



## SCIENTIFIC RESEARCH; KNOWLEDGE AND ATTITUDES OF MEDICAL STUDENTS TOWARDS SCIENTIFIC RESEARCH

1. MBBS, MME, D.A, PGD.N  
Assistant Professor  
Department of Medical Education  
Amna Inayat Medical College  
Sheikhupura.
2. MBBS, MPH, FHEA (UK), DHPE  
(Glasgow)  
Assistant Professor  
Department of Medical Education  
Khyber Medical University,  
Peshawar.

**Correspondence Address:**  
Dr. Sohail Anjum  
Department of Medical Education  
Amna Inayat Medical College  
Sheikhupura.  
drsohailanjum@hotmail.com

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**Sohail Anjum<sup>1</sup>, Usman Mahboob<sup>2</sup>**

**ABSTRACT... Objectives:** The primary objective of our study is to assess the existing level knowledge and attitudes towards scientific research amongst medical students of a medical college in Lahore. **Study Design:** Quantitative descriptive questionnaire-based survey. **Period:** June to September 2017 on fourth year and final year students of MBBS. **Setting:** Medical College in Lahore. **Methods:** After informed consent and briefing, the questionnaire was distributed to the participants. The collected data was analyzed using SPSS. **Results:** A total of 200 students were contacted out of which 102 responded (response rate 51%). The result showed that the knowledge assessment score of final year was lower than fourth year but the difference was not statistically significant. The knowledge was low in both the groups. Attitude score was slightly higher in 4<sup>th</sup> year as compared to 5<sup>th</sup> year. **Conclusion:** The study indicated less knowledge but positive attitude of medical students towards scientific research. Moreover, the culture of research needs to be developed in our undergraduate medical education.

**Key words:** Attitudes, Knowledge, Medical students, Research, Scientific.

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### INTRODUCTION

Using science methodology and its understanding is significant component of medical profession. Being a scientific based profession the acceptance of medicine requires assessment of attitudes and knowledge of medical students as an indicator for their preparation to accept it. Moderate levels of attitude and knowledge regarding health research are demonstrated by medical students.<sup>1</sup> In regards to the research role in medical school, the future studies should have wider surveys about the specific research questions. Moreover in regards to the role of the barriers to research in medical college curriculum, same kind of surveys of different educators and stakeholders of medical education will be of high value.<sup>2</sup> We have to investigate if medical students do have knowledge of scientific methodology and its communication in the very beginning of their medical professional education.<sup>3</sup> Inadequate knowledge is demonstrated by under-graduate medical students although moderate attitudes are possessed by them about health research. Major transformations of research facilities and

residency training are required at institutional level to enhance research by trainee residents.<sup>4</sup> Attending a course about research methodology has been related to positive attitudes regarding science.<sup>5</sup> We investigated if medical students have knowledge of scientific methodology and its communication in the beginning of their medical professional education. Some of the medical college curricula in Pakistan do not explicitly include education about scientific methodology therefore one can expect medical student's knowledge to be poor in this regard. The primary objective of our study is to assess the existing level of knowledge and attitudes towards health research amongst medical students of a medical college in Lahore.

### SUBJECTS AND METHODS

An ethical approval was obtained from Institutional Review Board for this cross-sectional descriptive study. The participants of the study were assured that confidentiality will be observed for their responses. No harm to the participants was anticipated. The participants were voluntary

ones and they were not compensated for their participation. All fourth and final year MBBS students of Rashid Latif Medical College Lahore were included who had consented to participate in this research study.

A 5- point Linkert scale was used for items in the instrument to measure the knowledge and attitude of medical students towards scientific research. It was pilot tested and validated in the local context.<sup>3</sup> The questionnaire was composed of two parts. The first part included Linkert-type statements on attitude toward scientific research whereas the second part evaluated knowledge about scientific research. The first part consisted of 10 positive and 10 negative items with Likert-type scale responses: 1 – strongly disagree, 2 – disagree, 3 – undecided, 4 – agree, and 5 – strongly agree.

The second part contained 8 multiple- choice questions about scientific research. For the purpose of this research, eight questions have been selected from the database, two from each of the main sections of the textbook of scientific research “Principles of scientific research” (collection and presentation of data, medical bibliographic databases, and principles of assessing and writing a scientific article).<sup>3</sup> We also considered biases such as threat of ‘Location’ that was controlled by collecting the data inside the respective lecture-theater. The threat of ‘History’ was controlled by avoiding data collection after some unplanned or unanticipated significant event. Other threats e. g attitude of subjects and implementation, mortality, testing, regression maturation and instrumentation were not anticipated. The statistical analysis was performed using Statistical Packages for Social Sciences. Responses from the participants were coded and entered into SPSS and their descriptive analysis was done. Mean and Standard deviation were used for numerical data. For categorical data, Frequencies and Percentage were used. Results were presented in the form of tables. P-value less than 0.05 were considered to indicate statistical significance.

## RESULTS

The survey included 200 medical students (100 fourth and 100 final year students) out of which 102 responded (response rate 51%). The knowledge assessment score was low in both the groups however for final year it ( Mean 1.44, SD 1.232) was lower than fourth year (Mean 1.53, SD 1.189) but the difference was not statistically significant (‘p’ value is 0.089 which is more than 0.05).

Attitude score was slightly higher in 4<sup>th</sup> year (Mean 63.73, SD 8.886) as compared to the final year (Mean 63.64, SD 7.567) but again it was not statistically significant because ‘P’-value is 0.085 which is more than 0.05.

## DISCUSSION

We usually expect that medical students in Pakistan have poor knowledge regarding methodology of science. Its reason is very easy to understand and that is medical college’s curricula here are devoid of education about scientific methodology. However it has been observed that the medical students show moderate levels of Knowledge and attitude about the health research.<sup>1</sup> In another study we see that undergraduate medical students have demonstrated inadequate knowledge but their attitudes regarding health research were moderate.<sup>4</sup> It will be a better choice if we investigate medical students to know that how much knowledge of scientific methodology do they possess and how much do they understand regarding its communication in the very beginning of their medical professional education.<sup>3</sup>

The knowledge assessment score was low in both the groups however for final year it ( Mean 1.44, SD 1.232) was lower than fourth year (Mean 1.53, SD 1.189) but the difference was not statistically significant (‘p’ value is 0.089 which is more than 0.05). Literature shows that including more medical students of other medical colleges improves research results.<sup>6</sup> If an adequate support is provided, the interest of medical students can better be nurtured in the field of research.<sup>7,8</sup> Such practical implications have been explained in research articles.<sup>9</sup>

Questions	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	No response
1- Human life has been prolonged by science.	18	8	49	15		
2- Mankind cannot progress without science progress.	6	23	9	56	6	1
3- If sound scientific research not there, valid discoveries cannot be made.	2	9	5	70	14	1
4- The world's better understanding has been given by science.	2	13	7	66	12	1
5- Medical progress is based on the utilization of scientific methodology.	6	5	5	60	25	
6- All physicians should have know how of scientific methodology.	2	9	14	54	21	1
7- Better problem understanding is possible by scientific approach.	1	7	10	71	11	1
8- To obtain objective and accurate data, scientific methodology is necessary.	2	11	5	61	22	
9- The fact could only be established by using scientific approach.	3	22	11	56	9	
10- Interesting and creative people are scientists.	12	45	17	19	8	
11- Physicians who believe in the science only are narrow-minded	24	45	15	14	3	
12- A scientific approach can limit choices of physicians.	11	41	24	20	4	1
13- Principle reason of atmospheric catastrophe is the science.	4	21	25	41	10	
14- Science can destroy mankind if it keeps on going in the similar direction it has gone yet so far.	4	21	28	37	11	
15- Humanity lacks in science approach.	6	28	27	36	4	
16- Unnecessary rules are imposed by scientific methods.	1	45	24	26	4	1
17- The medical research implementation is made difficult by scientific methodology.	11	46	17	25	2	
18- Negative influence of science has exceeded its positive influence.	6	35	23	25	12	
19- We could have lead healthier and easy lives without science.	14	47	15	20	5	
20- Boring and dull thinking way is scientific one.	17	52	11	18	3	

Table-I. Results of questions on attitude towards scientific research

MCQ	Correct Response	Percentage
1-Define a scientific truth.	1	0.99%
2-The characteristic essential for science is:	4	3.96%
3-Scale from '1' to '5' (similar to grades on examination) is called:	19	18.81%
4- Representativeness is fundamental characteristic of:	17	16.83%
5- MEDLINE is:	21	20.79%
6- You have got published a paper in a renowned journal of immunology previous year. To count the number of citations received by your paper, the best thing to be done is to search for the:	37	36.63%
7- Part of the science paper is:	24	23.76%
8- While writing "Introduction" section of scientific paper. All following listed rules of writing will apply EXCEPT:	27	26.73%

Table-II. Results of questions on Knowledge toward scientific research

Score	Group	N	Mean	Std. Deviation	p-value
Knowledge	Fourth Year	51	1.53	1.189	0.089
	Final Year	50	1.44	1.232	
Attitude	Fourth Year	51	63.73	8.886	0.085
	Final Year	50	63.64	7.567	

**Table-III. Comparison of results about and knowledge and attitudes:**

Another observation which is worth mentioning here is that attending a course about research methodology has been related to positive attitudes regarding science.<sup>5</sup>

Again coming towards our present study case it has been observed that the attitude score was slightly higher in 4<sup>th</sup> year (Mean 63.73, SD 8.886) as compared to the final year (Mean 63.64, SD 7.567) but again it was not statistically significant because 'P'-value is 0.085 which is more than 0.05. The studies have shown that after providing scientific training, the majority of the students have feeling that it boosted their interest for applying principles which they had learnt in practice of medicine.<sup>10</sup> Potential and actual barriers to the development of the research skills at undergraduate level and how to overcome such barriers have been discussed also in different studies.<sup>11</sup> Our study indicated less knowledge but positive attitude of medical students towards scientific research. Likewise the other research studies have suggested the scope of providing research activities at medical colleges.<sup>12</sup> Undergraduates had recognized the benefit of research experience (for example in our research study 70 % participants agreed that 'if sound scientific research not there, valid discoveries cannot be made'). 71 % of the participants have agreed that 'better problem understanding is possible by scientific approach'. However their above mentioned knowledge assessment scores shows that they need to have a real understanding of process of research. Only 21% of the participants have correct response about the MEDLINE. It shows that they need training for recognition of skills which are required in research.<sup>13</sup>

However, our study has presented a limited scenario of two classes of a single medical college. In regards to the research role in medical school, the future studies should have wider

surveys about the specific research questions. Moreover in regards to the role of the barriers to research in medical college curriculum, same kind of surveys of different educators and stakeholders of medical education will be of high value.<sup>2</sup> So what are the points to ponder upon in whole of the above mentioned discussion? It has been observed that major transformations of research facilities and residency training are required at institutional level to enhance research by trainee residents.<sup>4</sup>

## CONCLUSION

The study indicated less knowledge but positive attitude of medical students towards scientific research. Moreover the culture of research needs to be developed in our undergraduate medical education.

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*Beware of the person with nothing to lose.*

– Italian Proverb –

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#### AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Sohail Anjum	First Author	
2	Usman Mahboob	Second Author	