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ORIGINAL ARTICLE

Assessing attitudes of patient-centered care among chiropractic students at a South African university

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Objective: Patient-centered care (PCC) is acknowledged globally as a foundation of quality patient care and key to doctor–patient rapport. Student attitudes toward PCC have been assessed in some health professions and some international chiropractic institutions but is lacking in the South African chiropractic student context. This study explores this concept and compares these attitudes to other student groups.
Methods: A cross-sectional survey was conducted on chiropractic students (years 1, 3, 5, and 6) at a South African institution. The 18-item Patient–Practitioner Orientation Scale (PPOS), with scoring 1–6 on a Likert scale, was used to evaluate the attitude toward PCC by students. Higher scores were representative of more patient-centeredness. Variables were analyzed to assess for associations between variables. Mean PPOS scores were calculated, and reliability and validity were tested using Cronbach α and factor analysis.
Results: There were 100 respondents (68% response rate). The PPOS showed unsatisfactory reliability in our sample. The mean scores for the overall PPOS were 3.64 (SD = 0.46), the sharing subscale was 2.99 (SD = 0.61), and the caring subscale was 4.29 (SD = 0.58). There were small but suggestive trends noticed in PPOS scores based on age, sex, and year of study.
Conclusions: Chiropractic students from our university showed a general positive tendency toward PCC with no association between age and year of study. Sex showed some suggestive descriptive trends contrary to findings in other studies. The PPOS showed poor reliability in this study, warranting consideration with its use in similar contexts.

Key Indexing Terms: Patient-Centered Care; Attitude; Chiropractic; Student; South Africa

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INTRODUCTION

The quality and effectiveness of health care is fundamentally reliant on evidence-based practice[1] (EBP), which has been widely accepted as good clinical practice.[2] EBP is supported by policy makers and educators[3] as it has been shown to improve patient safety and clinical outcomes while reducing health care expenses with more consistent patient outcomes.[4–7] EBP is described as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research."[8] Following reproach from primary health care practitioners, "patient values" were included into the EBP decision-making process.[9]

Patient-centered care (PCC), a second model, refers to an approach to the planning, delivery, and evaluation of health care grounded in equitable partnerships between health care providers, patients, and their families.[10] There are several vital components within PCC, including working with the patient's beliefs and values, patient engagement, a sympathetic presence, sharing decision making and providing for physical needs.[11] The combination of EBP and PCC has the potential to enhance patient outcomes. However, a paradoxical relationship occurs as EBP and PCC have contradictory definitions.[12–14] Although scientific knowledge is the foundation of EBP, PCC is mindful to individualized patient preferences, needs, and values where patient values are a guide to all clinical decisions.[15] This has created the need for the inception of yet another trend, Evidence-Based Patient Choice, which aims to merge the EBP and PCC practices allowing the patient the lead role in making informed decisions based on current best evidence.[3,16,17]

The biopsychosocial model, a third model, combines the biological, psychological, and social aspects of a

patient's illness. It proposes that health care providers view a patient within the broader context, socially and culturally, of his/her illness and suggests incorporating the psychosocial elements of the patient encounter and including them when managing acute or chronic physical disorders.[18] Researchers have further expanded the biopsychosocial model to incorporate the spiritual element known as the biopsychosocial-spiritual model[19–21] to create a more inclusive model of care.[21] The World Health Organization supports and recognizes the importance of spirituality in the shift toward a more holistic health care that merges material and immaterial dimensions.[22] The biopsychosocial-spiritual model is advocated by over 1800 studies that show significant and positive relationships between religion and spirituality to mental or physical health.[23] PCC is included in the biopsychosocial model framework to a point where they overlap each other. By separating the overlap, PCC explores the experience of the disease from the patient's point of view, looking at the person as a whole thus improving the doctor–patient relationship. The biopsychosocial model on the other hand evaluated systematically the psychological and social aspects, it incorporates new dimensions of the disease and if the perception of the disease is altered, the result can be affected.[24]

Throughout the history of chiropractic, the biopsychosocial model has been implemented with its key features of patient assessment and the delivery of care.[25] Chiropractic care has similar characteristics to the biopsychosocial model as a triad of health, which includes nutritional/chemical, emotional/mental, and physical/structural concepts. In their profession, chiropractors connect with the socioemotional status of patients and build a relationship of attention, patience, kindness, and sympathy.[25] The chiropractic profession has long laid claim to offering patient-orientated health care with the chiropractic philosophical constructs of vitalism, holism, humanism, conservatism, and naturalism lending themselves to a patient-centered, rather than physician-centered, form of care.[26]

Certain variables have been shown to relate to the attitudes of health care students and professionals toward PCC. Female students generally have higher average scores than male students,[27–31] and some studies conclude that increasing age influences scores,[29] whereas year of study has shown, in some studies, to have no effect on average scores.[28,32–34]

In South Africa, there are 2 university-based chiropractic educational programs that are accredited by the Council for Higher Education and registered with the South African Qualifications Authority.[35] Both these institutions hold international accreditation with the European Council on Chiropractic Education,[36] obtained in 2009 and 2010, respectively. The educational model at the time of this study comprised a 3-year National Diploma followed by a 1-year Bachelor in Technology then 2-year Master of Technology. This has since been reformatted to a 4-year professional Bachelor of Health Sciences Chiropractic followed by a 2-year professional Master of Health Sciences Chiropractic degree.

PCC is seen as an integral component to current health services[37] yet there is no insight into the attitudes of chiropractic students in South Africa regarding PCC, which indicated the need for this study. Therefore, the purposes of this study were to evaluate the relationship of certain variables on chiropractic students' attitudes toward PCC and to determine if these attitudes changed over the course of their studies. This information could then inform clinical and academic stakeholders regarding students' attitudes toward PCC and make comparisons with other chiropractic and health sciences students from other universities.

METHODS

Design

A cross-sectional study of chiropractic students was conducted using an online survey in the 2019 academic year. The study received ethical clearance from the Health Sciences Research Ethics Committee at the University of Johannesburg, South Africa (REC-01-04-2019).

Participants

Only undergraduate first- and third-year (preclinical) and postgraduate fifth- and sixth-year (clinical) chiropractic students at the University of Johannesburg, Doornfontein campus, were invited to participate in the study. A total of 146 participants were eligible to participate in this study. These student years were targeted to assess if there was a progression in the attitudes of students to PCC from nonclinical (first and third) to clinical (fifth and sixth) years.

Recruitment and Data Collection

Participant recruitment and data collection occurred over a 4-week period from April 15, 2019, to May 15, 2019. Students received a link, via WhatsApp messenger (WhatsApp, Facebook, Inc, Menlo Park, CA), from their respective class representatives, which included an invitation to participate in the study and an information letter. It was explained in the link that the survey was voluntary and that by clicking "continue" the student was signifying consent to complete the survey anonymously as no identifying data were collected. Reminders were sent via WhatsApp messenger on a weekly basis. The survey was distributed using the MySurveyLab online platform (Survey Lab, 7 Points Ltd, Warsaw, Poland). The extracted data were labelled using identification numbers and stored on the University of Johannesburg's password-protected server.

Measures

Primary Outcome

The Patient–Practitioner Orientation Scale (PPOS), administered in English, was used to measure the primary outcome. The PPOS was developed by Krupat et al[31,38,39] and has shown to reliably assess the clinicians' and patients' orientations toward control in their relationship. However, the reliability of the PPOS was re-tested in the context of this setting as other African studies have shown

poor internal consistency[40,41] indicating that findings on the reliability of the PPOS are varied. The PPOS contains 18 items that reflect 2 domains related to the patient, namely, sharing and caring. Participants were required to respond to all the items. The 9-item "sharing" domain assessed whether the respondents believed that power and control should be shared between both doctors and patients, as well as the degree to which the doctor should share information with a patient. The 9-item "caring" domain measured whether the respondents considered the expectations, feelings, and preferences of patients to be critical components of the doctor–patient relationship. Each item is presented in the form of a statement and uses a 6-point Likert scale (strongly agree to strongly disagree) where mean scores are ranked and divided into 3 groups: high scores (patient-centered, with a mean score of 5.00 or greater), medium scores (greater than 4.57 but less than 5.00), and low scores (doctor-centered, mean of 4.57 or less).[42] An average score of the 18 items in total and the sharing and caring subscales was recorded.

Explanatory Factors

The primary independent variables that were of special interest were the students' ages, sex, and year of study. These independent variables were then descriptively compared with other student PPOS studies to note any similarities or differences between the student cohorts. Studies have shown that PPOS scores may vary with differing age and sex.[28,43]

Data Analysis

The responses were analyzed by calculating the means, which were ranked using the SPSS version 26.0 software program (Statistical Product and Service Solutions, IBM, Armonk, NY). Descriptive statistics were generated and an inferential comparative analysis, appropriate for the sample size and the nature of the variables, was used to address the research question. Based on the exploratory data analysis method, the statistician decided whether the variables would be analyzed using either parametric tests or nonparametric tests and, thus, either analysis of variance or the Mann-Whitney *U* test were used. After the data had been collected, a mean average of the differences and similarities between the opinions of the students was calculated. This provided a better understanding of what PCC meant to them. The internal consistency of the PPOS and its subscales were measured using Cronbach α followed by confirmatory factor analysis.

RESULTS

Sample

A total of 100 complete responses were received from a sample of 146 students indicating a 68% response rate. The number of responses per year were as follows: first year (n = 24, 24%); third year (n = 21, 21%); fifth year (n = 24, 24%); and sixth year (n = 31, 31%). The sample consisted of 79% (n = 79) female and 21% (n = 21) male students. Most of the participants were in the 21–25 age group (n = 51, 51%), whereas the second largest group of participants was in the 18–21 age bracket (n = 31, 31%), followed by the age group 25+ (n = 18, 18%).

Internal Consistency

The Cronbach α value for the overall PPOS score, the sharing component and the caring component were 0.53, 0.49 and 0.34, respectively. Acceptable values of Cronbach α range from 0.70 to 0.95.[44,45] The mean interitem correlations for the overall PPOS, the sharing component, and the caring component, were 0.05, 0.09, and 0.05. The reliability of the PPOS instrument was shown to be unsatisfactory in our student sample; however, the PPOS scores were compared between years to determine any emerging trends.

Scores of PPOS

Table 1 shows the mean and SD values for each year of study per item and overall PPOS with the sharing and caring subscales.

Year of Study

There was a statistically significant difference between the first-year (p = .041) and sixth-year students (p = .015) when compared with students in the fifth year for the sharing subscale. This indicates that the fifth-year students were less inclined to share power, responsibility, and information[24] with their patients compared with those in the first year or the sixth year. For the item "when patients disagree with their doctor, this is a sign that the doctor does not have the patient's respect and trust," the earlier year students mostly agreed, whereas the senior students mainly disagreed with a statistical significance of p = .032. For the item "most patients want to get in and get out of the doctor's office as quickly as possible," the first- and fifth-year students mostly agreed, whereas the third- and sixth-year students were indifferent with a statistical significance of p = .002.

Age

There were no statistically significant findings based on the age of students in our student cohort (p = .890). Table 2 represents the mean and SD values for each age bracket.

Sex

Male students were more inclined to sharing (mean = 3.036; SD = 0.531) with their patients than the female students (mean = 2.910; SD = 0.607) with a statistically significant value of p = .006. There were no statistically significant differences between the caring subscale for male students (mean = 4.195; SD = 0.575) and female students (mean = 4.309; SD = 0.588) nor any differences in the overall PPOS for male students (mean = 3.752; SD = 0.416) and female students (mean = 3.609; SD = 0.463).

For the items "the doctor is the one who should decide what gets talked about during a visit" (p = .028) and "although health care is less personal these days, this is a small price to pay for medical advances" (p = .042), the male students mostly agreed, whereas the female students

Table 1 - Mean Values Per Year of Study for Each Patient–Practitioner Orientation Scale (PPOS) Item

	Mean (SD)				
PPOS Items	**All Years**	**First Years**	**Third Years**	**Fifth Years**	**Sixth Years**
1. The doctor is the one who should decide what gets talked about during a visit.	3.11 (1.47)	2.63 (1.37)	3.05 (1.35)	3.21 (1.28)	3.45 (1.69)
2. Although health care is less personal these days, this is a small price to pay for medical advances	3.32 (1.49)	3.75 (1.59)	3.19 (1.47)	2.88 (1.39)	3.42 (1.47)
3. The most important part of the standard medical visit is the physical exam.	4.19 (1.39)	4.42 (1.31)	4.05 (1.59)	4.25 (1.67)	4.06 (1.06)
4. It is often best for patients if they do not have a full explanation of their condition.	1.87 (1.21)	1.92 (1.17)	1.81 (1.43)	1.67 (0.91)	2.03 (1.30)
5. Patients should rely on their doctors' knowledge and not try to find out about their conditions on their own.	3.71 (1.74)	3.50 (1.91)	3.95 (1.68)	3.08 (1.88)	4.19 (1.42)
6. When doctors ask a lot of questions about a patient's background, they are prying too much into personal matters.	1.55 (0.80)	1.46 (0.93)	1.71 (0.78)	1.38 (0.64)	1.65 (0.83)
7. If doctors are truly good at diagnosis and treatment, the way they relate to patients is not that important.	1.97 (1.21)	2.13 (1.45)	1.52 (0.68)	1.75 (0.84)	2.32 (1.42)
8. Many patients continue asking questions even though they are not learning anything new.	3.07 (1.38)	2.88 (1.32)	2.48 (1.28)	3.00 (1.44)	3.68 (1.27)
9. Patients should be treated as if they were partners with the doctor, equal in power and status.	4.15 (1.53)	4.54 (1.53)	4.29 (1.45)	3.88 (1.70)	3.97 (1.44)
10. Patients generally want reassurance rather than information about their health.	4.04 (1.20)	3.50 (1.06)	3.90 (1.22)	4.13 (1.36)	4.48 (1.02)
11. If a doctor's primary tools are being open and warm, the doctor will not have a lot of success.	2.19 (1.32)	1.75 (1.22)	2.00 (1.04)	2.38 (1.31)	2.52 (1.50)
12. When patients disagree with their doctor, this is a sign that the doctor does not have the patient's respect and trust.	3.29 (1.32)	3.96 (1.36)	3.14 (1.15)	2.88 (1.22)	3.19 (1.35)
13. A treatment plan cannot succeed if it conflicts with a patient's lifestyle of values.	4.82 (1.23)	4.63 (1.40)	5.10 (1.13)	4.83 (1.30)	4.77 (1.11)
14. Most patients want to get in and get out of the doctor's office as quickly as possible.	4.00 (1.35)	4.42 (1.06)	3.76 (1.70)	4.33 (1.16)	3.58 (1.33)
15. The patient must always be aware that the doctor is in charge.	3.88 (1.40)	3.54 (1.50)	3.81 (1.56)	3.92 (1.24)	4.16 (1.34)
16. It is important to know a patient's culture and background to treat the person's illness.	5.15 (1.08)	4.71 (1.57)	5.43 (0.67)	5.46 (0.77)	5.06 (0.96)
17. Humor is a major ingredient in the doctor's treatment of the patient.	3.97 (1.23)	4.29 (1.30)	4.10 (1.17)	3.71 (1.42)	3.84 (1.03)
18. When patients look up medical information on their own, this usually confuses more than it helps.	4.61 (1.31)	3.88 (1.51)	5.14 (1.10)	4.67 (1.27)	4.77 (1.08)
Sharing subscale	2.99 (0.61)	3.02 (0.45)	2.89 (0.68)	2.78 (0.51)	3.19 (0.68)
Caring subscale	4.28 (0.58)	4.24 (0.64)	4.37 (0.59)	4.28 (0.58)	4.26 (0.54)
Overall PPOS scale	3.63 (0.45)	3.63 (0.44)	3.63 (0.45)	3.53 (0.43)	3.72 (0.47)

Table 2 - Mean Values Per Age Group for Patient–Practitioner Orientation Scale (PPOS)

	Mean (SD)		
PPOS	**18–21 years**	**21–25 years**	**25+ years**
Sharing	2.982 (0.617)	2.976 (0.550)	3.061 (0.779)
Caring	4.250 (0.0683)	4.300 (0.551)	4.302 (0.501)
Overall PPOS	3.616 (0.503)	3.638 (0.429)	3.682 (0.465)

Table 3 - The Relationship of Patient-Practitioner Orientation Scale Items Indicating Patient-Centeredness to Year of Study, Age, and Sex

Items Indicating Patient-Centeredness	Year of Study, *P* Value	Age, *P* Value	Sex, *P* Value
It is often best for patients if they do not have a full explanation of their condition. Students mostly disagreed to this item.	.369	.412	.918
If doctors are truly good at diagnosis and treatment, the way they relate to patients is not that important. Students mostly disagreed to this item.	.117	.292	.153
Many patients continue asking questions even though they are not learning anything new. Students mostly disagreed to this item.	.225	.074	.091
Patients should be treated as if they were partners with the doctor, equal in power and status. Students mostly agreed to this item.	.428	.675	.705
A treatment plan cannot succeed if it conflicts with a patient's lifestyle of values. Students mostly agreed to this item.	.916	.714	.844
It is important to know a patient's culture and background in order to treat the person's illness. Students mostly agreed to this item.	.408	.270	.370

disagreed with these statements. Regarding the item "humor is a major ingredient in the doctor's treatment of the patient," male students mostly agreed, whereas female students agreed to a lesser extent ($p = .027$).

Many items relating to patient-centeredness showed no statistically significant findings indicating that students across the various years of study, students of all ages, and students of both sexes had similar attitudes. Patient-centered items with their statistically insignificant values are listed in Table 3, indicating no differences amongst the subsequent years of study, age, and sex and a common positive trend toward patient-centeredness.

DISCUSSION

This study set out to determine the attitudes of chiropractic students toward patient-centeredness and to see if these attitudes changed over the course of their studies. The PPOS was the instrument of choice as it has been shown previously to be valid[46] and reliable.[29,31,34] However, contrary to these previous studies, this current study did not show the PPOS to be a reliable instrument, in the context of the study. Although reliability was limited, certain relevant trends were observed. Results indicate a strong inclination toward patient-centeredness by all of the chiropractic students at the University of Johannesburg in South Africa from first year to the final sixth year. Although there were no statistically significant differences found across the sample (including age, sex, and year of study) to the overall PPOS, some statistically significant differences were nonetheless noted in the sharing subscales with female students scoring less in the sharing subscale than male students. Sixth-year students were more inclined to share power, responsibility, and information[24] than the first-year students.

Although the above referenced studies found satisfactory internal consistency,[29,31,34] other studies have found substandard internal consistency similar to that of our results.[47–49] A Saudi Arabian study on sixth-year undergraduate medical students reported a Cronbach α of 0.56,[47] with another study done on medical students in South Africa reporting a Cronbach α value of 0.51.[48] These values are consistent with the Cronbach α value in this study. Various possibilities may explain why our sample showed poor reliability. A clear understanding and definition of "patient-centeredness" should be in place in order to complete the PPOS. The definitions of PCC are inconsistent among available literature.[18] The PPOS focuses on the doctor–patient relationship, specifically that of medical doctors. The chiropractic curriculum at the University of Johannesburg incorporates the biopsychosocial model of health care, in line with the standards stipulated by the European Council on Chiropractic Education accreditation,[49] which may influence the students differently toward patient-centeredness when compared with students of other health professions. If the questions asked are relevant to the study population, this would improve validity and reliability. The first- and third-year students in this study do not have direct contact with patients and possibly could not relate to the doctor–patient relationship.

The mean overall PPOS score in this study (3.63) was lower than what was shown in other international studies. These other studies include a study on the attitudes of chiropractic students to PCC from 7 international chiropractic educational programs[34] (4.18), another study done on Swedish medical students[28] (4.20 in male students and 4.36 in female students) and a study done on Brazilian medical students[33] (4.66). These international studies all reported higher overall mean PPOS scores than what was

found in our sample. However, 2 African studies showed similar overall PPOS scores to this study, with a value of 3.38 in the Malian study[40] and 2.24–2.65 in the South African study,[48] both done on medical students. The sharing subscale reflects the student's attitude to the extent of equitable relationship between the doctor and patient, whereas the caring subscale displays the student's attitude to patient emotions and lifestyles.[33] The sharing (2.99) and caring (4.28) subscale results in this study were also found to be lower than in other studies. Results from the Brazilian medical students[33] and the international chiropractic studies[34] showed values of 4.10 and 3.89 for the sharing subscale and 5.20 and 4.48 for the caring subscale, respectively.

Caution should be applied with using the PPOS outside of high-income countries where it was developed[40] as lower-income countries do not seem to show satisfactory internal consistency. Accessibility to quality health care, availability of health care resources, when one would seek health care, and awareness of patients own health conditions are factors that could possibly influence health care in lower-income countries. The disparities seen between African counties and non-African countries are possibly influenced by the cultural differences as: "Traditional African health is not just about the proper functioning of bodily organs. Good health for the African consists of mental, physical, spiritual, and emotional stability [of] oneself, family members, and community; this integrated view of health is based on the African unitary view of reality. Good health for the African is not a subjective affair."[50] This value system that is unique to an African setting may not be inherently structured into the more Westernized PPOS resulting in its lack of internal validity in the African context.

Interestingly, this current study reported no substantial overall changes in attitude between the junior years and the senior years indicating that the chiropractic students had similar attitudes across the 6 years of study. This was consistent with numerous other studies that confirmed that scores were maintained with progressive years.[28,32–34] The similarities seen across the years in this study may be attributed to the notion that students who choose a career in health sciences already have a patient-centeredness outlook.[32] The biopsychosocial model infused curriculum introduces PCC as early as the first year of study.[49] What was shown, for the sharing subscale, was that particularly the fifth-year students were less likely to want to share information with patients when compared with the first- and sixth-year students. Because the chiropractic students in this sample first encounter patients in their fifth year, this new interaction may influence their attitude to patient sharing as they enter clinical practice with minimal patient experience and gain experience and confidence with each patient communication.

Age did not seem to have an influence on students' scores on PCC. This was a consistent finding with 1 study[27] but inconsistent with findings of other studies.[28,34] The age subscales in this study were broad in range, similar to the age groupings used in the Haidet et al[27] study. Although other studies used more specific age rages, this could possibly explain why the results from this current study were unable to find any associations with age and patient-centered attitude. The students in this current study were all quite young.

A noteworthy finding in this study, which is substantially inconsistent with all other studies reviewed,[27,28,33,34,43] was that the female students (3.60) did not show higher overall PPOS scores compared with the male students (3.75). The male students also showed a statistically significant difference in the sharing subscale (3.03) when compared with the female students (2.91). There was no statistical significance in the caring subscale between male and female students, but the female students did have a higher score for this subscale. Females tend to be more empathetic and are able to articulate better with others[28] leading to the assumption that female students would share more, our study does not corroborate this generalization. The finding that the male students "shared" more whereas the female students "cared" more may stem from the Afrocentric cultural and patriarchal system that South Africa has conventionally been accustomed to,[51] with the belief system that the male sex dominates the female one[52] resulting in "asymmetrical power-relations"[53] between the 2 sexes.

An overall positive tendency toward patient centeredness was observed (3.61) in this current study. This finding was higher than that found in Malian and Pakistani studies, similar to a Chinese study on medical students but lower than American, Brazilian, and Swedish studies.[27,28,33,40,41,43,54] This current study sample also showed a higher predilection for caring than sharing, which is inline with other African studies that also showed higher caring values.[29,40,55,56] Socioeconomic, religious, and cultural elements play a key role in the relationship between the doctor and patient and thus any differences could be explained by the differing countries.[43]

Limitations

There are currently no other studies that have explored the attitudes of PCC within chiropractic students in South Africa. This study can also be used to show that the PPOS may not be a reliable instrument to use in the South African context. Limitations of this study are that this study was cross-sectional rather than longitudinal and second- and fourth-year students were not included. It is important to note that the findings of this study cannot be generalized to the second chiropractic institution in South Africa as only the University of Johannesburg students were evaluated.

CONCLUSIONS

This study, the first to assess the attitudes of chiropractic students in South Africa toward PCC, contributes data that show a general positive tendency toward PCC by the students. There was no association between age or year of study in terms of attitudes toward PCC, but sex did show that male students were more inclined to share power, responsibility, and information

with their patients when compared with female students, contrary to what most other studies show. The PPOS, in the context of our study, showed poor reliability. This finding should be taken into consideration with the use of the PPOS in other African or international countries with similar low-income thresholds to that of South Africa. The University of Johannesburg's chiropractic program with its biopsychosocial approach as well the clinical exposure may influence students' attitudes about PCC attitudes.

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