information:
Researcher: Daniel Kuan
Tel: +853 62636465
Email: c3065132@uno.edu.au
Supervisor: Dr John Fisher
Tel: +61 249487373
Fax: +44 1159334288
Email: John.fisher@newcastle.edu.au

Information Statement for the Research Project:

[Determinants of consumer satisfaction among chiropractic consumers in Macao]

Your clinic is invited to participate in the research project identified above which is being conducted by Daniel Kuan from the University of Newcastle, Australia. The research is part of Daniel Kuan’s studies at the University of Newcastle, supervised by Dr. John Fisher.

Why is the research being done?

114
This research is intended to identify factors that can predict consumer satisfaction among chiropractic consumers in Macao, and to examine the relationship between consumer loyalty and consumer satisfaction.

Why to conduct this research?
今次的研究是用來找出原因去預知澳門脊椎治療法使用者的滿意度，以及使用者滿意度和忠誠度兩者的關係。

Who can participate in the research?
We are seeking current chiropractic consumers who are 18 or above and we think your clinic is in the best position to assist us in providing this group of individuals the opportunity to participate in this research.

誰能參與是次研究？
我們正在尋找年齡在 18 歲或以上的脊椎治療法使用者，而我們相信貴診所是處于最理想的姿態來提供給我們最合適的人選參與是次的研究。

What choice do you have?
Participation in this research is entirely voluntary. If your clinic decides to participate, it may also withdraw from this study at any time, without any negative consequences, simply by informing the researcher.

是次研究你能如何選擇？
是次的研究參與完全是出於自願的。若貴診所決定參與是次研究只需通知我們的研究員。而中途貴診所想隨時退出是次的研究對貴診所亦絕對沒有任何不良的影響。

What would you be asked to do?
If you consent to participate, this will involve making the participant information sheets available to your clients by leaving those information sheets in the waiting room.

是次研究你將會被要求做什麼？
How much time will it take?

Approximately four weeks.

是次的研究需時多久？

大約四星期。

What are the risks and benefits of participating?

There are neither risks nor direct benefits for any individual participant. However, it is hoped the research will lead to greater understanding of chiropractic consumers’ attitude and behaviours.

參與是次的研究有什麼危害和利益？

參與者是不會有任何危害和利益。但希望通過是次研究能對脊椎治療法使用者的態度和行爲作進一步的了解。

How will your privacy be protected?

The name of your office and the names of any of your participating clients will not appear in any thesis or publication resulting from this research. As the data collected in this research is anonymous, no individual respondent or survey is able to be identified. All information gathered will be considered confidential, and the data collected will be kept in a secure location and confidentially disposed of in accordance with the University of Newcastle’s policy and procedures for the disposal of confidential material.

你的隱私怎樣受到保障？

在是次研究中，貴診所名稱和參與的病患者姓名將不會在本論文和是次研究的刊物裡公開。由於是次研究所收集的數據是匿名的，任何參與者或調查是會被識別的。所有搜集的資料將被保密，和所搜集的數據一起被保存在一個安全的地點，並且根據紐卡素大學的政策和程序把保密的資料在保密的情況下消毀。

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**How will the information collected be used?**

Results from this research will form the basis of a thesis submitted for Doctoral degree; individual respondents will not be identified in any reports arising from this research. Once the report is finalised, a summary will be made available on the survey website – www.chiro-research.net. It is anticipated that the report will be completed by August, 2013.

**搜集的資料將怎樣被使用？**

是次研究的結果將會在一份博士論文內透露；參與是次研究的個人參與者不會在任何報告被識別出來。當是次的研究報告完成後，將會有一份關於是次研究調查的簡報表在 www.chiro-research.net 的網站內發表，預計是次研究報告將在 2013 年 8 月完成。

**What do you need to do to participate?**

Please read this Participant Information Statement and be sure you understand its contents before you commence the questionnaire. If you have any questions regarding this study, or would like additional information about participation, please contact the researcher, Daniel Kuan, at (853) 62636465 or by email c3065132@uno.edu.au. You can also contact the research supervisor, Dr. John Fisher, by telephone at (+61)249487373 or by email at John.fisher@newcastle.edu.au. Once you have read and understood the statement and wish to proceed, please make the participant information sheets available to your clients by leaving those information sheets in the waiting room.

**你需要做什麼來參與？**

請參閱參與資料說明書和肯定明白裡面的內容在你未開始回答問卷之前。如果你有任何疑問關於是次的的研究或想提供更多參與的資料，請致電 (853)62636465 聯絡是次研究員 DANIEL KUAN 或電郵致 c3065132@uno.edu.au。亦可致電 (+61)249487373 聯絡是次研究的指導老師 JOHN FISHER 博士或電郵至 John.fisher@newcastle.edu.au。當閣下已參閱明白參與資料說明書後仍想繼續參與是次研究，請把參與者資料表放在貴診所的候診室給病人填寫進一步的資料。

**Further information**

If you would like further information, please contact the researcher, Daniel Kuan, at (853) 62636465 or by email c3065132@uno.edu.au.
Thank you for considering this invitation.
Your participation would be greatly valued.

Firstname Lastname Research Student
Dr. John Fisher Daniel Kuan
Research Supervisor Student Researcher

All Information Statements must be signed. The printed name and position of at least the Chief Investigator must appear, together with his/her signature.

For student projects, the Information Statement must be signed by both the Project Supervisor and the student.

獲取進一步的資料
如果你想獲得進一步的資料，請致電（853）62636465 或電郵到
c3065132@uno.edu.au 聯絡研究員 Daniel Kuan。

Complaints about this research
This project has been approved by the University’s Human Research Ethics Committee, Approval No. H-2012-0397. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone +61-2-4921-6333, email Human-Ethics@newcastle.edu.au
OR the following local contact: [Daniel Kuan, Researcher, (853) 62636465]

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Appendix E- Newspaper Advertisement

Ethic Conditional approval reference no: H-2012-0207

Participants Wanted

Chiropractic consumers are invited to take part in an anonymous online survey about their experiences with chiropractic services in Macau. The research is part of a doctoral research project from the University of Newcastle, Australia, by Mr Daniel Kuan. The survey will take 20 minutes. If you want to participate or are interested in knowing more about the research, please visit the website: www.chiro-research.net.

Thank you for your consideration!
Appendix F - Survey Website Screenshot (English Version)
Chiropractic consumer survey

Thank you for your interest!
Appendix G – Survey Website Screenshot (Chinese Version)