

Original Research Article

Effect of epidemiology batch posting in improving attitude towards research among medical students

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ABSTRACT

Background: Epidemiology batch posting (EBP) is conducted only in a few Indian medical colleges for undergraduate students to orient them with research methodologies. EBP is designed to overcome the lacuna in knowledge on attitude towards scientific research amongst medical students. The objective of the study was to study the effect of EBP in improving attitude towards research among medical students.

Methods: A pre-post study was conducted on a batch of 40 students (consecutive sampling technique) posted for EBP in Department of Community Medicine, at VMMC and Safdarjung Hospital, New Delhi during October-November 2017. This was well above the required sample size of 16 calculated using G Power 3.1. Data was collected using R-ATR (revised attitude towards research) Data was found to be non-parametric by applying tests of normality. Hence Wilcoxon sign rank test was used to find the statistical significance in change of attitude between pre and post-tests.

Results: Participants mean age was 20.50 ± 1.58 yrs and 75% of them were males. The median attitude towards research usefulness increased from 5.25 to 6.75 following EBP. In the domain of positive predisposition towards research, there was an overall positive change in attitude from a median of 4.00 to 5.25. A negative change was shown in 'research anxiety' domain, from a median score of 5.00 to 3.00.

Conclusions: Authors recommend that Indian medical curriculum should mandate a small group learning model such as EBP for all undergraduate medical students to bring about a positive attitude towards research and to reduce their anxiety levels.

Keywords: Epidemiology batch posting, Medical students, Research attitude

INTRODUCTION

In the current Indian education system, there is a variation in teaching methods and curriculum followed amongst medical schools. The current medical health care system is established on firm evidence based practices which requires combining one's own expertise with the best evidence that is available from research.¹ In this evidence based era, the Indian education system should be able to inspire students to take up more research as an integral part of their career. Health research training forms a

necessary component of medical curriculum, because the emerging focus is on skills, knowledge and attitudes and not just on factual learning.^{2,3} Research leads to evolution of new concepts and techniques. Research attitude helps to critically analyze facts.⁴ Now, research has become an essential part of almost all the post graduate programmes. Studies have shown a strong association between involvement of undergraduate students in research and research initiatives taken by up by them as a postgraduate student.^{5,6} Moreover, students contributing to research addressing specific health problems and needs of a local

community can have implications in the clinical practices in that area.^{7,8} With more than a billion people in India, there is ample need for research to provide better medical services and breakthrough medical advances. With a marked improvement in the Indian economy, there is greater focus on improving healthcare and healthcare-related research in the country.⁹ Research training is a vital part of medical education which will help medical professionals to develop research skills and reasoning attitude.¹⁰ In the recent years, special attention has been paid to exposure of undergraduate medical students to research experiences and research courses. Epidemiology batch posting (EBP) is conducted in few colleges for undergraduate medical students to get oriented with study design, research methodology and data analysis. An extensive review of literature reveals that though a few studies have attempted to analyse the attitude towards research among patients being enrolled in research, there was little knowledge on attitude towards research among medical students. A previous study also showed that medical school students had positive attitude toward scientific research despite their lack of knowledge on research methods.¹¹ Almost no studies have been conducted to analyse what methods of training would improve the attitude towards in research among students in medical field. EBP is designed such as to overcome this lacuna in knowledge on scientific research methods. The objective was to study the effect of EBP in improving attitude towards research among medical students.

METHODS

A pre-post study was conducted on medical students posted for EBP in Department of Community Medicine,

at VMMC and Safdarjung Hospital, New Delhi from months October to November 2017. The inclusion criteria for the study participants were, students posted in EBP from 30 October 2017 to 18 November 2017 in the department. Students with less than 75% attendance and those who did not give consent were excluded from the study. Consecutive sampling technique was used, and all the students posted for EBP, who were eligible to participate were studied. In total, applying the above said criteria 40 students were selected for the study. This was well above the required minimum sample size of 16 calculated using GPower 3.1. Data was collected using R-ATR (Revised Attitude Towards Research) which is a pre designed, structured questionnaire containing 13 items on Research usefulness, Research anxiety, and Positive predisposition towards research, whose scales range from 1 (strongly disagree) to 7 (strongly agree).¹²

A pre-designed syllabus that is being used by the Department of Community medicine at a medical college in Delhi for the past 4 years was used in this EBP. For a group of 40 students, adequate mentor strength considered and used in authors study was 1 faculty, 1 senior resident and 2 junior residents. The curriculum of EBP is described in Table 1. The study was an evaluation of ongoing academic activity in the college. Since EBP and end of posting evaluation is in the routine curriculum as an exercise for MBBS students, ethical committee clearance was not required and hence not sought. But the permission for the same was obtained from the Department of Community medicine at VMMC and Safdarjung hospital. Data was collected twice using R-ATR scale.

Table 1: Curriculum of EBP used in this study.

Topic	Details of the lesson	Duration
General epidemiology	Introduction to epidemiology, Epidemiological application, types of studies	3 hrs
General epidemiology	Disease frequency / measures of morbidity	2 hrs + 1 hr E
Maternal and child health indicators		2 hrs + 1 hr E
Advance epidemiology	Association and causation, Bias	3 hrs
Bio-statistics I	Central tendency. Normal distribution	2 hrs + 1 hr E
Bio-statistics II	Types of data	2 hrs + 1 hr E
Data presentation	Tables, graph, maps, pie chart, etc	2 hrs + 1 hr E
Screening & Diagnostic tests	Screening methods, Sensitivity & Specificity	2 hrs + 1 hr E
Outbreak investigation	Outbreak investigation & response	2 hrs + 1 hr E
Sampling & sampling techniques	Sample distribution, sampling methods	2 hrs + 1 hr E
Bio-statistics III	Cluster sampling	2 hrs + 1 hr E
Bio-statistics IV	Test of significance	2 hrs + 1 hr E
Activity	Poster presentation of data on epidemiology of a particular disease	3 hrs

At the beginning of the posting pretest was conducted and then again at the end of the posting post test was conducted using the same R-ATR questionnaire.

Data was subjected to tests of normality by Kolmogorov-Smirnov and Shapiro-Wilk tests and to found to be non-parametric data. Hence Wilcoxon sign Rank test was used

on non-parametric data to find the statistical significance in change of attitude between the pre and post-tests.

RESULTS

Amongst the 40 students enrolled in the study, 30 (75%) were males and 10 (25%) were females. The age of study subjects ranged from 19 to 23 years and the mean age was 20.50 ± 1.58 yrs.

Research usefulness

The median attitude towards research usefulness increased from 5.25 to 6.75 following the intervention by EBP. The positive change seen in all the 4 items of research usefulness domain is statistically significant. The maximum change is seen in the item research is connected to my field of study. The median score of pre-post assessment of each question in the research usefulness domain is shown in Table 2.

Table 2: Median scores of pre and post-test with regard to research usefulness.

Items	Pre-test median (IQR)	Post-test median (IQR)	P value
Research is useful for my career	5.5 (5-6)	7 (6-7)	0.001
Research is connected to my field of study	4 (3-5)	6.5 (6-7)	<0.001
The skills I have acquired in research will be helpful to me in future	5 (4-6)	6 (5-7)	<0.001
Research should be indispensable in my professional training	6 (5-6)	7 (6-7)	<0.001
Total median	5.25	6.75	

Table 3: Pre and post test scores for positive research predisposition.

Items	Pre-test median (IQR)	Post-test median (IQR)	P value
I enjoy my research course	4 (3-6)	5.5 (4-6)	0.003
I love research courses	6 (5-6)	6 (5-7)	0.608
I find research courses interesting	4 (3-5)	5 (4-6)	<0.001
Research courses are pleasant	4 (2.25-4)	4 (4-6)	0.025
Total median score	4	5.25	

Table 4: Median scores of Pre and post-test on the research anxiety.

Questions	Pre-test median (IQR)	Post-test median (IQR)	P value
Research makes me anxious	4 (3-5)	3 (2-4.75)	0.045
Research course scares me	3 (2-4.75)	2 (2-4)	0.014
Research courses are stressful	6 (5-7)	5 (3-6.75)	0.104
Research course makes me nervous	5 (4-6)	3 (2-4)	<0.001
Research courses are difficult	6 (5-6)	3 (2-3)	<0.001
Total median score	5	3	

Positive research predisposition

In the domain of positive predisposition towards research, there is an overall positive change in attitude from a median of 4.00 to 5.25 as shown in Table 3. The median attitude remains the same for the statement “I love research courses and research courses are pleasant”. The other 2 statements, “I enjoy my research courses” and “I find research courses interesting” show a positive change in attitude and are statistically significant.

Research anxiety

A negative change is shown in ‘research anxiety’ domain, from a median score of 5.00 to 3.00 (Table 4). However,

the change observed in the statement “Research courses are stressful” is not statistically significant and the change seen in other statements such as “Research makes me anxious”, “Research course scares me” and “Research course are difficult” are statistically significant.

Impact of EBP

The overall median values of the 3 dimensions in attitude towards research recorded in the pre and post tests are depicted in Figure 1 with the help of a radar chart. As authors can observe, the median score between pre-test and post-test after EBP, has shown a positive change in research usefulness and positive predisposition towards research whereas a negative change in research anxiety.

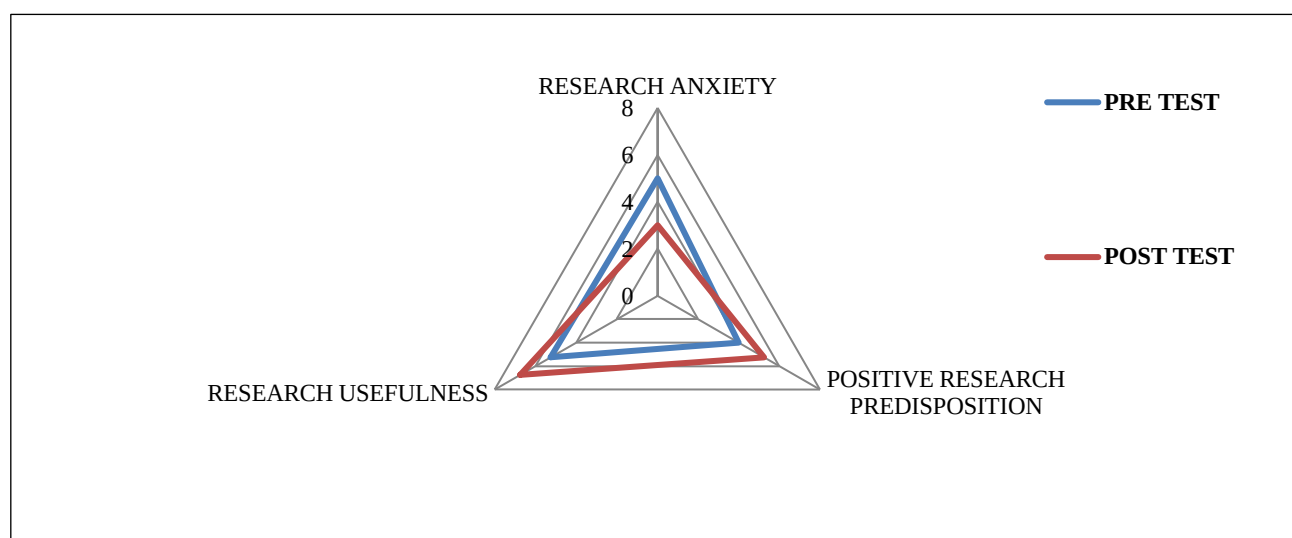


Figure 1: Difference between median scores of pre and post-test values in each of the 3 categories under which the attitude towards research was analysed.

DISCUSSION

The present study is an attempt to find out the effect of EBP on attitude towards research among undergraduate students.

A cross sectional study conducted to assess attitude towards research among students of two institutes teaching alternate form of medicine (Acupuncture and Oriental medicine (AOM) which had begun to integrate research training into their curriculum, stated that, the students believed that research is of limited relevance to their clinical practice and this in turn was associated with widespread belief that scientific methods may not be consistent with the principles of AOM.¹³ But this study has shown a positive attitude towards research. The difference might be due to the content and quality of EBP or because of the difference in study population as this study was done on students following allopathic form of medicine which strongly believes evidence-based practice.

A cross sectional study on 382 medical students in India, on attitude towards research and barriers on research showed a positive attitude towards research, reported by 94.7% of participants. The positive attitude towards research was higher among senior students. This study however used a different study tool which also had Likert scale scorings.⁹ Another study revealed moderate attitude towards research in 83.3% and good attitude amongst 11.3% students.¹⁴ The same study also showed that knowledge regarding research was good amongst only 4% of the students study population.¹⁴ So, a positive attitude needs to be translated into practice by imparting knowledge and skills to young researchers. Anxiety towards research could be a possible reason for poor attitude which could be due to lack of knowledge. This study also showed that, there was statistically significant

decrease in anxiety regarding research and an increase in positive attitude towards research after completion of EBP.

A cross sectional study was done on MBBS students to analyse if medical students perceived research to be important at undergraduate level. The results of this study showed that 81.7% of the students admitted to research as being essential for understanding and changing their perception of medicine.¹⁵ But 38.3% of the sample found research to be cumbersome. Similarly, in this study, the median score towards research usefulness was on the higher side even during the pre-test. This study combined the stress, difficulty of research and anxiety all under the domain of research anxiety which is partly same as the item 'cumbersome' used by the previous study. Like the previous study, this student also showed high anxiety towards research, but this was decreased by EBP teaching module.

A questionnaire-based study on medical students was conducted in UK on 238 students. Of those, 86% felt research or audit experience was useful for medical students.¹⁶ The median score of research usefulness in this study was also slightly on the higher side, which was further improved by EBP.

A cross sectional study in Europe on medical students showed that the average score on attitude was 166 out of a maximum of 225 (which is 73.7%), indicating a positive attitude towards science and scientific research.⁶ However in this study, the positive attitude towards research before the intervention was slightly lower at 57.1%. The difference might be due to study setting and different scales used for assessment in both the studies.

A study on medical students in Pakistan showed that attitude towards research was 53.7%, which is slightly

lesser than this study population in which a score of 57.1% was recorded.¹⁷

In a study conducted in Saudi Arabia among medical students it was shown that almost all the students (97.1%) agreed that research is important in the medical field. In this study, the usefulness of research was recorded in Likert scale values and the mean score showed that participants felt research was 75% useful to their career.¹⁸

All the previous studies discussed were cross sectional studies, whereas this study was a longitudinal in nature which assessed the students before and after the intervention using EBP helping to gauge the impact of EBP. The usefulness of research is not limited to professional advancement but also leads to better understanding of diseases, improved patient care and survival along with potential application in the area of health economics. Medical students should be made aware about the usefulness of usefulness in a holistic perspective. EBP can be an excellent opportunity for this purpose. The impact of EBP was significant when it was carried out in a small group of 40 students with adequate student mentor ratio. Hence, authors conclude that EBP has an overall positive impact in improving students' attitude towards research and also to reduce their anxiety towards research.

Recommendation

From the findings of this study, authors recommend that the Indian medical curriculum should mandate EBP for all undergraduate students, which will give adequate emphasis on cultivating logical and scientific habits of thinking, clarity in expression and reasoning, ability of judgment of information. A small group learning model with adequate interaction should be adopted to train students in research methodology to bring about a positive attitude towards research and to reduce their anxiety. The R-ATR scale though having a reliability coefficient in the good to excellent range, it is slightly lesser compared to the full version of ATR scale.

Limitations of this study influence of EBP in bringing about a positive change in attitude towards research amongst this study population was not studied with a control group and so alternate explanations for the outcome of the study could not be ruled out. The Wilcoxon test used has its limitation as it may give misleading results if many measurements have the same value.¹²

CONCLUSION

In this evidence-based era with new emerging knowledge and diseases, carrying out a research is a mandate skill for medical professionals. The EBP has shown to be effective in improving the knowledge and attitude towards research and reducing anxiety towards research among medical students. Further evaluation of this approach in different

settings might give better insights about it so that it can be implemented in the curriculum. This will eventually improve the quality of research outcomes among medical personnel in their early career.

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