



## Barriers Towards Research Among Medical Students

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### ABSTRACT

**Introduction:** Scientific publications by the undergraduate students reflect their level of critical thinking, and attitude and skill regarding research. Students are indeed very motivated to do research, but are hindered by some barriers. **Aims & Objectives:** To determine the barriers towards research among medical students. **Place and duration of study:** This cross sectional survey was conducted in King Edward Medical University, Lahore from May to October 2018. **Material & Methods:** Through non-probability convenient sampling, 275 students were asked to fill a Likert scale type questionnaire, enumerating research barriers, after ensuring their confidentiality and anonymity. Statistical Package for Social Sciences version 22 was used for analyzing the data which was presented as frequency tables. **Results:** Total number of respondents was 275 with female to male ratio of 1.6:1. Lack of experience (223,83%), lack of knowledge about research methodology (211,76.7%), deficient guidance by teachers (180, 65.5%), non-availability of a skilled librarian (194,70.6%), lack of appropriate diagnostic facilities (184,66.9%), lengthy synopsis approval process by ethical review board (188, 68.4%), and peer review by publishing journal (183, 66.5%), lack of funding (160,58.2%), and lack of research culture in society (216,78.5%) were considered as barriers. **Conclusion:** The undergraduate medical students considered lack of knowledge about research methodology and statistics, deficient guidance by teachers, lack of funding and appropriate diagnostic facilities, lengthy synopsis approval process by ERB, peer review by publishing journal and lack of research culture in society as barriers to research.

**Key words:** Medical students, Barriers, Research

### INTRODUCTION

Research is a systematic process that uses standard methods to achieve new knowledge, science or invention. In this age of evidence based practice, there is much emphasis on inculcating research culture in undergraduate medical curriculum, so that medical students may become better clinical practitioners in future and improve patient care.<sup>1</sup> Scientific publications by the undergraduate students of a country reflect their level of critical thinking and attitude in research. Moreover, research experience and subsequent publications increase the chances of acceptance of medical students in highly competitive post graduate training programs.<sup>2</sup>

Studies have reported that students are indeed very motivated to do research, but are being held back by a number of barriers.<sup>3</sup> These barriers are posed by personal lacking, organizational mismanagement, financial deprivation and even the general attitude

of a society toward research.<sup>4</sup> Lack of encouragement and guidance from mentors about research, lack of facilities and sources of literature, hefty curriculum,<sup>5,6</sup> lack of funding,<sup>7</sup> little practical impact on society,<sup>8</sup> and generalized negative attitude shown by their supervisors to younger researchers<sup>9,10</sup> are considered as potential barriers to research.

In Pakistan, the research culture is just developing among undergraduates. Studies identifying barriers among them have also been few. So this study will help to determine the barriers that are preventing the practice of quality research among medical undergraduates.

### MATERIAL AND METHODS

This cross sectional survey was conducted in King Edward Medical University, Lahore from May to October 2018. This study was approved from the institutional review board. The study instrument used was a questionnaire enumerating barriers to

research for students. This Likert scale type questionnaire had 4 domains and 34 items. The participants were briefed about the study and were assured of their confidentiality and anonymity. Students' responses were recorded according to the Likert Scale for each question (strongly disagree, disagree, neutral, agree and strongly agree). The responses of students who did not want to participate in the survey and those who did not answer three or more questions were excluded from the study.

**Statistical analysis:**

SPSS 22 was used for statistical analysis of the data and was presented as frequency tables. Chi square test was applied for comparative analysis between the three classes.

**RESULTS**

Total number of respondents was 275 out of which 169 (61.5%) were female students with female to male ratio of 1.6:1. Respondents who had studied previously in matriculation system were 80.4% (n=221) and those from Cambridge Assessment International Education (CAIE) system were 19.6% (n=54). Participants from third, fourth and final year were 87 (31.6%), 125 (54.5%) and 63 (22.9%) respectively. (Table-1)

The barriers were divided into four domains: individual, organizational, financial and social. For the purpose of simplicity, we took strongly agree and agree as positive response. Lack of previous experience in research (223, 83%), recognition of areas that needed research (213, 77.5%), lack of

knowledge about research methodology (211, 76.7%), lack of knowledge about statistics (203, 73.8%), insufficient knowledge of publication criteria (208, 75.6%), no previous participation in any research program (200, 72%) were potential individual barriers (Fig-1). Deficient guidance by teachers (180, 65.5%), non-availability of a skilled librarian who could help in finding relevant literature (194, 70.6%), lack of appropriate diagnostic facilities (184, 66.9%), not enough credit given to students after the completion of research (175, 63.7%), lengthy process of approval of synopsis by Ethical Review Board (188, 68.4%), delay in approval of article by supervisor (189, 68.7%), and peer review by publishing journal (183, 66.5%) were considered as organizational barriers (Fig-2). Lack of funding (160, 58.2%), lack of research culture in society (216, 78.5%) were financial and socio-cultural barriers (Fig-3).

Comparing the responses between different classes, it was found that final year MBBS, who have passed through research has overall more agreement on barriers than 3<sup>rd</sup> and 4<sup>th</sup> year (Table-2).

Variables		n (%)
Gender	Male	106 (39.5)
	Female	169 (61.5)
Educational Background	Matric/F.Sc.	221 (80.4)
	GSCE	54 (19.6)
Year of study	3 <sup>rd</sup> Year	87 (31.6)
	4 <sup>th</sup> Year	125 (45.5)
	Final Year	63 (22.9)
Total		275 (100)

**Table-1:** Distribution of cases by Gender, educational background & Year of study (n=275)

Year of MBBS in which respondent is studying (I)	Year of MBBS in which respondent is studying (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Third year	Fourth year	1.64818	2.48632	.508	-3.2467	6.5431
	Final year	-13.60591*	2.94591	.000	-19.4056	-7.8062
Fourth year	Third year	-1.64818	2.48632	.508	-6.5431	3.2467
	Final year	-15.25410*	2.75143	.000	-20.6709	-9.8373
Final year	Third year	13.60591*	2.94591	.000	7.8062	19.4056
	Fourth year	15.25410*	2.75143	.000	9.8373	20.6709

**Table-2:** Multiple Comparisons on total score (n=275) (Chi-square test was applied)

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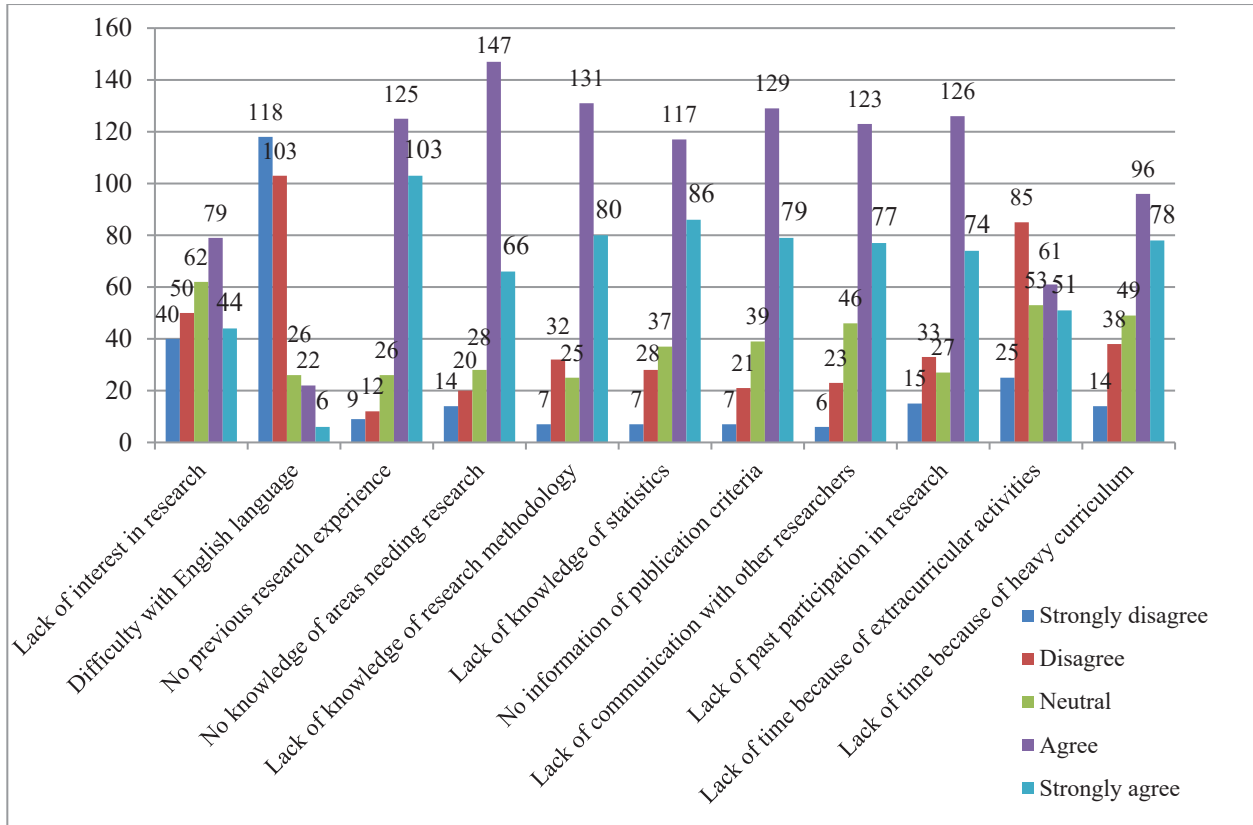


Fig-1: Frequency of Individual Barriers towards Research (n=275)

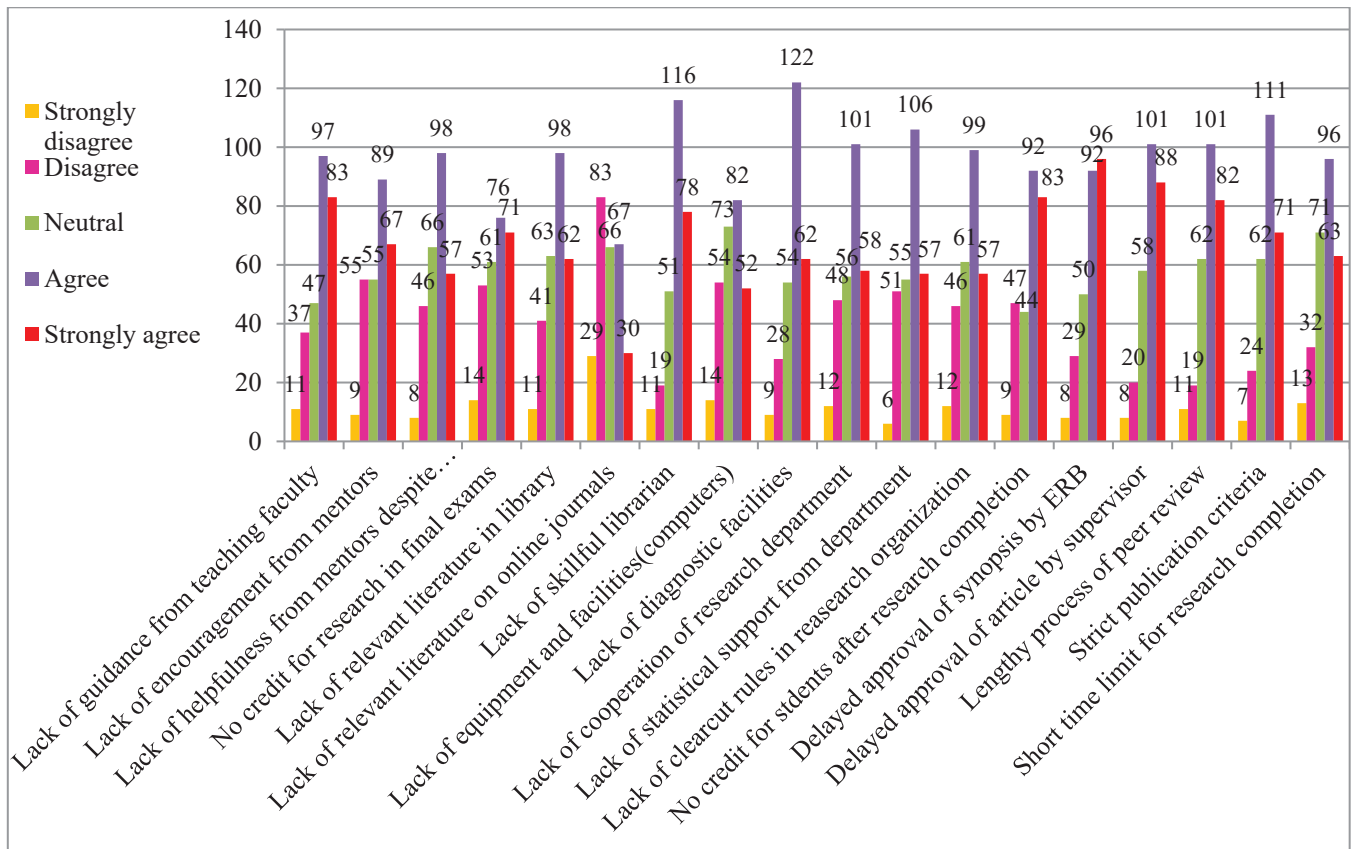
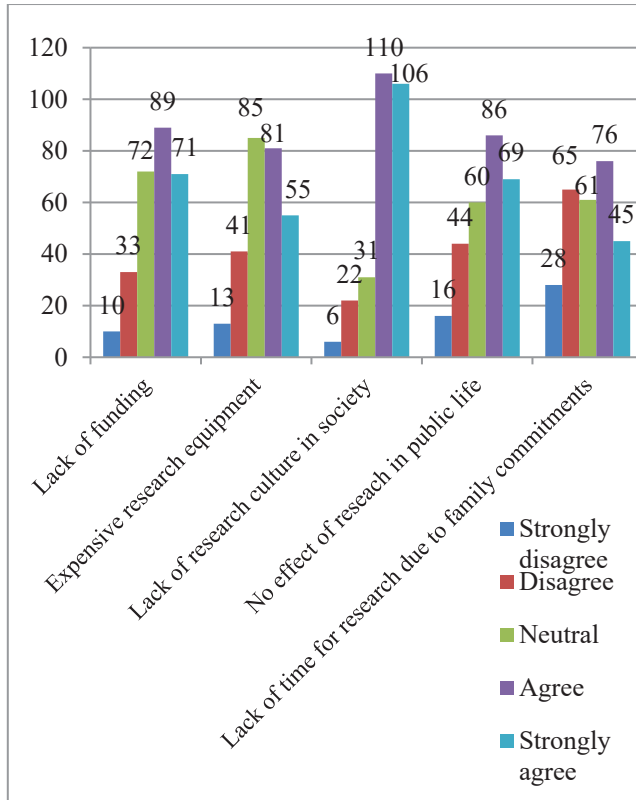


Fig-2: Frequency of Organizational Barriers towards Research (n=275)



**Fig-3:** Frequency of Financial & Socio-Cultural Barriers towards Research (n=275)

### DISCUSSION

Medical undergraduates face a plethora of barriers when it comes to participation in research. In the present study, 83% students considered lack of previous experience in research, while 76% students considered lack of knowledge about research methodology as barrier to research. Our results are supported by local data from Raza et al<sup>2</sup> who also observed lack of interest, lack of training in scientific literature and research methodology as barriers. The barriers reported by us are similar to those reported in international literature.<sup>11,12,13</sup> These barriers might be tackled if students are provided with comprehensive and high quality books written by well versed researchers and mentors on the basics of research. Increasing the span of compulsory research projects over more than just one year (4th year) will likely help in building up the pupils' research experience.

Deficient guidance by teachers (65.5%), lack of appropriate diagnostic facilities (66.9%), lack of enough credit (63.7%), lengthy process by publishing journal (66.5%), lack of funding (160 (58.2%)), lack of research culture in society (216(78.5%)) were also potential barriers. Our results are comparable with a local study by Raza et al<sup>2</sup> and Meraj et al<sup>11</sup> showing institutional barriers as most

common barriers to participation in research. Same was reported by Al-Ghamdi et al<sup>5</sup> and Al-Shalawy et al<sup>12</sup> in which lack of professional supervision, and lack of training were different institutional barriers. Memarpour et al<sup>1</sup> also cited financial inadequacy as the main barrier as did some other previous studies.<sup>14,15</sup> The financial limitation might be overcome if the institutes try to dwell not just on the government for research funding but also on nongovernmental sources. Researchers should also be encouraged to strive for grants and awards. Concerning the inadequate diagnostic facilities, if students are allowed access to the data of diagnostic laboratories within the institute, they might be able to do retrograde research studies on already available diagnostic information. It might be made mandatory for the clinical consultants and researchers to include a particular number of volunteering medical students as part of their research team. It will help inculcate a positive attitude in medical society towards research.

There exist several limitations to this study that need to be taken into account. Firstly, this study is a self-report survey and independent verification of data could not be done. Secondly, students of only one medical university were included in the survey and results may not be representative of other institutes. Finally, only volunteer students filled the questionnaires and complete attendance in classes could not be managed at the time of survey. The results also suggest formulating measures to alleviate individual, organizational, financial and social barriers so that research can flourish in our medical undergraduates.

### CONCLUSION

This study concluded that undergraduate medical students consider lack of knowledge about research methodology and statistics, deficient guidance by teachers, lack of funding and appropriate diagnostic facilities, lengthy process of approval of synopsis by ethical review board and peer review by publishing journal and lack of research culture in society as barriers to research.

The take home message is that the alleviation of these barriers demands work on part of not only the students but also the medical institute as a whole. Arrangements should be made to employ only well versed supervisors, organize precise and high yield research workshops for students, provide access to quality online literature to students and increase their access to clinical and laboratory data. Moreover, the students should be encouraged to voice their concerns openly because only then the

barriers they are facing can be recognized and dealt with.

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