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Sujata Khobragade

Department of Community Medicine Melaka Manipal Medical College (MMMC), Jalan Batu Hampar, Bukit Baru, Melaka – 75150, Malaysia, sujata.khobragade@manipal.edu.my

Yadneshwar Khobragade

Department of Community Medicine Melaka Manipal Medical College (MMMC), Jalan Batu Hampar, Bukit Baru, Melaka – 75150, Malaysia, sujata.khobragade@manipal.edu.my

Adinegara bin Lutfi Abbas

Department of Community Medicine and Dean, Melaka-Manipal Medical College (MMMC), Jalan Batu Hampar, Bukit Baru, Melaka – 75150, Malaysia, sujata.khobragade@manipal.edu.my

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A study on knowledge, attitude and approach towards research methodology amongst Malaysian medical students

Sujata Khobragade*, Yadneshwar Khobragade, Adinegara bin Lutfi Abbas

Email: sujata.khobragade@manipal.edu.my

Abstract

This cross-sectional study was conducted on MBBS (6th and 7th semester) III year students at Melaka Manipal Medical College Muar campus in Malaysia from November 2016 to January 2017. Total participants were 142 students, 88 women and 53 men. Seventy-eight students were from 6th semester and 64 students from 7th semester. The students were tested for knowledge, attitude and approach towards research methodology and its application in research. More than 95 % of the students felt the need for inclusion of research methodology in medical education ($p < 0.005$) and found teaching on journal critique useful in critical thinking. Though students viewed knowledge and skills acquired in research methodology as helpful for future research and training ($p = 0.018$), but most of them ($p = 0.049$) found it difficult to understand the concepts of research methodology. Some students ($p < 0.304$) showed lack of interest in research methodology and some ($p < 0.360$) lack the awareness of its importance in advancement of knowledge. Most students know the importance and benefits of learning research methodology, but due to lack of interest, they do not have clarity of its concepts. Therefore, relooking at the barriers of learning and finding out the methods to generate interest and motivation is required.

Key words: Attitude, critical thinking, journal critique, perception, research methods

Introduction

Research is a scientific process of investigation and/or experimentation by using standard methods. Health research has an impact on healthcare policy. It helps in the prevention, diagnosis and treatment of diseases. It plays a crucial role in medical development. Most undergraduate medical students show lack of interest in learning research methodology and show negative attitude towards research.¹ The level of knowledge has also been found to be poor among these students; however, after receiving training in research a significant

improvement in knowledge and a desirable change in attitude has been observed.² Many studies have shown that learning research methodology during the undergraduate training is strongly associated with post graduate research initiatives and future career achievement in academic medicine. It inculcates critical thinking and reasoning skills and develops a positive attitude towards scientific research.^{3, 4, 5}

Interest and motivation improves learning outputs.⁶ To learn and improve performance; right attitude, self-efficiency and efforts are required.⁷

Sujata Khobragade

Senior Lecturer, Department of Community Medicine Melaka-Manipal Medical College (MMMM), Jalan Batu Hampar, Bukit Baru, Melaka – 75150, Malaysia

Yadneshwar Khobragade

Professor, Department of Community Medicine Melaka-Manipal Medical College (MMMM), Jalan Batu Hampar, Bukit Baru, Melaka–75150, Malaysia

Adinegara bin Lutfi Abbas

Professor and HOD, Department of Community Medicine and Dean, Melaka-Manipal Medical College (MMMM), Jalan Batu Hampar, Bukit Baru, Melaka – 75150, Malaysia

*Corresponding Author

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Studies in research methodology found that after teaching, students show significant improvement in knowledge, skills in research and positive attitude towards science and scientific research in medicine.⁸ There is a need for more clinical as well as basic health science investigators. Encouraging and motivating students' research activity will help developing countries to achieve self-reliance in healthcare. The factors which has an impact on research success are knowledge, positive attitude and approach towards research methodology. Therefore, research methodology has been included in the curriculum of year III MBBS in Melaka-Manipal Medical College (MMMC), Malaysia. It will help in creation of a research-oriented culture among future clinical leaders.

There are various hurdles for research activity such as lack of knowledge in various study design, data collection, interpretation of study result, lack of interest, lack of supervision and research training, uncertainty about the ability to successfully complete the research.

Keeping this in mind, the present study was conducted with the objective to evaluate the knowledge, attitude and approach towards Research Methodology among the year III MBBS students of MMMC.

Methods

Study Design and Study Sample

This study was cross sectional (CS) and conducted among the year III MBBS (6th and 7th semester) students of MMMC at Muar campus from November 2016 to January 2017.

In MMMC, Melaka semester 6 and 7 students under Community Medicine learn research methodology. This posting is for six weeks.

By using Epi Info statistical software, with 95% confidence level, 5% margin of error, based on previous literature on poor knowledge of 23%⁵ we acquired a sample size of 120 students in order to conduct this study. A total of 140 students 64 from 7th and 76 from 6th semester participated in the study.

Universal sampling method was used. Inclusion criteria was all the medical students of semester 6 and 7 posted in Community Medicine during that period. Exclusion criteria was those students who refused to sign the written consent.

Data collection

A structured questionnaire was used to collect the data. We explained the aim of the study and assured them that all the information will be kept confidential and then took their written informed consent. The questionnaires were distributed directly to individual students and were collected immediately after completion.

The questionnaire consisted of three parts. The first part was on personal information such as Batch, Semester, Age, Gender, Ethnicity and Religion. The second part with section 1 and 2, we gave 7 questions for evaluation of student's knowledge on research methodology, study design and statistical tools. Total 15 marks were allotted. Third part, that is section 3 to evaluate attitude and approach towards research methodology. A total of 20 questions were given. The response options utilized a 5-point Likert scale. 13 questions with positive approach scored: strongly agree = 5, agree = 4, neither agree nor disagree = 3, disagree = 2, strongly disagree = 1 and 7 questions with negative approach scored: strongly agree = 1, agree = 2, neither agree nor disagree = 3, disagree = 4, strongly disagree = 5.

Result and Analysis

A statistical analysis was done by applying Epi info version 7.2. Student's t test and Likert scale were used in the analysis.

Table 1: Distribution of students according to gender and semester

Parameter	No. (%)
Gender -	
Female	88 (62.7%)
Male	54 (37.3%)
Semester -	
6	78 (54.9%)
7	64 (45.1%)

The rate of participant's response was 98.5%. The total number of participants were 142. The completed questionnaire received was 140. Two

students attended the session but did not answer any question. The sample included 88 (62.7%) female and 53 (37.3%) male students.

Table 2: Frequency distribution of knowledge and approach/ attitude towards research methodology

Approach towards research students	% of students Agree with	p value
Q. Research Methodology should be integrated in the medical curriculum	>99	.003
Q. Teaching journal critique is useful for critical thinking	>99	.004
Q. Skills acquired in research will be helpful in future	>98	.018
Q. Training in research methodology will not be helpful in future	>90	.083
Q. Research Methodology is difficult to understand	>95	.049
Q. Prior provision of handouts improves the clarity of subjects	>94.5	.055
Q. Research is not relevant to medical education	>93	.070

We find from above table 2, that 99% of the students think that research methodology should be included in medical education (p=0.003) and the teaching on journal critique is useful in critical thinking while reading the articles (0.004). Ninety-eight percent students expressed the view that knowledge and skills acquired in research methodology shall be helpful in future research and training (p=0.018), more than 95% of them find it difficult to understand the concepts of research methodology during their teaching-learning program (p=0.049).

However, 91.7% students feel that training in research methods is of no use in future to doctors (p>0.05) and 94.5 % view that prior distribution of handouts help in improving clarity of subject being taught.

Table 3: Level of knowledge of the students on research methodology according to Semester and Gender

Parameters	Mean (SD)	t-test	p value
Semester			
6	7.0 (2.9)	-2.41	0.017***
7	8.0 (1.7)		
Gender			
Female	7.6 (2.4)	1.09	0.277

Parameters	Mean (SD)	t-test	p value
Male	7.2 (2.3)		

The study included 37.3% male students and 62.7% female. The performance of female students was better than male, but it was not statistically significant (0.227). However, semester 7 students performed better than semester 6 (p=0.017).

*** indicates highly statistically significant.

Table 4: Perception of the students toward research methodology, median of selected perception regarding research

Perception	% of students agree With statement	Median (25th percentile– 75th percentile)	p value
Q. Research is not relevant to medical education	>99%	4.0(3.0 – 5.0)	0.001
Q. Students benefit from research	>95%	4.0(3.0 – 4.0)	0.047
Q. Research Methodology is interesting	70%	4.0(3.0 – 4.0)	0.304
Q. Research is important to advance knowledge	64%	4.0(3.0 – 4.0)	0.360
Q. Difficult to understand the concept of research	95%	4.0(3.0 – 5.0)	0.050

From Table 4, we observe that more than 99% of the students think that research has no relevance to medical education (p=0.001) and more than 95% of students feel that they are benefited from research (p=0.047), but they find it difficult to understand (p=0.05).

However, around 70% students lack interest in research methodology (p=0.304) and 64% are not aware of importance of research in advancement of knowledge (p=0.360).

Discussion

Melaka-Manipal Medical College is one of the teaching units of Manipal Academy of higher education (MAHE). It has included research methodology in the training of the students in the MBBS program and the subject is being taught in the 6th and the 7th semester. Students learn on how to conduct research. Knowledge on research

is critical for furtherance in research and academic career in this competitive world. If students' foundation is strong on research methodology at undergraduate level, they will find it easy to conduct research during postgraduate studies and in academic/research career. Interest and motivation on the part of students is necessary for research activities. During teaching, we generally observe that very few students show eagerness to learn research methodology and majority of them do not show enthusiasm in this area. Therefore, in order to find out these students' knowledge, attitude and perception/approach towards research methodology, we conducted this study.

Various studies have shown that the level of knowledge and understanding on research methodology ranges from 48% to 70% in undergraduate students.^{5, 9} Bhat N *et al* in their Study on post-graduate dental students in Udaipur, Rajasthan found that 27.7 % of second year and 45.6 % of third year dental postgraduate students knew the definition of research hypothesis.¹⁰ Saudi Arabian study on senior medical students observed that 97.9% of resident physicians were aware of essentiality of research in medical science and 86.9 % felt need for research education in building future career; however, only 38.8 % were actually involved in research.¹¹ To assess the knowledge on research methodology, we asked questions on meaning and usefulness of research methodology, various study design, sample calculation, sampling methods, testing hypothesis, test of significance and statistical tools. We observed that 87/142 (61%) of the students were having knowledge of research methodology and its usefulness in research. Study by Memarpour M *et al* observed better performance of female students over male students. Our observation was similar. Out of 88 girls 21 failed and amongst 53 male students 15 failed; giving percentage of failure at 23.8% and 28.3% for female and male, respectively; however; this difference was not statistically significant.

When the university makes research training or conduct of original research and publication mandatory in medical education program, it facilitates acceptance by students, develop interest and motivation amongst students towards research.

It improves thinking process, attitude, skills and develop a spirit of teamwork in conduct of research study.¹¹ Mujumdar A *et al* in their study on knowledge, attitude and practice (KAP) amongst medical students observed that 83.7% of students were interested in community oriented research (COR), 74.4% felt the need for inclusion of training courses and workshops on (COR) in medical education and 55.8% were in favour of recommending introduction of such courses in medical colleges at MBBS level.¹² Similarly, a cross-sectional study by Pawar D *et al* on awareness of medical research among resident doctors observed that 84% of resident doctors agreed for involvement of post-graduate medical students in medical research during junior residency.¹³ When inquired for concepts of research hypothesis to post-graduate medical students, Giri P *et al* observed that only 17.2% of resident doctors were clear about research concepts.¹⁴ More than two-thirds of the medical students in public universities in Egypt felt that participation in research will improve their long term career goal and 20% of the students thought that research has no relevance to medical education.¹⁵ A KAP study by Saeidinia A *et al* on towards research observed moderate skills in application of research methods but did not find any positive attitudinal change of medical students towards research methodology.¹⁶ In our study, 70% of the students did find interest in research methodology. This lack of interest and difficulty amongst MBBS students could be due to the fact that after pre-clinical and para-clinical courses at Manipal they are posted in hospital for clinical training and simultaneously, are being taught research methodology which may appear dry, dull, boring and non-interesting compared to clinical subjects as there is no direct contact with patients.

Josephine L *et al* found that courses on evidence-based medicine (EBM) increases students' references to journal literature, self-perception of skills and improved performance.¹⁷ In our study, students feel that problem-based learning is useful in organizing thoughts and build more confidence but are not sure about the importance of research in the advancement of knowledge. This lack of awareness could be

because they are new to the topic on research methodology. Therefore, it is possible that students will not understand the importance of research in advancement of knowledge. Nevertheless, students agreed to the fact that research is important in medical education and medical practice.

Dongre A et al, in their community-based research study amongst under-graduate medical students observed that exposure of students to community-based research survey improved students' research skills, communication skills, awareness of local health care practices and understanding on research methodology.¹⁸ As the students are taught research methodology, their interest increases, and more students participate in research. Ghamdi K et al observed that 55.3 % of senior students participated in research.¹¹ In our institute, we observed that all students participated in research project assigned to them but few of them got motivated to take up research project and publish papers in journals.

Learning and active participation in research increases awareness and perception of importance of research methodology. Good training is therefore essential to build interest, confidence and motivation to learn research methodology. Apart from inner desire and self-motivation to learn research methodology, inspiring teaching will help students to develop insight, right attitude and approach towards research.¹⁹

Limitations of Study

Only those students who were posted in Community Medicine during the period from November 2016 to January 2017 were included in the study. They might not represent the majority of the students of the 6th and the 7th semester.

The posting of Research Methodology under Community Medicine for semester the 6th and 7th in MMMC is only for six weeks, which may not be enough to make their concepts clear.

Conclusion

From this study, we observed that undergraduate students know that knowledge on research is necessary for the advancement of medical education and patient care though some of them lack the

interest and enthusiasm and their concepts are not clear even after teaching research methodology for six weeks. Research methodology is an important branch, which needs to be taught from the undergraduate level and concepts needs to be cleared so that once the students go for post-graduation or join any research branch they are aware of research hypothesis, study design and methodology. They should know its benefits and have the confidence to independently design and carry out studies.

This study was conducted on a small sample size of 142 students. More studies required to be done to find out the barriers of learning research methodology and after identifying, necessary changes can be brought about to remove the barriers. Desirable changes can be made in the education system and teaching technique to improve KAP towards research methodology.

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