



# RESEARCH AMONGST JUNIOR AND SENIOR MEDICAL STUDENTS; COMPARISON OF KNOWLEDGE, ATTITUDE AND PRACTICE

Nayyab Zehra<sup>1</sup>, Ahmed Hassaan<sup>2</sup>, Shafaq Mushtaq<sup>3</sup>

1,2,3  
Army Medical College,  
Rawalpindi

**Correspondence Address:**  
Nayyab Zehra  
45B Lane 3 Askari 7 Adyala Road,  
Rawalpindi  
nayyabzehra13@gmail.com

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**ABSTRACT: Background:** Evidence based scientific knowledge and research is an integral part of medicine. This led us to this study to find out the knowledge, attitude and practice regarding research in medical students of final year and first year at Army Medical College-NUST, Rawalpindi, Pakistan. **Objectives:** The objectives of the study were to compare the level of knowledge, attitude and practice regarding research amongst medical students of final year MBBS and 1<sup>st</sup> year MBBS. **Study Design:** Cross sectional descriptive study. **Place of Study:** Army Medical College-NUST Rawalpindi, Pakistan. **Duration of Study:** Three months (October 2013 to December 2013). **Materials and Methods:** A questionnaire consisting of 23 closed questions, was filled by students of first and final year MBBS, through non-probability convenience sampling. The data was analyzed by SPSS 21. p value of < 0.05 was considered to be significant. **Results:** Over 50% of first year students and 21.53% of the final year students had poor knowledge of research methodology. 89.30% students from final year along with 51.30% students from first year were motivated and had interest in research activities. Not a single student from first year and only 12.37% of students from final year were actively involved in research process at the time of undertaking the research. 50.40% first year students and 58.46% from final year strongly disagreed that there are ample opportunities for research in the college. **Conclusions:** A working scientific forum should be established in the college with introduction of student mentor link. Students should be guided on how to carry out a research and how to make a good research question, how to develop skills for paper writing and evaluating the data collected.

**Key words:** Research methodology, undergraduate students, Pakistan, medical students

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## INTRODUCTION

Research is process of investigation, interpretation and updating of the scientific knowledge regarding any specific field of study. Physician scientists play important role in the treatment plans for difficult clinical cases through carrying out trials and studies<sup>1</sup>. Internet plays an important role for carrying out successful research projects, especially through online searches regarding previous medical data for the selected topics. Possible funding for the projects is a determinant for the completion of researches<sup>1</sup>.

Innovations in medical diagnosis and treatment are due to advancement in different fields of science by successful research projects. These researches are successfully put in practice in clinical settings. Current decrease in physicians

with developed research skills has put better medical treatment and diagnostics at stake. Personality traits and activities carried out during college life is an essential factor for the attitude of students towards research and research oriented careers after graduation<sup>2</sup>.

The main aim of medical education is to prepare self sufficient physicians who can face the hurdles in their clinical practice and find answers to queries through clinical trials. For this purpose, the adequate environment for research skills implementation is to be provided with appropriate time and guidance. This further helps the students to develop an interest in research based careers even after the less favorable financial incentive at hand<sup>3</sup>.

Research is regarded as an important component of every field worldwide on account of its beneficial effects on welfare and health. Research methodology involves a sequential process of making a questionnaire, deciding a study design, data collection, analysis of the data and finally summarizing all the findings of the data into meaningful, well organized research paper<sup>4</sup>. To become an efficient researcher, one has to be equipped with ample skills and knowledge about the research methodology.

Training in research methodology is an important but highly neglected part of medical education curriculum, which needs to be paid more attention through workshops, discussions and seminars carried out on regular basis, which show a positive increase in the attitude of the students towards carrying out research<sup>5</sup>.

Undergraduate students predominantly have positive attitude towards research but due to lack of opportunities in their study years, they as postgraduate are not proficient in research<sup>6</sup>. The habit of reading journals or writing an article for any journal is not developed thus pointing towards the deficient research skill development in undergraduate years and needs to be paid attention to<sup>6</sup>.

University influence and encouragement plays a vital role in the enhancement of possible interest of students in research. Research when carried out in specific interesting field of medicine shows higher output of successful research projects<sup>7</sup>.

Nowadays medical students of our country do not possess the required skills to carry out research on their own. This has caused a huge gap in number of properly qualified doctors who can be a part of some important research projects. They are unable to cope up with the challenges in their clinical practice. Sadly, they are not in touch with latest research, thus stick to old conventional ways of treatment and cannot compete with other doctors abroad in field of medicine.

Students are, though, motivated towards research

but due to lack of awareness of the research activities in the universities, are not much involved in the ongoing research projects<sup>8</sup>. Inadequate training for carrying out research along with lack of interest in students is the major cause of decreased level of awareness regarding research methodology. Students are, most of the time, highly motivated towards research, there just needs to be proper guidance procedure on how to carry out a research project<sup>9</sup>.

The lack of interest in research amongst students is due to less number of future prospects of a financially stable career along side with the inappropriate research oriented training during their undergraduate years of study<sup>8</sup>. Regardless of the level of interest prevailing in the undergraduates, they are still unable to carry out research due to absence of mentors, time issues and personal limitations<sup>8</sup>.

In order to create interest and increase in the research oriented personnel, there is a dire need of formulating effective research training sessions at undergraduate level. All the identified limitations if catered for, will surely help in ameliorating the insufficiency of research oriented physicians<sup>10</sup>.

Keeping this in mind, we assessed the knowledge, attitude and practice regarding awareness of research methodology amongst the students of Army Medical College, National University of Science and Technology Rawalpindi, Pakistan. To identify the diversity of the level of knowledge amongst medical students after exposure to clinical and theoretical training, students from the final and first year MBBS were included in this study.

## MATERIALS & METHODS

This was a cross sectional study involving students of 1<sup>st</sup> and final year MBBS, carried out between October 2013 and December 2013. The study was carried out within the lecture halls of Army Medical College, NUST.

A total of 200 medical students were included in the study. Non Probability convenient sampling was done for collection of the data. The sample

size was calculated using WHO calculator. Students excluded from the study were those suffering from any medical conditions.

A questionnaire with 23 closed questions adapted from the guidelines given by Centre for Excellence in Teaching and Learning in Applied Undergraduate Research Skills (CETL-AURS) at Reading University (<http://www.reading.ac.uk/cetl-aurs/>) was used. This questionnaire was selected as it met with our objectives and there are no other standardized questionnaires to assess medical student’s involvement in research.

The questionnaire was distributed among 200 first and final year MBBS students. Students were briefed about the purpose of the research beforehand and it was made totally voluntary to fill out the forms. The questionnaires were completed at the end of large group lectures.

The results were calculated using SPSS 21 and p value <0.05 was considered to be significant. Means, medians and bar charts have been used for descriptive statistics.

**RESULTS**

A total of 200 medical students participated in the research, with 100 students each from 1<sup>st</sup> year and final year MBBS classes. Out of 100 students from each class, 50 were males and 50 females.

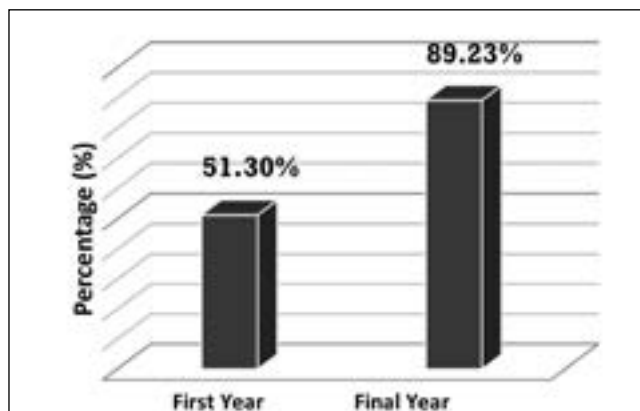
Age of the students ranged between 18 and 24 years with mean of 21.33 years (SD 3.225).

The questionnaire was used to judge the knowledge, attitude and practice of medical students regarding research. Extent of knowledge was divided into four categories, excellent, good, satisfactory and poor. It is pertinent to note that 0 percent of first year students had excellent knowledge of research and just a mere 6% of the final year student had excellent knowledge [Table I]. Over 50% of first year students and 21.53% of the final year students had poor knowledge of research methodology.

Class Years (MBBS/ BDS)	Excellent	Good	Satisfactory	Poor
First year	0	4.80	44.80	50.40
Final year	6.15	27.69	44.61	21.53

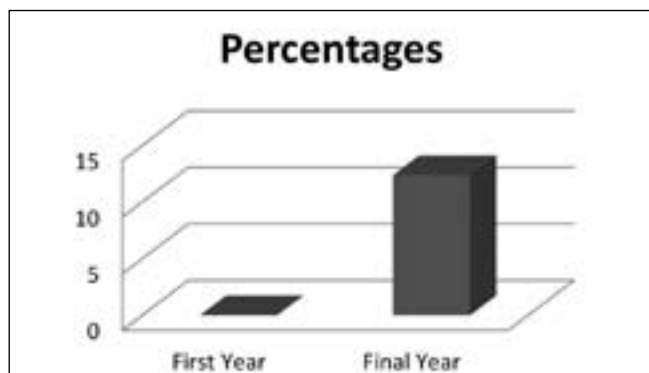
**Table-I. Percentage of Knowledge of Research Methodology (n=200)**

Self-rated levels of motivation towards doing research by the students were categorized into low, moderate and high, using equal cut-off points. 51.30% students from first year and 89.30% students from final year [Figure 1] were highly motivated and had interest in research activities. No significant difference was found with respect to year of study, gender or age group between different student groups. Students who perceived a medical career incorporating research as appealing (mean score 83.22) were significantly more motivated than those who did not (mean score 63.64; t =6.632, p<0.05) 93.50% students from first year and 68.23% students from final year were not aware of the research activities occurring in the college showing a gap in communication regarding the research activities.



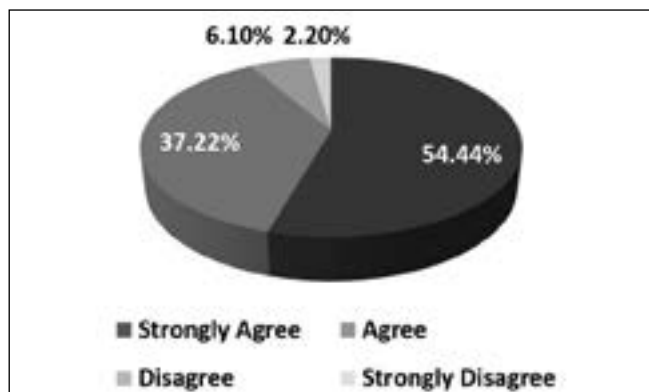
**Figure-1. Level of Motivation and Interest in Research Activities (n=200)**

Not a single student from first year and only 12.37% of students from final year were actively involved in research process at the time of undertaking this research. [Figure 2]



**Figure-2. Active Participation in Research Activities (n=200)**

Fifty five percent of students strongly agreed to the fact that there is need for provision of research opportunities at undergraduate level within the college premises [Figure 3].



**Figure-3. The need for provision of more Research opportunities to UG students (n=200)**

When students were asked about the adequate opportunities of research in Pakistan, again we observed a varied response in both the years. 61.8% first year students and 73.84% from final year disagreed [Table II] to this point.

Class Years (MBBS/BDS)	Strongly agree	Agree	Disagree	Strongly disagree
First year	8.10	30	50.40	11.40
Final year	6.15	20	58.46	15.38

**Table-II. Adequate opportunities for research in Pakistan (n=200)**

## DISCUSSION

In today’s era research is becoming integral part of medical sciences as a result of the increasing queries in the clinical setup<sup>11</sup>. Newer diseases are becoming recognized. Extensive research needs to be done in order to figure out the possible pathogenesis and treatment of the emerging diseases. Research also provides for better health care services, better diagnosis and treatment<sup>12</sup>. As in the past, great scientists, like Louis Pastuer, Robert Koch and so many more, worked and researched for the unanswered questions regarding new diseases of their times<sup>13</sup>, similarly today’s clinician is expected to bridge the gap between the diagnosis and treatment through research for upcoming disease issues worldwide.

Our results are indicative of the fact that final year students, though better rehearsed in the research methodology as a result of their own personal efforts and exposure than first year, are still lacking in the required standards of awareness about research.

As indicated in our study, students all around the world though are motivated towards carrying out research but lack of opportunities becomes a limiting factor<sup>8</sup>. Every student regardless of which class they belonged to, agreed that the research opportunities in the country and the college are very minimal. Most of the times, they are unaware of any research activities happening in the college.

Research at undergraduate level gives a head start to the students for their future careers. It helps them to get a better insight into the IT and statistical skills involved in data collection and analysis<sup>14</sup>. Similarly in order to complete a good research, students have to read original articles<sup>15,16</sup> and learn the techniques on how to organize a worthy research question and formulate the strategies on how to get an answer to the question asked. These skills learnt can be used in any field of science including pharmaceuticals, biotechnology, microbiology and many others<sup>17</sup>.

Competition in the field of medicine and increasing number of graduating students from both private

and public sector medical colleges is producing a dearth of jobs which can give reasonable salary to the doctors. As a consequence new fields are being chosen by the current graduates to prosper in life and get professional satisfaction along with a handsome pay for the work done<sup>17</sup>. For this, there is a need of appropriate research guidance programs to be initiated as agreed by more than 50% of the students surveyed, which can train the students for doing better research. Undergraduate involvement ensures more competitive individuals getting into this field and helping the advancement in the field of research.

There is a serious dearth of clinical scientist career oriented individuals all over the world and thus research methodology has been inculcated in the medical curriculum for undergraduate students in many institutes<sup>4</sup>. This is done to increase the level of awareness amongst students regarding research and research skills which can be helpful in pursuing research oriented careers once they leave medical college<sup>4</sup>.

In order to provide for more experienced graduates in research methodology, who know how to carry out a research, present it efficiently in oral and written form<sup>16</sup>; there is a need to overcome the gap of facilities and opportunities at the college and country level along with the lack of interest and motivation in the students as well. Although students are interested in research but lack of experienced guidance by mentors has resulted in a very low number of successful research at undergraduate level all around the world<sup>12</sup>. Carrying out research at undergraduate level needs to be included in the curriculum from the very start of the course. Sufficient guidance in research methodology skills can cater for the lack of interest for carrying out a research and increase participation in research projects available on campus<sup>18</sup>.

Research methodology training is vital in development of better competent students once they graduate. This training has short term positive effect, which needs to be added as a permanent course in the curriculum in order to maintain high

competency levels in professional field<sup>19</sup>.

Critical thinking and reasoning skills are to be developed in undergraduate students in order to create a sufficient awareness of the research methodology. Students are to be properly encouraged by the mentors and engaged in research projects by motivation, which will lead to induction of appreciation of significance of research and its consequences in clinical set up in their post graduation years. Problem based learning technique is to have gained some fame as a step forward in creating an ambience for research in undergraduate students<sup>5</sup>.

## CONCLUSIONS

A working scientific forum should be established in the college with introduction of student mentor link. Students should be guided on how to carry out a research and how to make a good research question, how to develop skills for paper writing and evaluating the data collected. They should be given time to complete research in their academic year along with the textbook studies. This system need to be established within the country for better undergraduate research skills and projects in students.

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Don't cry because it's over.  
Smile because it happened.

Adolf Hitler

