ORIGINAL ARTICLE

Barriers to Research Perceived by Medical Students of Private Medical College, Lahore- Pakistan

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ABSTRACT

Aim: To identify the major barriers to conducting research perceived by medical students and their association with various years of study and gender.

Methodology: This was an analytical cross-sectional study conducted from 9th March 2021 to 6th June 2021. It was conducted among the medical students of all years studying in Combined Military Hospital Lahore Medical College (CMHLMC) & Institute of Dentistry (IOD). Non- probability convenient sampling technique was used. The questionnaire was self-administered and data was analyzed by using SPSS version 20.0.Descriptive statistics of qualitative variables were calculated as frequencies and percentage. Chi-square test of significance was used to see impact of gender and year of study on barriers perceived. P value<0.05 was considered statistically significant.

Results: There was significant difference in barriers perceived by male and female students (p <0.05). The most prevalent barrier in males was extracurricular activities (p=0.001) while major barrier in females was fatigue (p=0.006). Prevalence of barriers was found to be greater among students of 2nd year MBBS (39.3%) and 4th year MBBS (31.3%).The most significant barrier among 2ndyear MBBS was fatigue (p=0.006) while in 4th year MBBS the common barriers perceived were lack of previous exposure (p=0.003), uncooperative colleagues (p=0.003) and finding a mentor (p=0.018).

Practical implications: By using this research as a template we can identify ways in which our education system can probe about flaws in promotion and execution of research among students and how to rectify these so that more students can be urged to go forth in medical field as competent researchers so to advance current methods of treatment and bring forth new queries .Pakistan being a third world country is in dire need of young medical professionals who can bring about a new perspective in field of medicine and we can only do so by facilitating them . This article will give an insight in the current difficulties faced by students whether from personal or administrative point of view which is proving to hinder their progress.

Conclusion: The results of study showed that major barriers perceived by medical students were curriculum overload, finding a mentor, lack of previous exposure to research. There was significant difference in barriers perceived by various classes and males and females.

Keywords: Barriers, medical students, research, gender, medical research, Pakistan, curriculum

INTRODUCTION

Research in the field of medicine provides the evidence needed to understand diseases better, thereby contributing to modernization of medicine and healthcare, and grasping the interest of physicians[1]. Serving as the foremost scientific hub of the societies, universities/medical colleges have the onus to contribute a great share of the research works[2].

Research conduction nurtures the creative minds of students and assists them in optimizing their talent and thinking skills. Research is an excellent method of translating this talent into knowledge production and scientific development. Research conducted in The Albert Einstein College of Medicine revealed that medical researches not only increased critical thinking, data collection and analysis in students but also helped them evaluate their personal strengths and weaknesses[3].

This task is handled by both students, as well as faculty members. However, research indicates that faculty members at universities in developing countries are mostly occupied with academics, leaving them with little time to spare for research[4]. Additionally, with recent, fast-paced advancements in the field of medicine, and progressing medical techniques, health research has become an increasingly important element of medical education[5].

Unfortunately, certain barriers exist, which impede research activity, and serve as deterrents to the trend of research among medical students. Among these are time limitations, inadequate knowledge of study design, inadequate monetary funding, lack of mentors, lack of research self-efficacy, lack of interest, lack of research training, and limited access to data sources[6].

Another factor in this study is the mental health of medical students and how that is currently and for future references

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an important aspect hindering students from pursuing different challenges in their academic field , including research , and how early interventions might have lasting benefits[7].

Additionally, interest is minimized by factors such as lack of internet experience, curriculum overload, an uncooperative community, difficulty in selecting a topic, difficulty in finding a mentor, lack of previous exposure to research methodology and lack of interest in research among medical students of Pakistan[8].

Research plays an important role in dissemination of correct information amongst the general population about prevalent diseases, their complications, new breakthroughs in treatment, dismission of myths; for example, the role of research papers and resources available in e-libraries in spreading the right information was quite effective during the covid pandemic[9,10,11]. In addition to that certain case studies and cross-sectional studies carried out by university students help in raising awareness about important medicine related social issues, for example a study done by a medical student and postgraduates showed a negative link among caregiver burden and quality of life of caregivers of patients with chronic illnesses (schizophrenia in this case)[12].

The aim of this study was to determine barriers to conducting research perceived by medical students and to give recommendations to overcome these barriers so that research culture may be promoted among medical students.

METHODOLOGY

Population: All students of MBBS from CMH Lahore medical and dental college were included as eligible candidates and students of any other discipline (BDS, DPT, and MIT) were excluded.

Sampling: Non-probability convenience sampling technique was used to select sample

Sample size: Raosoft sample size calculator was used to calculate sample size with 95% confidence level, 5% margin of error, 1100 total student population and 50% anticipated

population proportion. It was 285. But since we received 313 complete questionnaires, therefore we kept sample size of 313.

Data collection procedure: This was a cross-sectional study. After getting approval from Institutional Review Board (IRB) of CMH, Lahore Medical College & IOD case# 4413/ERC/CMH/LMC, data was collected by means of physical questionnaires as well as online surveys in the form of google document starting from 9th march, 2021 and closed when sample size was completed on 6th of June, 2021. Permission from IRB and informed consent was obtained before collection of data and students were ensured complete confidentiality of data

Data analysis plan: Data was analyzed using SPSS software version 20.0. Descriptive statistics of qualitative variables were calculated as frequencies and percentages. Chi-square test of significance was used to see the impact of gender and year of study on perceived research barriers. P-value < 0.05 was considered as statistically significant.

The first part of questionnaire included demographic variables of gender and MBBS year of study. The second part included variables that could be perceived as barriers by students in their research process and included : curriculum overload, sleep loss, fatigue, extracurricular activities, finding research useless, lack of previous exposure, internet inexperience, uncooperative colleagues, uncooperative community, improper weather, lack of knowledge, finding mentor, topic selection, plagiarism, social commitments, drugs, laziness, lack of internet facilities, uncooperative faculty, transportation problems, no motives, faculty forced research.

RESULTS

The cross-sectional study was conducted in CMH Lahore medical college & IOD from 9th March 2021 to 6th June 2021. Sample size consisted of 313 people which included 150 (47.9%) males and 163 (52.1%) females. Sample was collected from all five MBBS classes with maximum part from 2nd year MBBS (39.3%) followed by 4th year MBBS (31.3%).

Major barriers perceived by medical students in conducting research were curriculum overload (85%), fatigue (79.2%), and lack of previous exposure (73.2%), sleep loss (70.9%), laziness (67.7%), selecting a topic (64.2%), finding mentor (62.9%), and lack of knowledge (55.6%) (Table 1, Graph 1).

There was significant difference in barriers perceived by male and female students (p <0.05). The most prevalent barrier in males was extracurricular activities (p=0.001) while major barrier in females was fatigue (p=0.006).(Table 2, graph 2)

Table 1: Barriers to conducting research perceived by medical students in conducting research (n = 313)

Perceived Barriers	Frequency	Percent %
Curriculum overload	266	85 %
Sleep loss	222	70.9 %
Fatigue	248	79.2 %
Lack of previous exposure	229	73.2 %
Finding a mentor	197	62.9 %
Selecting a topic	201	64.2 %
Laziness	212	67.7 %
Extracurricular activities	93	29.7 %
Research is useless	92	29.4 %
Internet inexperience	100	31.9 %
Lack of internet facilities	66	21.1 %
Uncooperative colleagues	127	40.6 %
Uncooperative community	167	53.4 %
Uncooperative faculty	106	33.9 %
Improper weather	101	32.3 %
Lack of knowledge	174	55.6 %
Bad past experience	60	19.2 %
Social commitments	152	48.6 %
Drugs/addiction	24	7.7 %
Transportation problems	98	31.3 %
No motives and incentives	153	48.9 %
Faculty forced research	152	48.6 %

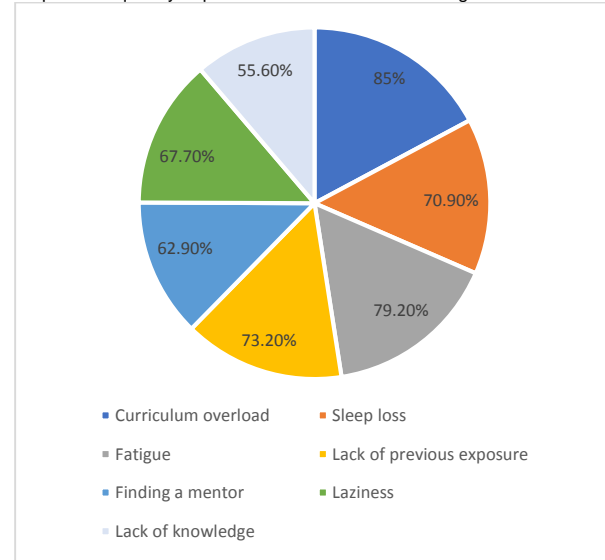Graph 1: Frequency of perceived barriers to conducting research

Table 2: Impact of gender on the barriers perceived in conducting research (n=313)

Variables	Yes (Male)	Yes (Female)	Total	P value
Extracurricular	65	28	93	0.001
Fatigue	109	139	248	0.006
Laziness	93	119	212	0.037
Finding research useless	52	40	92	0.049
Drugs/Addiction	20	4	24	0.001

Graph 2: Impact of gender on the barriers perceived in conducting research
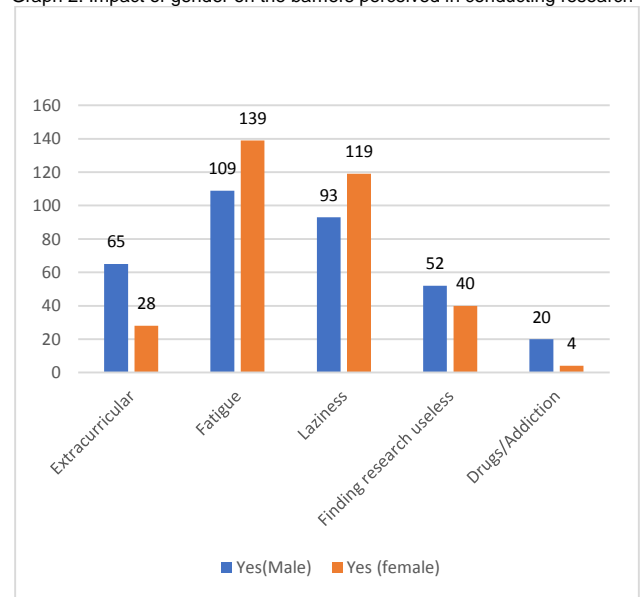
Prevalence of barriers was found to be greater among students of 2nd year MBBS (39.3%) and 4th year MBBS (31.3%).The most significant barrier among 2nd year MBBS was fatigue (p=0.006) while in 4th year MBBS the common barriers perceived were lack of previous exposure (p=0.003), uncooperative colleagues (p=0.003), uncooperative community (p = 0.004) and finding a mentor (p = 0.018) (Table 3).

Table 3: Association of year of study with barriers perceived in conducting research (n = 313)

Variables	Yes					Total	P value
	(1st yr)	(2nd yr)	(3rd yr)	(4th yr)	(5th yr)		
Fatigue	44	100	11	76	17	248	0.005
Lack of previous exposure	38	75	15	81	20	229	0.003
Uncooperative colleagues	17	40	7	52	11	127	0.038
Uncooperative community	22	53	9	66	17	167	0.004
Uncooperative faculty	15	27	3	48	13	106	0.001
Improper weather	21	34	0	41	5	101	0.001
Finding a mentor	35	66	9	69	18	197	0.018
No motives and incentive	26	45	12	54	15	153	0.009
Faculty forced research	21	51	7	61	12	152	0.024

DISCUSSION

Multiple factors emerged, both organizational and personal, as a cause of hindrance in research conduction. Curriculum overload and academic burden was found as the key barrier in conducting research (85%). Lack of time to conduct research is mainly caused due to the hefty medical course and extensive clinical rotations. According to another research[13], only 31% of the students felt like they had enough allotted time for research conduction. This finding was also very similar to a research conducted in *Alfaisal University,* where 77.4% students cited lack of time as the basis of low participation in undergraduate researches[14]. In a research conducted by *Mahtab,* research based knowledge of medical students was deemed lower than the knowledge of students of pharmacy students because to heavy workload in hospitals[15].

Difficulty in finding a mentor or supervisor for research also emerged as a prime hurdle in research conduction. One of the reasons could be busy schedule of the faculty which most of the time involves teaching as well as clinical practice. According to the research conducted in *Kasturba Medical College*, it was found that the faculty felt that they didn't give the required time to their subordinates as they were preoccupied due to their hectic schedules[16]. Increase in the number of faculty members who are skilled and trained research coordinators can assist in overcoming the difficulty in finding proficient research mentors[17,18].

A study conducted in multiple medical and dental colleges of Lahore states that teacher centric method of conveying knowledge are getting outdated[19].

Modern techniques such as audiovisual learning and peer tutoring can help medical students learn about the methodology of research in a more efficient way. A student centric approach of learning not only makes students more comfortable and eager to learn but also imparts sense of responsibility in them.

In line of our present findings, lack of knowledge among student body emerged as an impediment to undergraduate participation in research. This finding is in line with the findings of *Sakineh Dadipoor's* research, where research found out that inadequate knowledge of research methodology and little guidance resulted in the lack of student's participation in any research[20]. Insufficient knowledge about research format, statistical analysis and development of suitable questionnaire are main scientific hiccups faced during research ventures[21].

A large number of students cited fatigue and laziness as a research barrier. This can be due to the increased workload which leads to lethargy and weariness in medical students decreasing their output. Other research literature also revealed a high level of burnout in medical students due to hefty academic course citing one in every five medical students as burned out[22]. Our research also revealed that in females the most common barrier was fatigue (p = 0.006). This finding is in conformity with the findings of *Dušan V Backović* research on gender difference in burn out among medical students of final year. The research disclosed that female medical students accessed their academic stress and burnout levels as worse compared to their male colleagues[23].

Leading studies have shown that medical students are prone to development of stress, anxiety and depression[24]. High levels of stress and anxiety have a negative impact on the learning abilities of students as it reduces their attention span and concentration therefore effecting their cognitive ability[25].

Stress and anxiety also have adverse effects on sleep cycle causing chronic insomnia and fatigue, both of which turned out to be the leading cause of research barrier in our statistics[26].

Lack of internet facility or poor access to information was not a major barrier. This finding was opposite to the findings of *Sakineh Dadipoor's* research where limited access to informational sources surfaced as a key obstacle in UG research[27].

Sleep deprivation turned up as a dominant cause too (70.9%). A study conducted among *Lithuanian students* revealed that Medical students are known to have poorer sleeping patterns as compared to Non-medical students of the same age group[28]. Sleeping patterns are closely linked to academic performance and learning abilities of medical students[29].

CONCLUSION

In conclusion, it can be deducted from the study that both organizational and personal barriers can ensue as an obstacle in research conduction. Organizational barriers can be combated by efforts of Medical Institute to provide better guidance to undergraduate students. On personal level students can attend more seminars and workshops of research methodology and medical writing and try to manage their time wisely in order to overcome lack of knowledge and time management issues.

The limitation of this study is that it is a cross-sectional study with a small sample size therefore it can't be generalized. Moreover it was limited to one medical college. A multicenter study with large sample size is recommended.

Conflict of interest: Nil

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