ORIGINAL ARTICLE

Undergraduate Students' Perception of Research Barriers: a Gender-Based Study

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ABSTRACT

Objective: To determine the gender-based differences in the perception of barriers to research among undergraduate medical students.

Methodology: This cross-sectional study was conducted in the King Edward Medical University, Lahore from June to September 2018. A total of 188 undergraduate students of both the genders were included after informed consent by non-probability convenient sampling. A 13-items Likert scale type questionnaire was used. Data was entered in SPSS 22, followed by application of chi-square test to see gender difference between responses.

Results: Out of total of 188 students, 112(59.5%) were female. Among the variables studied, there were statistically significant differences of opinion between the two genders regarding agreement about the inadequate experience in research, research methodology, statistical skills, delay in the approval of research synopsis from the ethical review board and societal neglect towards research development as barriers to research. Differences in responses towards barriers regarding areas of medicine needing further research, unfamiliarity with publication criteria, communication gap with senior researchers, the dearth of skilled librarian and diagnostic facilities, delay in supervisor's approval, stringent publishing criteria and time consuming peer review were insignificant.

Conclusion: The difference of opinion between the male and female undergraduate students was observed regarding their perception of inadequate experience in research, research methodology, statistical skills, delayed approval of synopsis from the ethical review board and underdeveloped research culture in society as barriers.

Keywords: *Undergraduate medical students. Research barriers. Perception.*

INTRODUCTION

For the improvement of our society, a basic and important step is research. Any scientific and logical movement is considered valid only if it is research-based. The present education system must train researchers. If this aspect is neglected, the research could never be incorporated as an integral and efficient activity in the educational system.[1] Research is a mandatory part of the core curriculum in the Bachelor of Medicine and Bachelor of Surgery (MBBS) & Bachelor of Dental Surgery (BDS) course of most of the medical institutes and students play a pivotal role in it. The social cognitive theory states that researchers are greatly influenced by environmental and personal factors.[2] One such personal factor is the gender of researcher. We want to identify how gender interplays with other factors to help or hinder research. This will help to improve communication between researchers and the beneficiaries of the research, thereby making research findings applicable practically and facilitating the problem solving process.[3,4]

Several studies have been carried out in many countries to evaluate the understanding of barriers toward scientific research among health professionals and medical students.[5,6] Evidence also showed that existence of barriers brings the gap between the theory of scientific research and practice of conducting it.[7] Furthermore, lack of skills training, infrastructure and facilities, mentorship and lack of time & motivation were cited as the major hurdles.[8-11] The possible reasons for the decline in research may also be less monetary benefits, family, gender disparity, practice philosophy and insufficient exposure to research prior to start a career.[12-14]

It is important to know whether both male and female students consider the above stated factors equally as barriers or they think it differently. The rationale of this study is the identification of gender-based barriers to research so that the gender disparity, if any, could be alleviated and both male and female could equally benefit medical research culture. Therefore, this study aims to determine the perception of gender-based differences in barriers of research among undergraduate medical students.

METHODOLOGY

This cross-sectional survey was conducted in the King Edward Medical University, Lahore from June to September 2018 and got ethical approval by the Institutional Review Board. A total of 188 undergraduate students (fourth and final year MBBS) of both the genders were included by non-probability convenient sampling. A 13-items Likert scale type questionnaire made by the author was used to collect data. The questionnaire was based on the findings obtained by other researchers regarding students' perspectives about research. Informed consent was

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taken. After briefing to the participants, they were requested to answer the questionnaire maintaining the anonymity. We excluded those students where we did not find a response to more than 10 variables.

STATISTICAL ANALYSIS

Data was entered in the Statistical Package for the Social Sciences (SPSS) version 22 followed by the application of the chi-square test to see the difference in responses between the two gender groups. The p-value of ≤ 0.05 was taken to be significant.

RESULTS

A total of 188 students responded, out of which 112(59.5%) students were female. Among barriers studied in both the genders, 68(89.3%) males compared to 87(77.7%) females, agreed that inadequate previous experience in research was a barrier. This difference of opinion was statistically significant (p-value 0.029). Similarly, we found statistically significant differences of opinion between males and females considering their agreement for lack of proficiency in research methodology (82.9% males; 67.8% females; p-value 0.004) and statistical skills (82.9% males; 70.6% females; p-value 0.002), delayed approval of research synopsis from ethical review board (76.3% males; 75% females; p-value 0.03), and underdeveloped research culture in society (84.2% male; 76.8% female p-value 0.013) as barriers to research. However, facing problem in identifying area of future research (81.6% males; 71.4% females; p-value 0.053), little understanding of publication criteria (82.9% males; 75.9% females; p-value 0.113), communication gap with senior researchers (79% males; 73.2% females; p-value 0.120), dearth of a skillful librarian (67.1% males; 71.4% female; p-value 0.383), unavailability of advanced diagnostic facilities (76.3% males; 66.1% females; p-value 0.114), delay in supervisor approval,

Table 1: Gender-Based Differences in Perception of Research Barriers (n=188)

Barrier	Gender	Disagree	Neutral	Agree	p-value
Undeveloped research culture in society	**Male**	5(6.6%)	7(9.2%)	64(84.2%)	0.013*
	Female	15(13.4%)	11(9.8%)	86(76.8%)	
Inability to recognize the area needing further research	**Male**	5(6.5%)	9(11.8%)	62(81.6%)	0.053
	Female	18(16.1%)	14(12.5%)	80(71.4%)	
Inadequate research experience	**Male**	3(3.9%)	5(6.6%)	68(89.3%)	0.029*
	Female	14(12.5%)	11(9.8%)	87(77.7%)	
Lack of proficiency in research Methodology	**Male**	7(9.2%)	6(7.9%)	63(82.9%)	0.004*
	Female	20(17.9%)	16(14.3%)	76(67.8%)	
Lack of statistical skills	**Male**	7(9.2%)	6(7.9%)	63(82.9%)	0.002*
	Female	19(17%)	14(12.5%)	79(70.6%)	
Dearth of skillful librarians	**Male**	8(10.5%)	17(22.4%)	51(67.1%)	0.383
	Female	13(11.6%)	19(17%)	80(71.4%)	
Unavailability of diagnostic Resources	**Male**	9(11.8%)	9(11.8%)	58(76.3%)	0.114
	Female	11(9.8%)	27(24.1%)	74(66.1%)	
Delay in synopsis approval by Supervisor	**Male**	7(9.2%)	11(14.5%)	58(76.3%)	0.082
	Female	14(12.5%)	16(14.3%)	82(73.2%)	
Delay in synopsis approval by IRB	**Male**	7(9.2%)	11(14.5%)	58(76.3%)	0.030*
	Female	15(13.4%)	13(11.6%)	84(75%)	
Communication gap with senior Researchers	**Male**	7(9.2%)	9(11.8%)	60(79%)	0.120
	Female	9(8%)	21(18.8%)	82(73.2%)	
Unfamiliarity with publication Criteria	**Male**	5(6.5%)	8(10.5%)	63(82.9%)	0.113
	Female	11(9.8%)	16(14.3%)	85(75.9%)	
Stringent rules of publication	**Male**	8(10.6%)	15(19.7%)	53(69.7%)	0.537
	Female	10(1.7%)	25(22.3%)	77(68.7%)	
Time consuming peer review process by journal	**Male**	8(10.5%)	13(17.1%)	55(72.4%)	0.357
	Female	10(8.9%)	24(21.4%)	78(69.6%)	

***p-value ≤0.05 Significant**

(76.3% males; 73.2% females; p-value 0.082), stringent publishing criteria (69.7% males; 68.7% females; p-value 0.537) and time consuming peer review by the journals (72.4% males; 69.6% females; p-value 0.357) were perceived as barriers but with insignificant differences of opinion between the genders.

DISCUSSION

Understanding of scientific methods becomes a crucial component of the medical profession. Although every health professional is not inspired to perform research to acquire new knowledge, he or she should be able to know the principles of scientific research. Researches have been conducted as to why students are not motivated for research. Moreover, perception of research barriers may be different for students and so, gender differences may play a role.[6] This study focuses on male and female medical students that how they perceive research barriers differently.

The findings from our study showed the difference of opinion between the two gender groups for some barriers (perception of lack of previous experience in research, research methodology, statistical skills, delayed approval of synopsis from the ethical review board and underdeveloped research culture in society). Studies from around the globe have found that gender effect is minimal on the perception of barriers. Soe et al. conducted a study to find the degree of knowledge, attitude and barriers to research in undergraduates and found no significant relationship between gender and perceived barriers toward research.[1] Similarly, findings from Ashrafi-rizi et al. related to the effect of gender showed that mean difference of research activities barriers is not significant in terms of gender.[3] Ejaz et al. from Karachi found that the institutional factors can inspire students to pursue research and show enthusiasm. Authors from this study observed the keen interest of the undergraduates and fresh graduates with 57(32%) final year students and 20(20%) interns who would like to publish. Their difference of opinion between genders was not found to be statistically significant factors related to a respondent's perception of barriers in research.[15] Baig et al. from Karachi did not find any difference of opinion between the genders. Authors reported that 88% of both genders stated that they intended to do research projects in their undergraduate years, 75% stated that their motivation was to improve their curriculum vitae to be more competitive for a residency abroad.[16] Amgad et al. observed that there was no apparent gender difference regarding the following outcomes: interest in a career in research; involvement in research during medical school; attitudes towards research; interest in or motivation towards performing research; research knowledge or skills. However, on average, males seem to be significantly more likely to publish the research (OR = 1.59, 1.26-2.01).[17]

The gender difference was again an insignificant factor in Pakistani study by Khan et al. where authors found that although gender was not a significant predictor of knowledge about health research, however, males had a significantly higher mean score on the attitude scale.[18] Meraj et al. from Shifa Medical College, Islamabad found that there was no statistically significant gender difference in response except one (p=0.01) where females considered research more helpful.[19] Osman from Sudan found that principle barriers to student research were lack of funding (75/72.1 %), insufficient time (71/68.3 %) and the demands of the curriculum (70/67.3 %). No significant differences were detected between gender and perceptions towards research.[20] Although our study also reported no difference in some barriers but finding significant differences in responses is not observed in previous studies. This difference in results may be due to the different population of medical undergraduates or unmatched female to male ratio. The reasons behind this gender difference may also be due to factors unrelated to research such as the overall academic environment or psychosocial factors.

This study has some limitations. This study used author made questionnaire which was not validated in our local setting. Only quantitative analysis was done on a smaller sample size due to which results from this study cannot be generalized. Considering these limitations, multicenter qualitative studies on a larger scale are needed.

CONCLUSION

The difference of opinion between the male and female undergraduate students was observed regarding their perception of inadequate experience in research, research methodology, statistical skills, delayed approval of synopsis from the ethical review board and underdeveloped research culture in society as barriers.

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