ORIGINAL ARTICLE

PERCEPTIONS OF MEDICAL STUDENTS ABOUT THE EDUCATIONAL ENVIRONMENT AT THE START AND END OF OBSTETRICS AND GYNAECOLOGY ROTATION AND ITS IMPACT ON CAREER CHOICE

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Background: The educational environment can influence students' learning and their attitudes towards various medical specialties, thus affecting their career choices. This study aimed to compare perceptions of medical students about educational environment at the start and end of Obstetrics and Gynaecology (O&G) rotation and to assess if these perceptions influenced their career choices. **Methods:** This was a Comparative analytical study carried out in the Obstetrics and Gynaecology Department, Combined Military Hospital Lahore Medical College from 1st February to 30th July 2019. Eighty-eight final year MBBS students (60 females and 28 males; average age 22±1.2 years) completed validated Dundee Ready Education Environment Measure (DREEM) questionnaire at the start and end of three weeks of O&G clinical rotation. Two questions were added post rotation to assess impact of their perceptions on career choice. Data was analysed through SPSS version 21 using independent sample t-test. **Results:** Mean total DREEM score was 126.68±14.17 and 127.49±15.31 out of a maximum of 200 pre and post rotation (*p*-value 0.001). The sub-scale which improved significantly (*p*-value 0.010) was Perception of Environment with average scores of 27.88±4.63 and 28.25±4.64 pre and post rotation. Majority of female students (78.7%) felt motivated for choosing O&G as a career after this rotation. **Conclusion:** Final-year medical students perceived the learning environment to be positive. Clinical rotation helped in improving their perception about O&G learning environment and helped female students get more inclined to choose this specialty as a career.

Keywords: Career choice; Environment; Medical students; Perception; DREEM

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INTRODUCTION

According to adult learning theories, teaching and learning is not just confined to providing and acquiring knowledge; rather it is also affected by the educational environment and climate for learning.[1] Genn[2] has rightly compared the educational environment of an institution to its climate which influences behaviour. It is evident from the research that the learning environment of an institution can have a great impact on the students' progress, academic learning and behaviour as well as their feeling of well-being while undergoing the training program.[3] It also acts as the basis for the diagnosis of practices or situations within an institution.[4] An additional benefit is that as the environment is changeable, a measure of the existing educational environment can point out the deficiencies which can act as a platform for making the necessary modifications towards better educational practices in line with the institution's own goals.[5]

The educational environment can influence students' attitudes towards various medical specialties. The specialty of O&G has special demands like time commitment, uncontrollable lifestyle and personal devotion; however, it is selected as a career mostly by female medical graduates in Pakistan, primarily due to the prevailing cultural and religious beliefs.[6] However, educational environment has also been found to affect the attitudes of the students critically ultimately affecting their career choices.[7] Some other factors like poor clinical teaching may also affect the students' attitudes negatively.[8]

Dundee Ready Education Environment Measure (DREEM) is a validated inventory which has proven to be a highly reliable in various countries for assessing the learning environment of health professional's education institutions and medical schools.[9–11] It was developed by Roff *et al*[12] in between 1994–1996 by a Delphi panel of about 100 medical and health profession educators from several countries. The quality of the educational environment of an institution or department is an indication of the effectiveness of the educational program on the students' learning, motivation and

learning outcomes. The hypothesis of the study is that the educational environment of a department affects the learning of the students as well as their career choices. The rationale was to determine if perceptions of the educational environment in O&G rotation influences attitudinal changes towards this specialty in medical students and impacts decisions about choosing O&G as a career. The study may also help in pointing out the deficiencies which may act as a platform for making the necessary modifications in the current educational practices of the department.

MATERIAL AND METHODS

The study was conducted in O&G department of CMH LMC from 1st February to 30th July 2019 after approval from Ethical Review Committee of the college (Ref No 115/ERC/CMHLMC). The study tool used is the DREEM inventory which contains 50 items, each scoring 0–4 on a 5–point Likert scale (4=strongly agree, 3=agree, 2=uncertain, 1=disagree and 0=strongly disagree), with 9 items (numbers 4, 8, 9, 17, 25, 35, 39, 48 and 50) being negative statements and scored in reverse manner. The maximum overall score is 200.[9] Assessment of specific strengths and weaknesses of the education climate can be done with the DREEM inventory.[5] In order to assess the students' perception, statements in questionnaire are divided into five major domains in addition to the overall score; perception of learning (12 items/maximum score 48), perception of teacher (11 items/maximum score 44), academic self-perception (8 items/ maximum score 32), perception of atmosphere (12 items/maximum score 48), and social self-perception (7 items/maximum score 28).

A minimum sample size of 80 students was initially calculated for a total population of 100 students keeping the confidence interval 95% with 5% margin of error, however, a sample size of 88 students was finalized for the study. Non-probability convenient sampling technique was used to recruit participants. Three batches of final year MBBS students coming to O&G department for clinical rotation were included while students with less than 50% attendance were excluded from the study. On the first day of rotation, an introductory lecture was arranged to explain the rationale of the study and verbal informed consent was obtained from all the participants. They were given the DREEM questionnaire which they completed and returned. At the end of rotation, they were given the another DREEM questionnaire to fill out with two extra questions to assess the impact of their perceptions on career choice. Data was analysed using SPSS version 21. Frequency and percentage were computed for qualitative variables, and mean ±SD was presented for quantitative variables, independent sample t-test was utilized to identify the significance of the scores; $p<0.05$ was considered as statistically significant.

RESULTS

All the participants were from Final Year MBBS; 60 females and 28 males with an average age of 22±1.2 years (Table-1).

The overall reliability of questionnaire was good with Cronbach's Alpha 0.75. The overall mean score at the start of rotation was 126.68±14.17/200, while at the end of rotation it was 127.49±15.31/200. This indicated a more positive than negative learning environment with significant improvement in score post rotation. On comparing the scores of the subscales pre and post rotation, the only sub scale showing significant change and improvement post rotation was the "Perception of Atmosphere" with score of 27.88±4.63/48 and 28.25±4.64/48 (*p*-value 0.010) pre and post rotation (Table-2).

Only 2 of the 50 items showed significant differences in pre and post rotation scores. On analysis of items in the domain of "Perception of learning", it was found that in item 25, significant improvement was noted (mean score 2.91±1.21 to 3.02±1.09, *p*-value 0.039) showing that teaching does not over emphasize factual learning. Significant improvement was also noted in score of item 50 which states "The students do not irritate the teachers" (mean score 1.82±1.57 to 1.92±1.54, *p* value 0.037).

Only seven male students found their views about O&G to be affected by the clinical rotation and only five of them considered experience of rotation in O&G as a motivational factor for choosing it as a career while 81.8% male students did not feel inclined to adopt it as a career even after the rotation. However, 34 (57.4%) of female students found their views to be affected positively and a greater majority of female students (78.7%) were of the view that the rotation experience provided motivational factor for choosing O&G as a career. (Table-3)

Table-1: Demographic characteristics of the participants (n=88)

Parameter (Age in years)	**Males**	**Females**	**Percentage**
21–23	14	29	48.84
24–26	12	27	44.21
27–29	2	4	6.95
Total	28	60	100

Table-2: Comparison of DREEM Inventory Scores between start and end of clinical rotation (n=88)

DREEM Subscales	Cronbach's Alpha	Pre training	Post training	Wilcoxon signed Rank test		Interpretation
		Mean±SD	Mean±SD	z	*p*-value	
Perception of Learning (0 – 48)	0.484	30.76±4.48	30.98±4.52	1.74	0.082	A more positive perception
Perception of Teachers (0 – 44)	0.421	30.51±4.22	30.58±4.40	0.57	0.567	Moving in the right direction
Social self-perception (0 – 28)	0.070	17.72±2.86	17.72±3.13	0.36	0.722	Not too bad
Academic self-perception (0 – 32)	0.522	19.82±3.91	19.97±4.12	1.41	0.158	Feeling more on the positive side
Perception of the atmosphere (0 – 48)	0.319	27.88±4.63	28.25±4.64	2.57	**0.010***	A more positive attitude
Total (0 - 200)	**0.750**	126.68±14.17	127.49±15.31	3.45	**0.001***	More positive than negative

*Statistically significant values

Table-3: Impact of clinical rotation on career choice (n= 88)

	1. Does your experience during the rotation affect your views of O&G as a discipline?		2. Did your rotation experience provide any motivational factor for choosing O&G as a career?		
Gender	**Yes n (%)**	**No n (%)**	**Yes n (%)**	**No n (%)**	**Total**
Male	7 (24.2)	2 1(75.8)	5 (18.2)	23 (81.8)	28
Female	34 (57.4)	26 (42.6)	47 (78.7)	13 (21.3)	60

DISCUSSION

Learning is found to be improved when perception of educational environment is positive for the students.[13] DREEM inventory has been found to be the most suitable and validated instrument to measure the effectiveness of educational environment in undergraduate medicine and has many uses, including comparing same groups' perceptions over a period of time.[14–16] This study was conducted to analyse the impact of rotations in O&G in bringing any change in perceptions of students about educational environment and to see if these perceptions had any impact on their career choice. A number of institutions in Pakistan have reported use of DREEM inventory over last decade, however, most of these were cross sectional studies aimed mainly at assessing perceptions of students regarding educational environment.[17–23] No local study was found which studied impact of DREEM score on career choices of undergraduate medical students. DREEM score from current study is comparable to the score reported by most of the private institutions and better than that reported from many public institutions.[18,19,23] This finding is consistent with other studies where DREEM score reported in most of local studies by private sector colleges has been persistently higher as compared to public sector colleges.[18,19,23] For instance, mean DREEM score for final year students in colleges affiliated with the University of Health Sciences (UHS) was significantly higher for private sector (M=137, SD=21.25) than for the public sector colleges (M=115, SD=23.76).[19] One of the probable reasons for this is that many private universities are performing much better and enjoy comparatively higher ranking in local and world ranking than many public sectors colleges although there are some public sector colleges that enjoy good reputation and ranking as well.[24]

This is pertinent to highlight that the total scores from this study in both time windows (126.8 and 127.4) is comparable to or above many of those achieved for various medical schools from around the globe; for example scores reported from some cross-sectional multi-school studies from Spain, Iran, Korea, Kingdom of Saudi Arabia and Ghana being, 116.2, 123.47, 113.97, 124.90, 117.32 respectively.[25–28] This finding from current study encouragingly suggests a more positive educational environment in O&G department, even though many of the studies mentioned here have reported a wide variation in the range of scores between institutions. However, much more effort is needed to reach much higher standards achieved by some other institutions. For example, two different medical schools sharing same curriculum, one in the United States and the other in Malaysia reported DREEM scores of 143.3 (SD 22.5) and 155.3 (SD 21.3) respectively, one of the highest DREEM score reported, indicating an environment highly conducive to learning.[29]

The strongest rated elements were a perception of the course, its organization and conduct, relaxed atmosphere and comfortable social life in both the pre and post rotation. The findings are comparable to the findings of Mayya in India.[30] The only sub scale showing significant change and improvement post rotation was the perception of atmosphere while other findings revealed that there was only slight positive change in the perception of the students before and after

the rotation on remaining individual dimensions. This entails a further evaluation study keeping in mind the weaker areas and trying to strengthen them after communicating the findings of this study to the department. A recent prospective study from Iran found that DREEM score was improved after five years from 115.33 to 123.47/200 after findings from first study were used to make improvements in the educational environment.[13]

Regarding the impact of clinical rotation on career choice, it was found that the rotation was ineffective in changing the views and career choices of majority of male students about O&G. In contrast to this, majority of female students (78.7%) were motivated by the rotation and were found inclined towards choosing it as a career, however, this could only be the reflection of already existing trend in the subcontinent.[31,32] Thus this trend is evident in a recent study from India also highlighted a significant gender bias in terms of preference for specialty with more female medical students preferring O&G as specialty of choice as compared to male students, who preferred general surgery and orthopedics.[31] This trend is in contrast to the preferences noted in other studies carried out in Kenya and Nigeria[33,34] where male medical students were found to be more inclined to adopt O&G as a career, again emphasizing the impact of cultural differences. Although in other studies exposure during clinical rotations has shown to affect career choices[35,36], in our study a fairly positive perception by the students as indicated by a good overall score (127/200) has not shown to affect career choice of majority of male students. It may indicate that the career choice of the students may be affected by factors other than the educational environment. Still there appears to be room for improvement as evidenced by a lack of significant improvement in scores of most of the remaining items. The results should also be stimulating in order to better transform the educational environment of the department to a higher level.

The major limitation of our study is the sample size and frame that is limited to only one clinical department. The results thus obtained cannot be a representative of educational environment of all the clinical departments and their impacts on specialty preferences. Also, apart from the educational environment, other factors for specialty preferences including income, working hours, personal interest, gender bias, cultural and religious influences have not been explored; many of these can be explored more deeply in qualitative studies. Further studies should be carried out in other clinical departments as well to gather more data regarding the opinions of undergraduate medical students not only about the learning environment but also about other factors having an impact on career choices.

CONCLUSION

DREEM is a useful tool for assessment and evaluation of learning environment and can help in highlighting the weaker areas in a clinical rotation. It can also guide the curriculum designers to act and improve the clinical rotations which would later impact upon career choices in order to encourage and ensure gender diversity and inclusion in the workplace.

AUTHORS' CONTRIBUTION

ST: Literature search, conceptualization of study design, data collection, data analysis, write-up, proof reading. SB: Data interpretation, write-up, proof reading. PA: Data analysis, data interpretation, write-up, proof reading. NM: Data interpretation, write-up, proof reading. QN: Data interpretation, write-up, proof reading. AB: Data interpretation, write-up, proof reading

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