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An exploratory mixed-method study to determine factors that may affect satisfaction levels of athletes receiving chiropractic care in a nonclinic setting[☆]

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Abstract

Objectives: The objectives of this study were to determine factors that may affect satisfaction levels of participants in a nonclinic (sport) setting through participant observation and participation. Factors associated with general satisfaction (observed) were determined along with a participant demographic profile, participant knowledge about chiropractic, and satisfaction with treatment received from a chiropractic student. Thereafter, the relationships between the demographic factors, participant knowledge, and participant general satisfaction were determined. Lastly, factors affecting satisfaction levels were compared between the participants and the observers.

Methods: An exploratory mixed-method observational study that compared results reported by 30 participants and 2 observers, regarding the treatment process, by completion of a self-administered questionnaire. Statistical significance was set at P less than or equal to .05.

Results: Of the 30 participants, 83.3% were South African, 90% were white, and 63.3% were male, with a mean age of 35.6 years, who reported they were very satisfied with chiropractic care ($P = .229$). The only factor to produce a significant difference between participants and observers was communication ($P = .082$ with Spearman = .332).

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Conclusion: In this study, communication had the greatest impact; therefore, it is suggested that positive verbal and nonverbal communication be emphasized in the training of future chiropractic professionals.

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Introduction

The complex nature of perception development toward service delivery or care may be influenced by various factors¹⁻¹⁵ attributed to the perceiver (patient), the object perceived (service), and the situation in which the object is being perceived (environment)^{1,16,17} (Table 1). These factors are applicable in any setting; however, most literature reports on the clinic setting and the doctor-patient relationship.^{3-7,11,12,18-22} Thus, these factors may vary in their applicability outside of the clinic setting where different parameters in terms of privacy, limited time, exposure to environmental factors, and nonexclusive doctor-patient relationships exist.

These factors should be contextualized¹⁸⁻²⁰; and one should consider that “the quality of interaction between the physician and the patient can be extremely influential in patient outcomes and, in some (perhaps many) cases, patient and provider expectations and interactions may be more important than specific treatments.”¹⁸ The factors in all instances should be examined regarding the varied contexts between doctor-patient interaction. Therefore, it is imperative to look at those factors, as it is evident that satisfaction of a patient is not confined to the practitioner-patient relationship,

but all factors influencing this interaction—the background of the patient, the service/care provided, and the environment—as these may all shape the development of perception in patients.^{1,16,17} An exploratory, mixed-method study was designed to identify factors that may have affected levels of satisfaction of patients treated in a nonclinic (sport) setting.

Method

Design

This 2-phased satisfaction study included a documented observational phase followed by a questionnaire-based participant response phase. The data collected in the 2 phases were analyzed using SPSS version 15.0 (SPSS Inc, Chicago, IL). The significance was set at P less than or equal to .05. The design was approved by the Durban University of Technology Faculty of Health Sciences Research Committee and the Ethics Review Board. This approval declared that the research conformed to the standards set by the Helsinki Declaration of 1975.

Sample

Observer data were collected by 2 observers at each of the following nonclinic (sport) settings: Mr Price Pro surfing competition (July 2007), Durban bouldering competition (July 2007), and *Gaterite verulam* (50-km walk/42-km run/21-km run/5-km run, July 2007). Observed patients were then requested to participate until a sample of 30 (10 per event) was achieved with respect to matched data sets. Matching of the data sets was only possible when patients had given their informed consent and completed the self-administered questionnaire.

Inclusion criteria

Any registered sports person presenting as a patient and seeking treatment at one of the approved nonclinic (sport) settings was eligible for inclusion in the study.

Table 1 Factors affecting patient and/or subject perception^{1,16,17}

Factors in the Perceiver	Factors in the Environment
Attitudes	Time
Motivation	Work Setting
Interests	Social Setting
Experience	
Expectations	
Values	
Culture	
Factors in the Perceived Object (Service)	
Motion	
Novelty	
Sounds	
Proximity	
Background	
Size	

Exclusion criteria

Patients who were younger than 15 years and those who were unable to read and understand English were excluded.

Data collection sheet development

A “checklist” was generated from factors identified in the literature¹⁻¹⁵ and vetted by a focus group and pilot study.²³⁻²⁹ On completion of these processes, the checklist conformed to the principles presented by

Table 2 Excerpt of questions from the observational data collection form

1. Was the Student Suitably Dressed in His or Her Role as a Person Who Is Responsible for the Patient's Care?	Yes	No
2. Was the Student Courteous and Respectful to the Patient?	Yes	No
3. Did the Student Explain the Posttreatment Complications (eg, Pain, Stiffness)?	Yes	No
4. Did the Student Adequately Explain the Assessment Process to the Patient?	Yes	No
5. Did the Student Spend Enough Time Treating the Patient?	Yes	No
6. Were Sufficient Resources Available for the Student to Treat the Patient Effectively?	Yes	No
7. Care Received Overall Was Not Good?	Yes	No
8. Ability of the Student to Put the Patient at Ease Was Evident?	Yes	No
9. Advice on Ways to Avoid Injury and Stay Healthy Was Given to the Patients?	Yes	No
10. Were the Clinical Staff Friendly and Courteous?	Yes	No

As satisfaction is multifactorial by nature, many of the questions elicited information about one or more scale and/or subscale. The statements were subdivided into the following scale(s) and/or subscale(s):

1. General satisfaction: questions 1 to 10.
2. Understanding of the assessment process: questions 3, 4, 5, and 6.
3. Chiropractic student conduct: subscales included:
 - Competence: questions 4, 7, 8, and 9.
 - Humaneness: questions 2, 3, 8, and 10.
 - Communication: questions 3, 4, and 9.
 - Chiropractic student demeanor: questions 1, 2, 5, and 8.

Table 3 Excerpt of questions taken from the participant questionnaire (37 questions in total)

1. Was the Student Suitably Dressed in His or Her Role as a Person Who Is Responsible for Your Care?	Yes	No
2. Was the Student Courteous and Respectful to You as the Patient?	Yes	No
3. Did the Student Explain the Posttreatment Complications (eg, Pain, Stiffness)?	Yes	No
4. Did the Student Adequately Explain the Assessment Process?	Yes	No
5. Did the Student Spend Enough Time Treating You?	Yes	No
6. Were Sufficient Resources Available for the Student to Treat You Effectively?	Yes	No
7. Care Received Overall Was Not Good?	Yes	No
8. Ability of the Student to Put You at Ease Was Evident?	Yes	No
9. Advice on Ways to Avoid Injury and Stay Healthy Was Given?	Yes	No
10. Were the Clinical Staff Friendly and Courteous?	Yes	No

As satisfaction is multifactorial by nature, many of the questions elicited information about one or more scale and/or subscale. The table indicates the question number and to which scale(s) and/or subscale(s) it pertained to. The statements were subdivided into the following scale(s) and/or subscale(s):

1. General satisfaction: questions 1 to 10.
2. Understanding of the assessment process: questions 3, 4, 5, and 6.
3. Chiropractic student conduct: subscales included:
 - Competence: questions 4, 7, 8, and 9.
 - Humaneness: questions 2, 3, 8, and 10.
 - Communication: questions 3, 4, and 9.
 - Chiropractic student demeanor: questions 1, 2, 5, and 8.

Dyer,³⁰ which facilitated ease of use by the observers, yet retained a rigorous observer tool composed of satisfaction scales and subscales (Table 2).

Questionnaire development

After a review of the literature¹⁻¹⁵ and the development of a questionnaire by the researcher, the questionnaire was then evaluated by a focus group and pilot tested.²³⁻²⁹ This process of constructive development followed the guidelines described by Morgan²⁴ to

obtain face, construct, and content validities.^{28,29} Thereafter, piloting of the questionnaire commenced according to the guidelines of Hicks²⁹ and Fink and Kosekoff,³¹ leading to the finalization of the questionnaire to be used in the data collection process.

The final questionnaire contained 37 questions relating to various aspects of general satisfaction, structured according to the same scales and subscales as the observer questionnaire (Tables 2 and 3). This was to ensure that accurate and reasonable comparisons could be made between the data collection tools. As is noted in Table 3, many of the questions overlap, indicating that many of the questions have a significant role to play in many of the scales and/or subscales.

Measurement frequency

Once matched data sets were completed (ie, observational checklist and corresponding participant questionnaires) at a particular event, the data were accepted into the study.³²

Statistical methods

Based on the data, the 4 objectives were analyzed to determine factors commonly identified by both observers. These were compared using percentage agreement and, where possible, the Cohen κ statistic.^{32,33} Description of the participant demographics, their knowledge about chiropractic, and general satisfaction of the interaction between the chiropractic student and themselves were analyzed using descriptive statistics, frequency tables, and scale(s) and subscale(s) comparisons, respectively.^{32,33} The assessment of any associations between various factors were compared using nonparametric tests (Mann-Whitney and Kruskal-Wallis tests); and in some instances, the Spearman rank correlation was performed.^{32,33} To determine factors that affected general satisfaction levels (made by comparing the results from the observers and the participants), Spearman rank correlation coefficient was used.^{32,33} In all instances, the significance level was set at P less than or equal to .05.^{32,33}

Results

Objective 1 determined factors commonly identified by both observers. General satisfaction, humaneness, student demeanor, and student competence subscales were all associated with beneficial influences on the treatment process, as perceived by the observers.

Fig 1. The mean observational scores (Cohen κ) for each factor commonly identified by the observers to the treatment process. The mean score of each of the items is shown in ranked order from lowest to highest mean score. There were 7 items that scored a mean of 1, the highest possible score. Two items scored a mean of 0 (items 17 and 18). This was because “N/A” was recoded to 0, and this was the most frequent score for these 2 items. On the whole, all items received generally high scores, implying that the observers felt that the chiropractic students had mostly performed each specific task as outlined by the statements that the observers responded to.

Therefore, the 2 scales that were seen to affect participant overall satisfaction were general satisfaction and chiropractic student conduct (Fig 1).

The above items were then grouped according to the *P* value, ranked from highest to lowest, according to the κ values (where a decreasing κ value indicated the scale[s] and/or subscale[s] of less significance). These results were tabulated according to their relevant values and given a weighting score per item (a positive weighting score for highly significant and significant items and a negative weighting for an insignificant item), within the following categories:

1. Highly significant items ranked with κ values of 1 (positive weighting).
2. Highly significant items ranked with a κ greater than 0.6 (positive weighting).

Table 4 Summary of the identifiable scales and subscales in objective 1 and objective 2

Significant Scales and Subscales (Positive Weighting)			
Observers: Objective 1		Participants: Objective 2	
General Satisfaction	23	General Satisfaction	15
Humaneness	10	Humaneness	2
Chiropractic Student Demeanor	7	Chiropractic Student Demeanor	5
Competence	4	Competence	2
Insignificant Scales and Subscales (Negative Weighting)			
General Satisfaction	-3	General Satisfaction	-5
		Humaneness	-2
		Chiropractic Student Demeanor	-2
		Competence	-2
		Communication	-2
Total Scores for the Scales and Subscales			
General Satisfaction	20	General Satisfaction	10
Humaneness	10	Humaneness	0
Chiropractic Student Demeanor	7	Chiropractic Student Demeanor	3
Competence	4	Competence	0
		Communication	-2

The table shows the weighting scores of the identifiable scales and subscales from objective 1 and 2. The significant scales and subscales were given a positive weighting score and were seen to positively impact on general satisfaction levels, whereas the insignificant scales and subscales were given a negative weighting score and were seen to negatively impact on general satisfaction levels. Total scores were then calculated for each of the scales and subscales by subtracting the negative weighting scores (insignificant scale[s] and/or subscale[s]) from the positive weighting scores (significant scale[s] and/or subscale[s]).

Fig 2. Ranking of health professionals usually consulted following injury. Patients are more likely to consult general practitioners, physiotherapists, and chiropractors more often than other health care professionals.

3. Highly significant items ranked with a κ greater than 0.4 (positive weighting).
4. Highly significant items ranked with a κ greater than 0.3 (positive weighting).
5. Highly significant items without a κ value (positive weighting).
6. Significant items without a κ value (positive weighting).
7. Insignificant items with a negligible κ value (negative weighting).

All questions related to the relevant scale/subscale that were significant were given a positive (+1) weighting; all questions related to general satisfaction that were insignificant were given a negative (-1) weighting to obtain weighting scores (Table 4). Four scales and subscales were highlighted as significant, including general satisfaction, humaneness, competence, and chiropractic student demeanor. Furthermore, the only scale to be found insignificant (by a minority) was that of general satisfaction, with a negative weighting score.

Objective 2 described participant demographics; 46.7% were mostly nonprofessional athletes representing club level activity, with a mean age of 35.6 years (SD, 15.6 years; range, 17-64 years), of which 63.3% were male, 90% were white, and 83.3% were South African origin. Of the research sample, 90% had English as a first language, with second languages being Afrikaans, English, and isiZulu in order of their reporting. From a medical vantage point, it was determined that 80% were financially independent and 70.4% had access to cover from a medical aid (insurance) carrier. Furthermore, participants were more likely to seek medical care more often from chiropractors, physiotherapists, and general practitioners before seeking treatment from orthopedic surgeons and homeopaths (Fig 2).

Objective 2 also indicated that participant knowledge about chiropractic was influenced by their

Fig 3. Various conditions that participants thought were treated by chiropractors. Patients identified shoulder and neck pain as areas of focus within chiropractic practice followed by hip pain, whiplash, back pain, sciatica, low back pain, and muscle strain. Knee pain and headaches rated poorly, whereas conditions scoring a “4” were seen as conditions not treated by chiropractors.

previous exposure to chiropractic care, with 63.3% of participants having previously consulted a chiropractor and 85.7% being satisfied with the previous chiropractic care received. Irrespective of this previous interaction, it was found that only 9.1% of participants reported the correct qualifications obtained by chiropractors to practice in the South African context. With respect to the scope of practice, it was found that patients identified shoulder and neck pain as the principle areas of focus followed by hip pain, whiplash, back pain, sciatica, low back pain, muscle strain, knee pain, and headaches. The categories of allergies and colic were reported as conditions that chiropractors do not see as perceived by the participants (Fig 3).

Based on participants’ agreement or lack thereof to statements about the chiropractic profession, it was

found that attitudes were generally positive, with only 10.3% indicating that chiropractic did more harm than good or that they were uncomfortable with it. Interestingly, 86.7% thought that chiropractor provided excellent care (Table 5). Despite the above results, the median rating for knowledge and understanding of chiropractic was scored as a 3 of 5 on a Likert scale, indicating that the participants did not feel very well informed about chiropractic, although the vast majority had seen chiropractors before.

Lastly, in objective 2, the factors affecting general satisfaction levels of participants in the interaction between the chiropractic student and themselves were analyzed. The results were tabulated and given a positive weighting score for highly significant and significant items, and negatively weighted for insignificant items. Following the above method of analysis and scoring of

Table 5 Descriptive statistics of responses about the knowledge of chiropractic and attitudes toward chiropractic (true or false)

	True		False	
	Count	%	Count	%
Chiropractic Does More Harm Than Good	3	10.3%	26	89.7%
Chiropractic Is Classified as a Conservative Therapy	10	38.5%	16	61.5%
Chiropractic Is Quackery	1	3.6%	27	96.4%
It Provides Excellent Care for Some Musculoskeletal Conditions	28	96.6%	1	3.4%
Chiropractors Are Competent	29	96.7%	1	3.3%
Chiropractors Are Well Educated	28	93.3%	2	6.7%
Chiropractors Do Not Work on the Spine	3	10.3%	26	89.7%
Chiropractors Only Work on Extremities	4	13.8%	25	86.2%
I Am Uncomfortable With Chiropractic	3	10.3%	26	89.7%
I Am Not Informed Enough to Comment	4	16.0%	21	84.0%
Chiropractors Provide Excellent Care	26	86.7%	4	13.3%

the items (observational phase), the following scales and subscales were highlighted as significant in the participant phase, with positive weighting scores (Table 4): general satisfaction, humaneness, chiropractic student demeanor, and competence. Insignificant scales and subscales, all with a negative weighting score, were general satisfaction, competence, communication, humaneness, and chiropractic student demeanor.

Objective 3 highlighted relationships between the various factors documented in the second objective. General satisfaction levels identified by participants were linked to prior chiropractic care ($P = .017$) that the participants had received and the sports activity that the participant was involved in ($P = .038$). Understanding of the assessment process ($P = .005$) (significant at $P = .01$), chiropractic student competence ($P = .011$), communication subscales ($P = .006$) (significant at $P = .01$), and conduct of the

chiropractic student ($P = .036$) were linked to the reported financial status of the participant.

Factors affecting general satisfaction levels were determined by comparing and contrasting results from the participants and both observers in objective 4. This indicated that general satisfaction and chiropractic student conduct were the 2 scales that were commonly identified by both the participants and observers. Conversely, subscales within the scale of chiropractic student conduct did differ slightly between the 2 groups, where a lack of communication skills (verbal and nonverbal) was shown to be the most significantly different subscale between the participants and the 2 observers, affecting the levels of general satisfaction negatively. The resultant “0” scores (Table 4) indicated that humaneness and competence did not impact on the levels of general satisfaction positively or negatively and, thus, they did not significantly affect levels of general satisfaction.

With communication scoring negatively, it indicated that communication had a negative effect on the participants’ perceived levels of general satisfaction. Thus, communication was shown to trend toward a significantly different factor between the participants and the 2 observers ($P = .082$ with a correlation of .322). This is supported by the findings shown in Table 6 and might have reached statistical significance with a larger sample size.

Discussion

General distribution of the demographic profile of the respondents is not in keeping with the general demographic profile as published in the midyear population estimates in 2007,³⁴ which indicated that majority of the population is constituted by African males (39.26%), followed by African females (40.34%), white females (4.61%), and white males (4.48%), with the remaining population constituting various other ethnic groupings.³⁴ Results of this study are in contrast to the only South African study to report patient demographics in a chiropractic context that found most of the patients to be female.³⁵ However, levels of privacy within the nonclinic (sport) setting may have been a factor that could have affected the numbers of female patients presenting to the chiropractic treatment facility. Sporting activity may also have influenced the demographic profile of the participants, as individual sporting codes are not necessarily representative of the South African norm or the norm with respect to the patients seen within

Table 6 Spearman correlation of “communication between the chiropractic student and participant” between the observational score and the participant subscale score

			Participant Communication Between Student and Participant	Observational Communication
Spearman ρ	Participant Communication Between Student and Participant	Correlation Coefficient	1.000	.322
		Sig. (2-Tailed)	.	.082
		N	30	30
	Observational Communication	Correlation Coefficient	.322	1.000
		Sig. (2-Tailed)	.082	.
		N	30	30

Communication trended toward being a significantly different factor between the participants and the 2 observers ($P = .082$) according to Spearman correlation score = .322.

chiropractic practices. Notwithstanding the limitations on generalization of the outcomes presented by the seemingly skewed demographics, the reported understanding that the participants had of the chiropractic scope of practice was still similar to the literature.³⁵⁻⁴² These choices may also have been based on the participants trying to match their perception of chiropractic scope of practice to the nonclinic (sport) setting, in which they may have perceived a subtle difference in conditions treated as opposed to the clinic setting. In addition, it can also not be assumed that the participants may have rated chiropractors more highly than would be the norm based on the principles of the Hawthorne⁴³ effect or the interpretation of the title of doctor,^{11,42} as the majority of responses (45.5%) indicated that chiropractors were perceived to have obtained a PhD to practice. It must however be considered that the small sample size of this study may have contributed to the above-mentioned outcomes that may be inherently skewed.

Previous experience of chiropractic care is demonstrated as having an influence on the manner in which chiropractic care and levels of satisfaction are rated^{3,5}; however, studies have found confounding factors that influence satisfaction levels.⁴⁴ What is evident from the literature^{3,4,6-11} is that many factors will detract or enhance the perceived levels of satisfaction dependent on, among others factors, previous satisfaction and the constraints of the place, time, and service being evaluated.^{1,16,17} In this respect, several studies^{5,9,10,13,21,22,44-48} have focused on patient satisfaction levels in the field of chiropractic showing favorable results in high satisfaction levels.

Results of this research agreed with the literature^{5,9,10,13,21,22,44-48} because it was found that the

participants and both observers rated general satisfaction and chiropractic student conduct as being positive influencers on satisfaction levels resulting in a high satisfaction level. Inconsistencies between the subscales of humaneness and chiropractic student competence were reported as having no effect on general satisfaction by the participants as opposed to the 2 observers.⁴⁴ In addition, the communication subscale affected the levels of general satisfaction negatively, as reported by the participants only. This is important because communication has been shown to have a significant impact on the outcome of perceived satisfaction.^{14,15} Thus, the way in which a chiropractic student acts in a verbal and nonverbal manner affects patient outcomes significantly. It is therefore suggested that verbal and nonverbal communication be emphasized in the training^{14,15} of future chiropractic professionals.

Conclusion

As communication consists of both verbal and nonverbal components, the research was unable to elicit which aspects had the greatest impact; and it is therefore suggested that further investigation into the contribution of each of these components should be conducted using larger sample sizes. It is suggested that positive verbal and nonverbal communication be emphasized in the training of future chiropractic professionals.

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