Attitudes of medical students in Khartoum, Sudan towards the doctor-patient relationship: a cross-sectional study

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Background/Objectives. The doctor-patient relationship is essential to the delivery of high-quality medical care, and an essential means of establishing a healthy doctor-patient relationship is effective communication that allows for better patient satisfaction and outcomes. This study aimed to assess the attitude of medical students in clinical years, at the University of Khartoum towards the doctor-patient relationship and to identify the factors associated with patient centeredness.

Participants/Setting. The study was conducted on medical students in clinical years from December 2020 to March 2021. The study sample consisted of 353 medical students from years 3 to 6.

Design. The cross-sectional study utilized the Patient Practitioner Orientation Scale (PPOS) for the measurement of student attitudes towards the doctor-patient relationship. PPOS scores are calculated as a mean score that ranges from 1(indicating doctor or disease centered inclinations) to 6(indicating patient centered or egalitarian inclinations). Medical students' demographic data were collected and included; gender, age and study year.

Results. 313 students completed the survey (response rate 89%). The average total PPOS score and the 'Caring' and 'Sharing' subscale scores for the entire cohort were 4.08 (+/- 0.53 SD), 4.43 (+/- 0.58 SD) and 3.72 (+/- 0.72 SD), respectively. Female gender ($p < 0.05$) and later school year ($p < 0.05$) were significantly associated with patient centered attitudes. Age had no association with PPOS scores.

Conclusion. Medical students at the University of Khartoum display a satisfactory level of patient centeredness and gender plays a role on the degree of patient centeredness exhibited by an individual. More work needs to be done to address the fact that students were not as competent in the 'Sharing' facet of patient centeredness as they were in the 'Caring' one.

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ABSTRACT

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Keywords Doctor-patient relationship, medical student, patient centeredness, patient centered care, PPOS.

INTRODUCTION

The doctor-patient relationship is essential to the delivery of high-quality medical care, where an essential means of establishing a healthy doctor-patient relationship is effective communication that allows for better patient satisfaction, compliance and affects health outcomes in a positive manner.[1]

Following the analysis of a number of recorded doctor-patient interactions, it was deduced that seven different physician styles exist, with two significant extremes at each end of the spectrum. The extremes were dubbed patient-centered style vs a doctor-centered style. The difference in the definition of the two styles revolved around the extent to which power was shared between the physician and the patient.[2,3]

It was therefore decided, that doctor-centered physicians commanded the visit by deciding what is talked about during the visit, not establishing a two-way mechanism of exchanging information and did not allow patients to participate in decision making, as oppose to patient-centered physicians that were eager to create a partnership with their patients and to allow patients to participate actively wherever their health was concerned.[4]

Various interpretations and definitions of patient-centeredness have been put forth over the years by researchers and scientists alike, where it was also proposed that a patient-centered style is to be contrasted to a disease-centered one, where in the latter the physician employs a solely biomedical means of providing healthcare instead of attempting to relate to the patient and empathizing with them.[3,4]
As it happens there remains to be a role to doctor-patient congruence and incongruence, and conformity between patient's expectations and physicians perceived behavior in the satisfaction of patients.[3]

In an attempt to better understand the tendencies and orientations towards the various physician styles, a previously validated instrument known as the Patient Practitioner Orientation Scale (PPOS) has been developed to assess the extent to which people hold patient-centered attitudes. It is an 18-item instrument originally designed to be administered to either doctors or patients and measures individual's attitudes toward the doctor-patient relationship along two dimensions termed 'Sharing' and 'Caring'. [3,5]

The fact that medical students represent future physicians warrants the investigation of their attitudes towards the doctor-patient relationship so as to be able to identify the nature of the believes they hold towards the matter.[6]

The doctor-patient relationship is thought of as being the cornerstone for better delivery of care and improved patient satisfaction and in spite of educators' attempts to introduce curricula that foster patient centeredness, a large body of qualitative and ethnographic data exists to suggest that

the culture of medical education focuses more on the biomedical mechanisms than on the issues central to patients' preferences, concerns and emotions.[5]

While evidence suggests that by encouraging patients to take on an active role in their health care, which is promoted by physicians adopting a patient centered style of care, physicians can increase the effectiveness of their therapeutic activities.

That being said we find that an ever growing population of doctors and medical students dismiss the importance and vitality of patient-centeredness and disregard it in their everyday practice but reality remains to be that in order to warrant the best delivery of care, patient satisfaction with consequent better adherence to treatment and possible improved outcome of therapy ; there needs to be added attention to promotion of patient centeredness in medical schools as part of the educational curriculum.

This study was conducted to find out more on the attitudes of medical students towards the doctor-patient relationship and hopefully achieve results that can support the demand for curricula that foster patient-centeredness.

Studies of the kind in the region have proven scanty to nonexistent and thus hopefully this study will have shed light on a highly under researched subject matter that forms the scaffold for better delivery of care and, allow for the evolution of how the doctor patient relationship is viewed by medical educators and medical students alike.

The aims of this study have been to: (1) to quantify and describe the attitudes of 3rd, 4th, 5th and 6th year medical students towards patient-centered care using the patient practitioner orientation scale (PPOS) and (2) to determine the factors (gender, academic year, etc.) associated with patient-centered attitudes.

MATERIALS & METHODS

Study design and participants

We conducted a descriptive, cross-sectional study at the faculty of medicine, University of Khartoum, where a 6-year undergraduate medical curriculum is fostered.
The faculty offers an undergraduate bachelor's degree in medicine to a total of 2,335 students, spread out across 6 years.
The program consists of 3 years that constitute the Basic Clinical Sciences leg of the curriculum and are followed by an additional 3 years where the learning consists entirely of Clinical Sciences.

It is worth noting that clinical rotation is introduced in the 3rd year of medical training, wherein students start attending occasional clinical rounds in two main subjects, namely; surgery and internal medicine.
Clinical round rotation then becomes more regular and frequent as students advance in their medical years, reaching its pinnacle in the 6th and final year of the medical education program.
Participants were chosen to be medical students in their 3rd, 4th, 5th and 6th year (clinical years) of medical education whom have had exposure to patients that ranges from a minimal to a full regular hands-on experience.

Instrument

Data were collected by way of a pretested, structured, close-ended and self-administered, previously devised and standardized scale, in addition to fields aimed at the acquiring of sociodemographic data of participants.[7]

Pretesting (pilot survey) was conducted on 14 students chosen at random to test for questionnaire field understanding and practicality.
The questionnaire consisted of a total of 21 fields that included, sociodemographic data; with age, gender and study year constituting the first 3 fields, respectively.
An 18-item instrument, which uses a 6-point Lickert scale ranging from strongly agree (given a score of 1) to strongly disagree (given a score of 6), known as the Patient Practitioner Orientation Scale (PPOS) was used to measure the students' attitudes toward the doctor-patient relationship.[7]
Overall mean scores were calculated and could range from 1(doctor-centered or paternalistic) to 6 (patient-centered or egalitarian). Scores higher than 3.5 indicate patient centered orientations.[8]

In addition to a total score, the PPOS measures attitudes towards the doctor-patient relationship along two subscales, namely; Sharing and Caring.
The Sharing subscale is composed of questions 1, 4, 5, 8, 9, 10, 12 and 15 while the Caring subscale is composed of questions 2, 3, 6, 7, 11, 13, 14, 16 and 17 of the items constituting the questionnaire. The sharing score measures the degree to which the respondent believes that power and control should be shared between the doctor and patient.
The caring score measures the degree to which the respondent cares about the value of warmth and support in the doctor-patient relationship and the degree to which the respondent believes the doctor should inquire about psychosocial matters.

Mean scores for each of the subscales were calculated for the nine items in each of the sharing and caring scales and could, as well, range from 1(doctor-centered or paternalistic) to 6 (patient-centered or egalitarian).

Sampling and data collection

The survey was administered to 3rd, 4th, 5th and 6th year students, all of whom had had varying degrees of clinical rotation. The corresponding total number of students enrolled in each year were as follows; 350 students in third year, 346 students in fourth year, 311 students in fifth year and 325 students in sixth year. Sample size was calculated using Slovin's formula which amounted to 308 participants. The designated sample size of 308 was increased by an additional 15% to allow for the making up of non-responses encountered during the period of data collection, giving a sum total of 353 participants.
Systematic random(probability) sampling technique was employed and 353 students were invited to participate by filling out an online survey due to Covid-19 restrictions on accessibility to students. The survey consisted of 21 fields requiring an average of 5 minutes to be completed. Data were collected throughout late December of 2020 and into late January of 2021.

Statistical analysis

Data collected were cleaned and coded in a Microsoft Excel 2019 spreadsheet and then entered into and analyzed using the Statistical Package for Social Sciences (SPSS) version 23.
Descriptive statistics applied included; frequencies and percentages for the description of demographics as well as means for the average Lickert scale responses.

Probability tests were performed to examine the relationships between PPOS scores, Caring and Sharing subscale scores and demographic variables. Student's t-test was run to examine the relationship between gender and Overall PPOS score, and that between gender and Caring and Sharing subscale scores.
The difference in means across different study years was compared using one-way Analysis of Variance was (ANOVA) for both the overall PPOS scores and the Caring and Sharing subscale scores.
Statistical significance was set as a p-value < 0.05.

Ethical approval

Ethical clearance was obtained from the Ethical Committee at the Department of Community Medicine, University of Khartoum. Ethics approval ID: 2/2022 Com.med.
The objectives and purpose of the study were stated and explained in writing to every participant. Informed written consent was requested and obtained from all participants. The study was based on "Do no harm" principles. The participants were not identified.

RESULTS

Students from the academic years 3-6 participated in this study (n=353).
Of the eligible 353 students that were invited to participate, 313 students responded by completing the PPOS instrument, making up an overall response rate of 89%.
The majority of the participants were females, 65%, while males made up the remainder 35% of the sample. The sample distribution by gender and academic year is shown in **Table 1.**
The participants' ages ranged from 20 to 27, and the mean age was 23.

The average total PPOS score for the entire cohort was 4.08 (+/- 0.53 SD), ranging from 2.39 to 5.56. The distributions of overall PPOS scores by medical school year and gender are shown in **Figure 1.** Higher PPOS scores indicate a more patient-centered and egalitarian attitudes towards the doctor-patient relationship.
The average 'Caring' score for the entire cohort was found to be 4.43 (+/- 0.58 SD), while the average 'Sharing' score for the entire cohort was 3.72 (+/- 0.72 SD). The total PPOS scores and the scores for the 'Caring' subscale and 'Sharing' subscale differed between males and females.

Female students were found to have a higher total PPOS score (4.16 +/- 0.52 SD) than their male counterparts (3.93 +/- 0.51 SD).
Females had also scored higher in the 'Caring' and 'Sharing' subscale domain. Upon further investigation, gender was found to be significantly associated with total PPOS score (p=0.000), 'Caring' subscale score (p=0.001) and 'Sharing' subscale score (p= 0.006).
Table 2 displays these results.
PPOS scores were also found to have differed across study years. Lower PPOS scores were observed among 3rd year students (3.76 +/- 0.52) than was observed among those in 6tth year (4.31 +/- 0.50). With the exception of a slight drop in overall PPOS score in 5th year, overall PPOS scores showed a steady rise and were found to be significantly associated with medical school year (p=0.000). **Table 2** displays these results.
Age, however, did not show a significant association with overall PPOS scores.

DISCUSSION

This study explored the attitudes of medical students in clinical years towards the doctor patient relationship using the Patient Practitioner Orientation Scale (PPOS), a previously validated instrument.[7]
To the best of our knowledge this is the first Sudanese study to assess the attitudes of medical students towards the doctor patient relationship. Comparing Sudanese medical students' scores with scores from around the world allows for a more comprehensive understanding of the attitudes displayed by Sudanese medical students.

Our findings have shown that our sample of Sudanese medical students exhibit patient centered inclinations as indicated by an overall PPOS score of 4.08. Scores higher than 3.5 indicate patient centered orientations.[8]

Overall PPOS scores compared to those of students from different parts of the world are as follows; Pakistan (3.40), China (3.63), Nepal (3.7), KSA (4.00), US (4.57), Brazil (4.66).[4, 5, 7-10]

Medical students at the University of Khartoum have demonstrated patient centeredness in every possible domain; overall PPOS, Sharing and Caring subscales. Their scores varied to those of their Malian counterparts, which had been lower in all domains. Overall PPOS scores, Sharing and Caring subscale scores for Malian students were 3.38, 3.04 and 3.68, respectively, as oppose to the 4.08, 3.72 and 4.43 scored by our sample of Sudanese medical students in the same respective domains.[12]

Females, whom have been known to score higher overall PPOS scores and are therefore associated with patient centered attitudes, were found to have higher scores than their male counterparts in this part of the world as well. (Female students' overall PPOS score 4.16, Male students' overall PPOS score 3.93, $p< 0.05$).[5]
These findings have been consistent to what was found by researchers in the US, Singapore, China, Greece, Sweden and Brazil where females were found to have scored higher overall PPOS.[5, 8, 11, 13-15]
In Pakistan and Nepal, however, females were found to have the same distribution of PPOS scores as males.[6, 9]
The mean Sharing subscale score (3.72) was lower than those of medical students in Nepal (3.91), KSA (4.2) and Brazil (4.10). They were; however, higher than the scores of medical students in China (2.88), Mali (3.04), Pakistan (3.18).[6, 8-11, 12].
While the mean Caring subscale score (4.43) compared to those of other medical students' from around the world are as follows; Nepal (3.51), Pakistan (3.63), Mali (3.68), KSA (3.8), China (4.53), Brazil (5.20).[6, 8-11, 12]
These differences might be explained by religious, cultural and socio-economic differences between countries. Students scored higher in the 'Caring' subscale domain (4.43) than they did in the 'Sharing' subscale domain (3.72), indicating that they are more interested in Caring about their patients than they are in Sharing information with them.

This quality has also been exhibited by students in China where the culture there is known to prefer doctors who are more inclined to make "doctor-based" decisions on the patients' behalf taking into consideration their psycho-social status, this is unlike the Western culture which prefers doctors to more openly share items relating to the healthcare of patients.[8]

This finding of higher mean Caring subscale score could be explained by the fact that students might be aware of the importance of empathy and relating to patients in a way that establishes a bond which allows for mutual channels of understanding.

Overall PPOS scores were also found to be positively associated with advancing school year ($p =0.000$). With the exception of a very small dip in 5th year all other consecutive years have shown that overall PPOS scores had risen substantially. This finding is contradictory to what was found among American medical students and Greek medical students where a drop in overall PPOS scores was associated with advancing school year. This finding; however, was consistent with findings among students in Brazil, where it was reported that students' overall PPOS scores

experienced a rise across consecutive medical school years and were therefore highest among students of later years than they were among those in the earlier years.
Other studies have demonstrated no change in overall PPOS scores among students across consecutive school years. Those were the studies from Pakistan, Singapore and Sweden, where all reported that students' overall PPOS scores were steady and experienced no decline throughout their years of medical education indicating that students were not getting any less or more patient centered as they advanced in the years of medical education.[6, 13, 15]

This positive association of overall PPOS score with advancing school year among our students suggests that as students advanced in their medical years, they were growing more and more patient centered and were in fact not drifting away, as was reported by Haidet and companions, from the idealism they held at the earlier years of medical school as they grew more and more engrossed in the biomedical aspects of disease.[5]

The differences observed in this study between male and female overall PPOS scores, mean 'Caring' and mean 'Sharing scores have shown that females tend to be more patient centered as they've scored higher in all the corresponding domains which is attributable to their better communication abilities.[16]

This research has attempted to reflect the attitudes of medical students in clinical years towards the doctor patient relationship but there remains to have been short comings which when addressed in future researches on the same subject matter, should allow for a more comprehensive exploration, assessment and understanding of patient centeredness among medical students. The study was conducted on students from one medical school. It would be preferable if further studies included students from a number of medical schools to allow for broader sampling.

The cross-sectional nature of the study does not allow for follow up comparisons to be made and thus future researches might want to consider longitudinal designs in an attempt to better understand the changes in patient centeredness experienced by medical students as they evolve in their medical undergraduate years.

The PPOS only measures attitudes and orientations of medical students towards the doctor patient relationship and not actual behaviors, future researches must attempt to investigate the behaviors of medical students towards the doctor patient relationship as well.

CONCLUSION

It has been found that the medical students at the University of Khartoum in clinical years display a satisfactory level of patient centeredness and that gender plays a role on the degree of patient centeredness exhibited by an individual, as has also been reported by other studies.

Patient centeredness was found to be positively associated with overall PPOS scores and thus students are getting more patient centered as their school year advanced.

It was also shown that more work needs to be done to address the fact that students were not as competent in the 'Sharing' facet of patient centeredness as they were in the 'Caring' one, which warrants further investigation as to why these differences in scores have come to exist.

Close attention must be paid to the role of hidden curricula as it forms an indirect means of delivering implicit messages to students which might be a factor in driving away their patient centeredness, the unintentional indoctrination associated with the "Hidden curriculum" has been defined as influences that exist outside the formal medical education at an organizational and cultural level.[17]

Strengths & limitations of this study

1. First Sudanese study to assess the attitudes of medical students towards the doctor patient relationship
2. The study was conducted on students from one medical school.
3. The cross-sectional nature of the study does not allow for follow up comparisons to be made.
4. PPOS only measures attitudes and orientations of medical students towards the doctor patient relationship and not actual behaviors.

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Figure 1

Demonstrates mean PPOS scores of male and female students across consecutive study years. University of Khartoum, Faculty of Medicine. 2020-2021 (n=313 students).

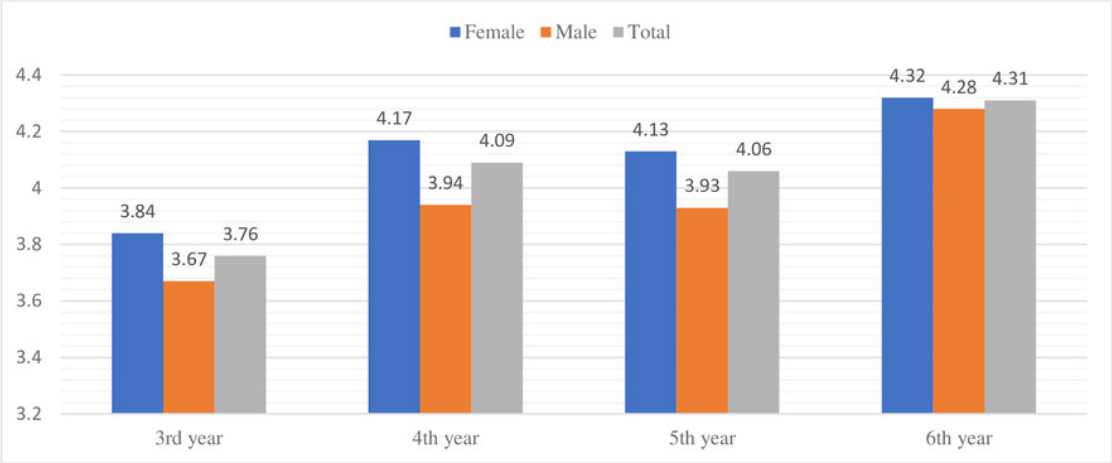
Female
Male
Total
4.4
4.2
4
3.8
3.6
3.4
3.2
3.84
3.67
3.76
4.17
3.94
4.09
4.13
3.93
4.06
4.32
4.28
4.31
3rd year
4th year
5th year
6th year

Table 1(on next page)

Demographics of sample of medical students. University of Khartoum, Faculty of Medicine. 2020-2021 (n=313 students).

Study Year * Gender Cross tabulation

		Gender		Total	%
		Male	Female		
Study Year	3rd year	30	31	61	20
	4th year	31	55	86	27
	5th year	29	52	81	26
	6th year	20	65	85	27
Total		110	203	313	100

1

Table 2(on next page)

Association between the demographics of all students and their mean scores for the sharing subscale, the caring subscale, and overall PPOS scores. University of Khartoum, Faculty of Medicine. 2020-2021 (n=313 students).

Demographic variable	Overall PPOS mean +/- standard deviation	Sharing subscale mean +/- standard deviation	Caring subscale mean +/- standard deviation
Gender			
Male	3.93 +/- 0.51	3.57 +/- 0.68	4.28 +/- 0.58
Female	4.16 +/- 0.52	3.80 +/- 0.72	4.51 +/- 0.56
p-value	0.000[#]	0.006[#]	0.001[#]
Study year			
3rd year	3.76 +/- 0.52	3.34 +/- 0.73	4.18 +/- 0.50
4th year	4.09 +/- 0.48	3.74 +/- 0.65	4.43 +/- 0.55
5th year	4.06 +/- 0.50	3.71 +/- 0.66	4.41 +/- 0.60
6th year	4.31 +/- 0.50	4.00 +/- 0.70	4.63 +/- 0.57
p-value	0.000**	0.000**	0.000**

Notes:

*All scores are mean scores, n=313.

**P < 0.05, one way ANOVA.

[#]P <0.05, Student's t-test.