

Original Article

A study to assess the attitude of under graduate medical students towards research

Manju. L¹, Dr. Nazeema Beevi¹, Dr. Ranu Rawat¹, Dr. Anil Bindhu¹

¹Department of Community medicine, Sree Gokulam Medical College & Research Foundation, Venjaramoodu, Trivandrum- 695 581.

Abstract

Background: Research methodology is a part of the under graduate medical curriculum. Assessing the attitude and the factors affecting the attitude among medical students is important for policy makers to modify the curriculum to create awareness about medical research. **Material and Methods:** A cross sectional study was conducted among the under graduate medical students in Sree Gokulam Medical College & Research Foundation, Venjaramoodu, Trivandrum, during December 2016. A pre tested questionnaire consists of 32 items was used for data collection. Sample size was computed as 341. Sampling technique is convenience sampling. A total of 375 questionnaires analyzed. Chi square test, one way ANOVA and factor analysis are the statistical tools involved. **Result:** Percentage of students having positive attitude is 52.3. Independent t test revealed that attitude is not related to gender, p-value=0.814. One way ANOVA showed a significant (p-value =0.013) difference between the batches. Bonferroni pair wise comparison showed a significant p-value for the senior (2011) and junior (2014) batches (p-value=0.005). A factor analysis produced four factors such as positive attitude towards research, research facility, research barriers, and relevance to life. Among these positive attitude is the highly contributed factor. **Conclusion:** More than half of the study sample have positive attitude. Lack of time is an important barrier. Adequate time should be provided to students for improving the research activities.

Keywords: Research, Attitude, Questionnaire, Factors.

Corresponding author Manju L Department of Community medicine, Sree Gokulam Medical College & Research Foundation, Venjaramoodu, Trivandrum- 695581.

This article may be cited as: LManju, BeeviV, RawatR, BindhuA. A study to assess the attitude of under graduate medical students towards research. Int J Com Health and Med Res 2017;3(2):60-65

Article Received: 16-02-17

Accepted On: 28-02-2017

INTRODUCTION

Research in common parlance refers to search for knowledge. According to Godwin Colibao research is the gathering of data for the advancement of knowledge.¹ Medical science involves exploration on a daily basis. Research is an inevitable part of medicine. The innovative techniques in medical field today are the results of years of research. Thus research plays an important role in medical field. So research activities should be a part of medical curriculum. Studies have reported that students with undergraduate research exposure are more interested to pursue research later in their academic life.^{2,3} Research methodology is included in undergraduate medical curriculum in many universities. Research projects during

undergraduate medical programme may provide an opportunity for students to learn research methodologies and acquire the ability for the critical analysis of published papers.⁴ Studies concluded that undergraduate students have negative attitude towards research activities.⁵ A study conducted in south India concluded that though students are interested in research, due to lack of time and guidance a very few are actively participating in it.⁶ Thus to create a positive attitude among students, teachers have to develop interesting techniques.⁷ In many developed countries research publications are essential to the credit of medical students to appear for the final year examination.^{8,9} In India to promote research in the undergraduate level Indian Council of

Medical Research has started a Short Term Studentship programme (STS) to conduct research for two months which enables the students to get an amount and a certificate on submission of the project. An all India programme, Indian Forum For Medical Students' research (INFORMER) was started in 2009 with a view to promote research amongst undergraduate medical students and to encourage them to present their research work at a national level by means of the annual conference organized by the forum. These programmes may create positive attitude among the students. The objective of the present study is to assess the attitude of the medical students towards research and to identify the factors influencing attitude.

MATERIAL AND METHOD

Study design

Cross sectional study.

Study population

Under graduate medical students of Sree Gokulam Medical college & Research Foundation, Venjaramoodu, Trivandrum.

Study period

One month, December 2016.

Sampling techniques

Convenience sampling.

Sample size

From a recent study the percentage of positive attitude is 43.9%.¹⁰ Taking 12% allowable error (L), sample size required is computed using the formulae, $n=4pq/L^2=341$. Assuming 12% non response the total sample size is $341+41=382$. Four hundred questionnaires were distributed to the students. Questionnaires were distributed after the lecture class along with an informed consent. We got 375 duly filled questionnaires, incomplete questionnaires were excluded.

Exclusion criteria

First year and second year students were excluded because they don't have any research exposure. Those who were not willing to participate were also excluded from the study.

Study tool

The questionnaire consisted of 32 closed ended questions. The first 10 questions were about demographic and research back ground. The rest 22 questions were 5 point Likert scale to assess the attitude towards research, which varies from 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree to 5 = strongly agree. Questionnaire was selected from another study with the consent of the author and modified it suitable for our

curriculum.¹¹ Objective of the study was explained to them and assurance was given regarding the confidentiality of the data. For this purpose, no identification variables were included.

Statistical analysis

A pilot study was conducted among 25 students to estimate the reliability and time required for filling the questionnaire. These 25 questionnaires were excluded from the final analysis. SPSS version 16 is used for statistical data analysis. All negative items were recoded so that the higher score represents the positive attitude. Frequency and percentages were computed. P-value <0.05 is considered as significant. For comparing categorical variables chi square test was used. One-way ANOVA test was used for comparing the attitude score for different batch of students. To identify the factors which affects the attitude score an exploratory factor analysis was done. Factors with eigen values more than one is identified as a factor.¹²

RESULTS

The reliability of the tool was examined using Cronbach's alpha coefficient, which is obtained as 0.832. Three seventy five questionnaires analyzed. Age ranges from 20-25 with mean \pm SD= 22.42 \pm 1.14. Female participation is more i.e. 64.8% because of the higher proportion of females students. Majority of them i.e. 82% had prior experience in school projects. 78% had presented their projects, 4% had done poster presentations, 5% had done paper presentations, 12% had both project and poster presentation and 1% had done all the three. All the students have participated in at least one of the research activities during their study period in medical college may be because it is part of their curriculum. All of them have done community surveys and among this 4% have done case study also. In comparison to the average student in the class 57.1% have the perception that they have average research experience, 22.4% think that they have above average experience and 20.5% of the opinion that they have below average research experience. We have computed the total attitude score for each student, it ranges from 22 to 104. The mean attitude score is 74.85 with standard deviation 11.8. For each student a percentage score is computed with respect to the maximum possible score. Those who scored less than 70% is categorized as having negative attitude and the rest as having positive attitude. Table 1 shows the distribution according to attitude level.

Table 1. Attitude level of the study participants

Attitude level	Number	Percentage
Negative	179	47.7
Positive	196	52.3

Table 2. Mean±SD of the attitude score according to gender

Gender	Number	Mean±SD	t	P value
Male	132	75.05±10.6	0.235	0.814
Female	243	74.75±12.42		

Table 3. Mean±SD of the attitude score according to year of admission

Year of admission	Number	Mean±SD	F value	P value
2011	40	72.331±11.525	2.988	0.031*
2012	150	73.783±13.047		
2013	108	74.820±9.417		
2014	77	77.850±8.971		

- significant at 5% level.

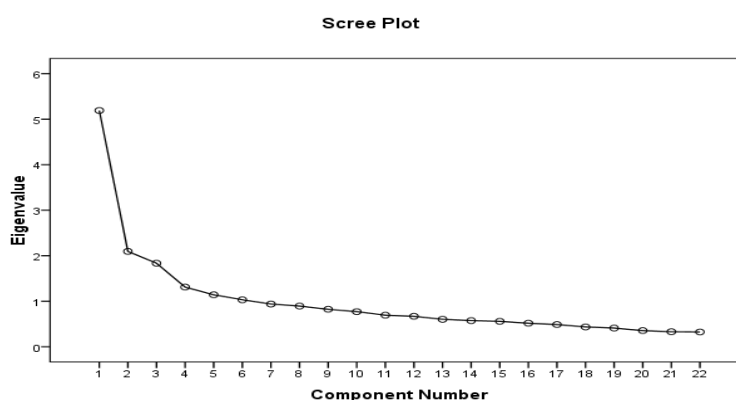


Figure 1. Scree plot showing the eigen values of the factors

Table 4. Rotated factor loadings of the attitude towards research scale

	Factors			
	F1 Positive attitude towards research	F2 Research facility	F3 Research barriers	F4 Relevance to life
Under graduate students should participate in research	0.673	0.032	0.217	0.006
Research in UG level is beneficial	0.658	0.157	0.168	-0.024
I am interested in research	0.645	0.117	0.313	-0.069
I am extremely interested in my research topic(s)	0.582	-0.096	0.465	0.018
I am inclined to learn research methodology in detail	0.569	0.088	0.393	0.004
I believe there is enough time in medical college to do research	0.103	0.597	0.046	-0.078
I believe there is adequate training in research methodology during UG course	0.256	0.617	0.048	0.266
I believe there is adequate training in reviewing scientific literature in UG course	0.023	0.654	0.032	0.214
I feel there is adequate room set aside in my curriculum to pursue research interests	0.416	0.585	-0.148	0.013
I am NOT involved in research because I do not have any interest in it	0.417	0.088	0.593	0.004
I am NOT involved in research because I do not have enough time	0.352	0.125	0.665	-0.142
I find it difficult to understand the concepts of research	0.134	-0.025	0.554	0.107
I believe that research will facilitate my long-term career goals	0.412	0.047	0.038	0.653
I believe research will be an aspect of my future career as a physician	0.358	0.069	-0.047	0.575
The skills I have acquired in research will be helpful to me in the future	0.228	0.037	-0.012	0.592

From the table it is seen that 52.3% have positive attitude towards research. In order to see whether gender affects attitude independent 't' test was done. The results are given in table 2. Since p-value is found to be not significant, there is no relation between gender and attitude. From the table 3 it is observed that the mean of the attitude score of juniors is more compared to others. In order to test whether years of exposure is factor, one way ANOVA was performed, after homogeneity of variance assumption was verified. Levene's test for homogeneity of variance is 1.897 with P value=0.130. Thus the homogeneity of variance assumption is satisfied. Since p-value is found to be significant there is significant difference between the year of study and attitude score. To test which of the batches have significance difference, post-hoc comparison of Bonferroni test was done. Only the juniors (2014 batch) is found to be significantly differ from the senior batch (2011 batch) with p value=0.005. No significance difference was observed between other pair wise comparisons. To identify the factors of the research tool principal factor analysis with varimax rotation and Kaiser Normalization was performed. Kaiser Meyer Olkin measure of sampling adequacy is 0.831 and Bartlett's Test of Sphericity has p-value <0.001. This implies the data is suitable for factor analysis.¹² Factors with eigen value greater than one is identified as factor. Figure 1 shows the scree plot of the factors. Criteria for naming a factor is that it should have at least three items with factor loading greater than 0.5. Factor analysis produced six factors. The first factor alone accounts for 23.59% of the total variance. The five items in this factor have factor loading above 0.5. These items relates to the 'positive attitude' towards research. The item with highest loading is 'Under graduate students should participate in research'. The second factor explains 9.52% of the variance and which consists of four items relate to the 'research facility' during the undergraduate course. 50.2% reveal that research supervisors provide adequate instruction and guidance to research. 32% is neutral in their opinion and the rest have negative attitude. The third factor explains 8.34% of the variance which consists of three items related to 'research barriers'. Most of the students i.e. 56% reported that they are not actively involved in research because they are not getting enough time. Fourth factor accounts for 5.19% of the total variance and consists of three items relates to the 'relevance of research in life'. Even though factor five and six have eigen value greater than

one we have excluded it because they have only two items and factor loadings are less than 0.7.¹³ Thus from the 22 items 15 items were extracted for the factor table. Table 4 shows that factors with the corresponding items and factor loadings.

DISCUSSION

This study focused on the attitude of students towards research and the associated factors. More than half of the students (52.3%) have positive attitude towards research. Since they are learning research methodology during their course they are aware of the importance of research in medical field. Rani and Priya conducted a study in Chennai, India reported that 68.4% have positive attitude towards research.⁶ Akash et al. conducted a study in Mumbai, India reported negative attitude¹³. Al-Hilali et al. conducted a similar study in Saudi Arabia, positive attitude towards research was reported by 43.9% of students.¹⁰ No gender difference is found for the mean attitude score. Al-Hilali et al. too reported no gender difference in the attitude towards research. The mean attitude score of junior students is more compared to seniors, statistical significance is found between the 2011th and 2014th batch may be because juniors may be getting more time compared to seniors. An exploratory factor analysis identified that this tool has four factors. The five items in the first factor related to the positive attitude. The second factor has four items and these items point out the facilities in medical college. Third factor contains items related to the barriers to research. Fourth factor has three items with regard to benefits in future. Half of the students, i.e. 49.6% participated in the survey felt that the skills acquired through research will help them in future and 46.1% have the perception that research will be an aspect of their future career as a physician. The item having highest contribution ($r=0.665$) in the research barrier factor is 'I am NOT involved in research because I do not have enough time'. This is cited as a factor by similar studies conducted in Saudi.^{10,15} Another study conducted in Kasturba Medical College, Manglore also confirms this point.¹⁶ Lack of time was also reported by medical students in Canada.¹¹ A Study conducted among medical students in University College Cork and University Sains Malaysia reports the same.¹⁷ One limitation of this study is that since sample is taken from a single institution we can't generalize the results to the population of undergraduate medical students. Also this is a self reported survey the results may be overestimated or under estimated.

CONCLUSION

Fifty two percentage of the study sample have positive attitude towards research. Junior students have significant attitude score compared to the senior students. No gender difference is observed. The four factors extracted are 'positive attitude', 'research facility', 'research barriers' and 'relevance to life'. Among research barriers 'lack of time' is an identified as the highly contributed item. In order to improve the research activity adequate time should be allotted to students.

Acknowledgements

We would like to thank Dr. D. Robert Siemens for providing us with a copy of the survey tool .

Ethical approval

The study was approved by the Institutional Ethics Committee

REFERENCES

1. Shuttleworth, Martyn (2008). "Definition of Research". Explorable.com. Retrieved 14 August 2011.
2. Segal S, Lloyd T, Houts PS, Stillman PL, Jungas RL, Greer RB., 3rd The association between students' research involvement in medical school and their postgraduate medical activities. *Acad Med.* 1990;65:530–533.
3. Ejaz K, Shamim MS, Hussain SA. Involvement of medical students and fresh medical graduates of Karachi, Pakistan in research. *J Pak Med Assoc.* 2011;61:115–20.
4. Greenberg RN. An argument for research in the medical school curriculum. *JAMA.* 1978;239:1162-1163.
5. Papanastasiou EC. Factor structure of the attitudes towards research scale. *Statistics education research journal.* 2005; 4(1), 16-26.
6. Rani RJ, Priya M. Biosciences biotechnology research Asia. 2014;11(1), 115-119.
7. Waters LK, Martelli TA, Zakrajsek T, Popovich PM. Attitudes toward statistics: An evaluation of multiple measures. *Educational and Psychological Methods.* 1988; 48, 513-516.
8. Davis DP, Poste JC, Kelly D. The UCSD Research Associate Program: a recipe for successfully integrating undergraduates with emergency medicine research. *J Emerg Med.* 2005; 28: 89-93.
9. Ogunyemi D, Bazargan M, Norris K, JonesQuaidoo S, Wolf K, Edelstein R, et al. The development of mandatory medical thesis in an urban medical school. *Teach Learn Med* 2005; 17: 363-9.
10. Al-Hilali, SM, Al-Kahtani, E, Zaman B, Khandekar, R, Al-Sahari, A, Edward DP. Attitudes of Saudi Arabian Under graduate Medical Students towards Health Research. *Sultan Qaboos University Med J.* 2016;16(1), e68–73 .
11. Siemens DR, Punnen S, Wong J, Kanji N. A survey on the attitudes towards research in medical school. *BMC Med Educ*2010; 10:4. doi: 10.1186/1472-6920-10-4.
12. Rummel RJ Applied factor analysis. Evanston; Northwestern University Press;1970.
13. Tabachnick, BG., & Fidell, L S. Using multivariate statistics. 5th ed. Boston, MA: Allyn & Bacon; 2007.
14. Akash K, Sadiq P, Sagar B and Snehal K. An analytical study to evaluate the research aptitude among the undergraduate students of a medical college in Mumbai
European journal of pharmaceutical and medical research, 2014, 2(2), 255-262.
15. Al-Ghamdi KM, Moussa NA, Al-Essa DS, Al-Othimeen N, Al-Saud A S. Perceptions, attitudes and practices toward research among senior medical students. *Saudi Pharmaceutical Journal.* 2014; 22, 113–117.
16. Unnikrishnan B, Kanchan T, Holla R, Kumar N, Rekha T, Mithra P, et al. Medical students' research: Facilitators and barriers. *J Clin Diagn Res* 2014; 8:XC01–4. doi: 10.7860/JCDR /2014/10223.5291.
17. Mohd Ismail I, Bazli MY, O'Flynn S. Study on medical student's attitude towards research activities between University College Cork and Universiti Sains Malaysia, 5th World Conference on Educational Sciences - WCES 2013 *Procedia - Social and Behavioral Sciences.* 2014;116, 2645 – 2649.

Source of support: Nil

Conflict of interest: None declared

This work is licensed under CC BY: *Creative Commons Attribution 4.0 License.*