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Original Article

Knowledge, Attitude And Perceived Barriers Towards Health-Based Research Among Senior Medical Students

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ABSTRACT

Objective: To evaluate the knowledge, attitude and perceived barriers towards participating in health based research among senior medical students. **Methodology:** A cross sectional institution centered study was conducted from July to September, 2015 on 4th and 5th (Final)year MBBS students at Bahria University Medical and Dental College, Karachi, after taking consent of ERC-BUMDC. Data was gathered by taking interview on one to one basis, after taking verbal consent, using specially designed questionnaire. Analysis was done using SPSS version 23. **Results:** Out of total 198 medical students of 4th and Final Year MBBS at Bahria University Medical and Dental College, 193 students participated in the study. Response rate was found to be 97.47%.The knowledge score regarding research was found to be average (4.9+3.9, out of 10 questions). Overall, the students showed positive attitude toward research as majority of students were agreed on positive statements toward research. The principal barriers to research among senior medical students identified in our study were lack of time (96%), inadequate training in research methodology, inadequate facility of experimental laboratory (77%), lack of adequate funding and monetary (75.64%). **Conclusion:** This study showed average knowledge score coupled with optimistic attitude toward research among senior undergraduate medical students. This could be related to various perceived barriers for undergraduate research identified by students. These barriers need to be addressed to ensure an improvement in the undergraduate medical research.

KEY WORDS: knowledge, attitude, perceived barriers, health based research, senior medical students

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INTRODUCTION

Research training is a fundamental component of undergraduate medical

education.[1]Involvement of medical students in undergraduate research is becoming an important career choice with the incorporation of evidence based medicine into clinical practice[2]. Active participation of medical students in research activities endorses optimistic attitude in them regarding research from the beginning of their medical profession[3]. Contribution in research projects augments their reasoning skills, critical thinking and decision making power associated with postgraduate training[4-6] Factors affecting the attitudes of undergraduate medical students on the road to research are prior training, research expertise, qualified faculty staff [7]and inspirational rewarding environment at the institution.[8]However study burden, lack of guidance, ineffective training in research methodologies[4] and less finance inducements are key factors that discourage medical students from participating in undergraduate research activities [9,10]. The literature has shown a well-documented importance of integrating research training into undergraduate medical curricula.[11]In order to encourage a culture at an undergraduate level, various measures are being taken to increase the interests of medical students at institutional level which contain compulsory and optional research projects, student corners in indexed journals, conduction of student scientific conferences, and workshops on various aspects of research.[12] Quality research is even more essential so as to develop improved health care system[13,14].

In order to assess whether efforts and intrusions to stimulate research are encouraging our future researchers, this study aimed to evaluate the knowledge, attitude and perceived barriers towards participating in health-based research among senior medical students.

METHODOLOGY

Study Place and Participants:

This cross sectional institution based study was done after approval by ERC-BUMDC at Bahria University Medical and Dental College, Karachi from July to September, 2015.The participants were 4th and Final year MBBS students. Data was collected by means of specially designed questionnaire, reformed from analogous studies conducted previously.[3,5,15,16] It was pretested on a sample of 25 participants for validity and reliability. Modifications were then made to achieve the objectives of our study. After the informed consent, respondents were given explanation about the purpose of the study. Questionnaire was filled on one to one basis by taking oral interview. Confidentiality was ensured during whole activity.

Questionnaire Development:

The questionnaire consisted of two sections:

Section One:

Section one contained the detailed demographic information of the students like:

Demographic information:

Name, Age in years, Gender, Academic year in Medical College, Residential address

Section Two:

Section two is further consisted of three components:

a. *Assessment of knowledge toward health research*: Ten (10) items (MCQ, one correct Type, with four options of each a-d)
Correct response received a score of one, while wrong answer received a score of zero.

b. *Assessment of attitude toward health based research*: Twelve (12) items by a Likert scale fluctuating from strongly agree (1) to strongly disagree (5).

c. *Assessment of perceived barriers toward health based research*: Ten (10) items with Yes or No options.

DATA ANALYSIS:

Data was entered on Microsoft Excel and analysis was done using SPSS version 23.

RESULTS

Out of total 198 students of 4th year and Final year MBBS at Bahria University Medical and Dental College, 193 students participated in the study. Response rate was found to be 97.47%. Among these 104 students were females (53.88%) and 89 (46.11%) were males. A total of 112 (58.03%) students were residents of Karachi and 81(41.96%) were belonging from outside to Karachi. (Table 1)

Table 2 illustrates the number of correct responses of undergraduate medical students about Mcqs related

TABLE 1
Demographic characteristics of participants
N=193

Variable	(%)
Mean Age:	23+1.2 year
Sex:	
Male	89 (46.11%)
Female	104 (53.88%)
Educational Level	Undergraduate
Academic Year	4thYear and Final Year
	MBBS
Resident: Karachi	112(58.03%)
Outside Karachi	81 (41.96%)

to research. An average knowledge score of 4.9 + 3.9 toward research was obtained by 4th year and Final year MBBS students. Knowledge regarding definition of research was found to be good as 179/193 students (90.40%) correctly defined the scientific hypothesis. The same was true for basic statistical concepts like statistical test (145/193, 75.12%), relation between sample and representativeness (113/193, 58.54%), type of scale (144/193, 74.61%), and type of research study (159/193, 80%). Knowledge regarding standard error and variable reported by (133/193, 67.17% and 191, 98.96 %) students respectively. However, the knowledge regarding scientific paper and Medline was average as reported correctly by (122, 63.21 % and 87, 45.07%) students regarding scientific paper and (77, 39.89%) for Medline.

Table 3 shows the responses of the included medical students towards the attitude items on likert scale. For convenience, the results of agree and strongly agree, and disagree and strongly disagree were combined. Overall, the students showed positive attitude toward research as majority of students were agreed on positive statements toward research. Of the respondents, 191 (98%) students viewed research as the basis of progress in medical profession and same number also believed that effective innovations are not possible without scientifically comprehensive research, 188 (97%) students believed that medical students can design and conduct research and it facilitates better understanding of health problems,185 (93%) number of medical students thought that research promotes critical thinking and 87 (91%) number of students were agreed on the item that research is relevant to medical education.. Although 121 (62.69%) of students agreed on mandatory research projects during undergraduate medical studies, 97 (50.25%) were not agreed on the point that research should be significant criteria for entrance to residency. Moreover, 93 (48.1%) number of students were not agreed on research being a long term carrier. Conducting research was stressful by 67 (34.71%) students.

A number of perceived barriers towards participating in health based research were mentioned by the students as shown in Table 4. Shortage of time due to being overworked with studies, comprising exams, was mentioned by 186 (96%) number of students. This was followed by inadequate training in research methodology and inadequate facility of experimental laboratory at our institute narrated by 149 (77%). Lack of adequate funding and monetary was the third important barrier for conducting research narrated by 146 (75.64%) of included students.

DISCUSSION

Health sciences research (HSR) is vital constituent of improving health care and perform a significant role in the field of medicine and clinical practice.[17]Developments in health care and medicine including disease surveillance, diagnosis, treatment and prevention all depend on the quality of researches as well as health policy.[3] Health-related research training and evidence-based scientific knowledge should be an elementary part of medical education.[18]

Present study evaluated the knowledge, attitude and perceived barriers towards participating in health based research among senior medical students at Bahria University Medical and Dental College. The knowledge score toward research was found to be average i.e. 4.9 +3.9 out of 10 questions.The average score of knowledge reported by Hren (3.2 + 1.7 out of 8 questions) and Amin was (3.6 +1.7 out of 10 questions) in undergraduate medical students.[19,16]

In the present study, the overall attitude of undergraduate senior medical students toward research was found to be positive as majority of students were

TABLE 2
Knowledge toward health based research among senior medical students (N=193)

Items Correct responses N (%)		
1. What is the definition of scientific hypothesis? * An answer or solution to a question which has a capacity of verification or empirical demonstration.	179	90.40%
2. Statistical test utilized to match observed data with data we would suppose toget based on specific hypothesis is called *Chi-square	145	75.12%
3. Representativeness is a key characteristic of : * Sample	113	58.54%
4. A scale from 1 to 5 (like scores in an examination is called: * Ordinal.	144	74.61%
5. The aspect of study which deals with distribution of disease is: *descriptive studies	159	80%
6. What is the standard deviation of a sampling distribution called? *standard error	133	67.17%
7. A variable whose value can be expressed numerically is called: *Quantitative variable	191	98.96%
8. The part of a scientific paper is: * Acknowledgment to persons who helped you during the research	122	63.21%
9. MEDLINE is: *Medical database	77	39.89%
10. All listed rules are applicable on writing an introduction section of a scientific paper Except: *Make it longer rather than shorter	87	45.07%
Average knowledge score:	**Mean+ S.D**	4.9 + 3.9

agreed on positive statements toward research. When compared with other studies, the attitude of senior medical students toward research reported byAlghamdi[20]at the King Saud University, Riyadh, Saudi Arabia was almost similar to our study. Most of the students were on the agreement that research is vital in the medical arena (97.1%), doing research during medical school is significant (87.7%),doing research should be compulsory for all medical students(67.4%),and research methodology should be included in medical school curriculum (91.9%) Whereas only forty-three percent (43%) agreed that research experience should be significant criteria for entrance in residency program.Amin[16]also reported positive attitude of medical students toward research in his study conducted at three Arab universities. Whereas Nel[21] reported61% of positive,31% neutral and 8% of negative attitude toward research among senior

TABLE 3
(N=193)
Attitude toward health based research among senior medical students

Responses (N %) **Items**	**Agree**	**Neutral**	**Disagree**
1. Research is the basis of progress in medical profession	191(98%)	2(2%)	0
2. Research facilitates better understanding of health problems	189(97.92%)	4(2.07%)	0
3. Research promotes critical thinking	185(93%)	6(3.10%)	2(2%)
4. Knowledge of research methodology is essential for obtaining accurate and objective data	159(82.38%)	10(5.1%)	24(12.4%)
5. Conducting research is stressful	67(34.71%)	13(6.7%)	113(58.54%)
6. Research training should be a compulsory part of medical curriculum	110(56.99%)	77(39.89%)	6(3.10%)
7. Research projects should be mandatory during undergraduate medical study	121(62.69%)	65(67.7%)	7(3.6%)
8. Research involvement should be a significant criteria for entrance in residency program	97(50.25%)	16(8.2%)	80(84%)
9. Valid discoveries are impossible without scientifically sound research	191(98.96%)	2(2%)	0%
10. Research is long term career goal	93(48.1%)	37(19.17%)	63(32.64%)
11. Research is relevant to medical education	87(91%)	100(5.18%)	6(7%)
12. Medical students can plan and conduct research	188(97%)	4(5%)	1(0.5%)

medical students at medical college of South Africa. Siemens[22] also reported only 51% of positive attitude of 4th year medical students toward research at three medical universities including Queens University, University of Ottawa and University of Western Ontario in Canada. The negative attitudes of medical students toward research have been found to work as a hindrance to learning leading and conducting research. Lack of student conferences and research workshops are among the common reasons for such negative attitudes. Similarly, Khan[3]etal reported mean attitude score of only 53.7% among undergraduate medical students. However, they included undergraduate students of all medical years.

The principal barriers to research among senior medical students identified in our study were lack of time (96%), inadequate training in research methodology, inadequate facility of experimental laboratory (77%), and lack of adequate funding and monetary (75.64%).When compared with other studies, according to Muatasim[23], the most important barriers associated with non-conductance of research among undergraduate medical students including both Junior and Senior medical students at Taibah College of Medicine, Madinah, Saudi Arabia were inadequate facility for doing research, lack of supervisors, and unavailability of the study participants. Insufficient facilities for research and poor support by mentors were the most significant obstacles notified by male students, and lack of reward and/or motivation, trouble in getting consent for the study, and unobtainability of the samples or patients were the most imperative obstacles predictors notified by female students. Most

TABLE 4
Perceived barriers toward health based research among senior medical students (N=193)

Items	N(%) Yes	NO
1. You have adequate time apart from educational activities to pursue research at your institute	7 (3.6%)	186(96%)
2. There is adequate training in research methodology at your institute.	44(22.79)	149(77.20%)
3. Research supervisors are easily available at your institute	100(51.81)	93(48.18)
4. Medical journals and other electronically relevant data base to research is easily accessible at your institute	142 (73.57%)	51(26.42%)
5. There is adequate facility in your institute to perform experimental studies e. g laboratory	44(22.79%)	149(77.20%)
6. There is motivation or reward for doing research in your institute	188 (97.40%)	5(2.5%)
7. Your institute pays you back the allowances you spend in data collection (e .g visiting different institutes)	178 (92.22%)	15 (7.77)
8. Efficient faculty staff/mentors is available to deliver necessary knowledge and skills	190 (98%)	3(1.55%)
8. Institute gives you the opportunity to conduct your own research	188 (97.40%)	5(2.5%)
9. Adequate funding and Monetary is available regarding research at your institute	47(24.35%)	146(75.64%)

common obstacles in conducting research indicated by Alghamdi[20] in the medical students are comprised of shortage of professional supervisors (84.7%), deficiency of training courses (88.8%), lack of time (72.3%) and dearth of funding (54.1%).Arti[24]also mentioned same barriers for undergraduate research in her study[24]. According to Siemens[22], the main blockades to participation in research in medical school seem to be shortage of time, non-availability of research mentors, formal teaching of research methods and the opinion that the student would not obtain due credit for work.

It is obvious that the expansion of research aptitude is necessary at the individual and institutional levels to achieve a justifiable enhancement in health research[25]; we should attempt to flawlessly incorporate research into the undergraduate medical curriculum as this will help them in active involvement in research in future professional settings.

CONCLUSION

This study showed average knowledge score coupled with optimistic attitude toward research among senior undergraduate medical students that can be related to various perceived barriers for undergraduate research identified by our students. These barriers need to be addressed to ensure an improvement in the undergraduate medical research.

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