Archives of Current Research International

11(4): 1-8, 2017; Article no.ACRI.38419
ISSN: 2454-7077

High-quality Learning: Harder to Achieve Than We Think: A Multicenter Study on Attitudes towards Research among Students

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Authors' contributions

This work was carried out in collaboration between both authors. Author AA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SAMR managed the analyses of the study and literature searches. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/ACRI/2017/38419
Editor(s):
(1) Domenico Antonio Restivo, Department of Internal Medicine, Neurological Unit, Nuovo "Garibaldi" Hospital, Italy.
Reviewers:
(1) P. Moodley, South Africa.
(2) Christofer Thomas, Sapthagiri Institute of Medical Sciences and Research Center, India.
Complete Peer review History: http://www.sciencedomain.org/review-history/22814

Original Research Article

Received 25th October 2017
Accepted 17th January 2018
Published 23rd January 2018

ABSTRACT

There has been a recorded decrease in the volume of research students who are ready to be Medical researchers in life. Various scientific-based departments have conveyed their worry about career deterioration that lacks the consistent reformation offered by the innovative growth of education. The suggested justification for the decrease in attention to become researcher includes less monetary benefits, responsibilities of family, less career prospects and insufficient introduction to experimental studies before professional routes are decided. Nevertheless, reported survey have registered conflicting viewpoint with regard to its significance with as much as 75% of students preferring to involve in other educational activities as compared to research. In addition, there has been a critical shift towards provision of students with initial practical research within educational program of the school.

Considering the requirements and capable attention of designing an undergraduate medical syllabus, as well as the outcomes of viewpoints of other students during medical education, it

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appears critical to survey the research participation during medical schools as well. The intention of the survey was to examine as for why do pupils wish to be engaged in research, what are the hurdles to effective involvement in research, and if students are sufficiently introduced to methods of research and careers of research. On the scrutiny of information, it was found that 32% of the students only had principal attention in research. 58% had passion in scoring for a "competitive" professional course 61% intended to engage in research so as to facilitate admission to higher professional colleges, 52% of them wanted to involve in research for fame and to get rewards. 57% wished to involve in research because of peer participation .45% implied that research should not be the main criterion for acceptance to higher education .64% mentioned that compulsory research time should be made in syllabus.76% stated that sufficient time was not allotted in the university to pursue research. 69% requires satisfactory training in research methodology in the Universities.

Keywords: Predictors of research; health sciences students; attitude towards research; research process; student-centered approach.

1. INTRODUCTION

There has been a recorded decrease in the volume of researcher physicians in medical practice. Various scientific-based departments have conveyed their worry about career deterioration which lacks the consistent reformation offered by the innovative growth of education. Suggested justification for the decrease in attention to become researcher includes less monetary benefits, responsibilities of family, less career prospects and insufficient introduction to experimental studies before professional routes are decided.

The Royal College of Physicians and Surgeons of Canada has taken up the critical lead of the significant capabilities of specialty training that has adapted to the expectation of confidence of research in training. Nevertheless, reported survey have registered conflicting viewpoints with regard to its significance with as much as 75% of students preferring to involve in other educational activities as compared to research. Other suggested measures to roll back this disinterest towards basic science or clinical research output by practicing physicians include the introduction of MD-Ph.D. programs, favoring research in sub-specialty fellowships and increased exposure to research at the medical school level by means of a medical researcher instructional program. In addition, there has been a critical shift towards the provision of students with initial practical research within the educational program of the school. Considering the requirements and capable attention of designing an undergraduate medical syllabus, as well as the outcomes of viewpoints of other students during medical education, it appears critical to survey the research participation during medical schools as well. Our aims of this investigation were to survey university students' understanding and views towards research and examine their recognized goals and hurdles to such efforts during their learning participation.

1.1 Aim and Objectives

1. To understand why do students prefer to be engaged in research.
2. To survey what are the hurdles to effective research involvement.
3. To scrutinize if students are sufficiently introduced to methods of research and careers in research.

2. MATERIALS AND METHODS

In this prospective study were surveyed. Students from all the batches in all colleges were included to participate in the survey. Participation within these colleges was completely voluntary and confidentiality was maintained at all times. The questionnaire consisted of demographic details & closed-ended questions addressed to report the experience and attitudes of university students was administered. The questionnaire was made available in both English and Arabic and took an average only five to ten minutes to complete. In the first part was assessed demographic information, research background and career aspirations for the students being surveyed. The remaining questions were in Likert scale format and were designed for addressing the above-mentioned objectives. Descriptive statistics was used to describe demographics and research background of students. All other quantitative statistics were done using the full 5-point Likert scale.

Self-Designed pre-validated Questionnaire based on the previous literature for the study included:

1. Demographic data and research experience of University students.
2. Attitudes regarding research interest of University students.
3. Comparison of attitudes regarding barriers of research of University students.

3. RESULTS

Two hundred students participated in the study. The sampled included 112 males (65.5%). The mean age was 20 years (SD = 1.17, range = 18–23). A value less than 0.05 being considered statistically significant. Questionnaire forms with more than two missing elements were not considered in the analysis. 52% of all was medical students, 20% was dental students, 10% was nursing and 10% was pharmacy students. Subgroup analysis showed that males and females did not show a significant difference in their average attitudes towards research (p value = 0.07). Students from different colleges showed different levels of positive attitudes with the medical students stating the highest positive attitudes (p value < 0.05). Students from nursing and pharmacy backgrounds showed no significant difference in their attitude towards research (p value = 0.1). 32% mentioned that they have a primary interest in research. 58% had been interested in scoring for a "competitive" professional course 61% wish to involve in research as to facilitate admission to higher professional colleges, 52% of them wish to involve in research for fame and get prizes. 57% wish to involve in research because friends are participating 45% stated that research should not be an important criterion for acceptance to higher education .64% mentioned that mandatory research time should be set in curriculum.76% stated that adequate time in the University to pursue research was not there. 69% needs adequate training in research methodology in the University.

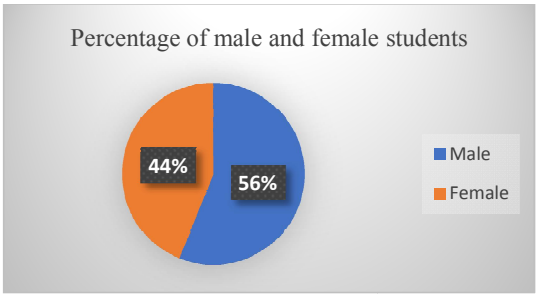

Fig. 1. Percentage of male and female students

4. DISCUSSION

Health research training has been recognized as an important component of medical education because the rapid expansion and progress in biomedical research is expected to transform

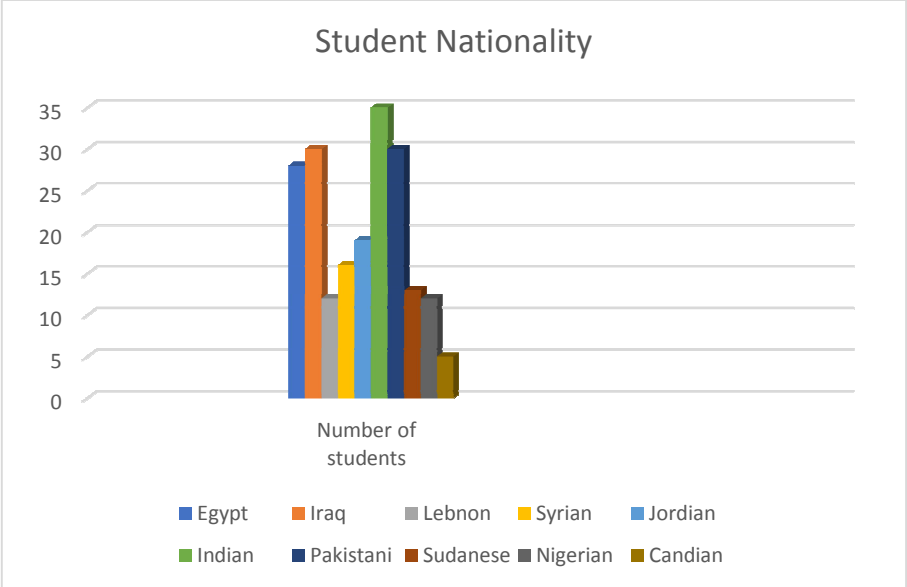

Fig. 2. Percentage of students nationality

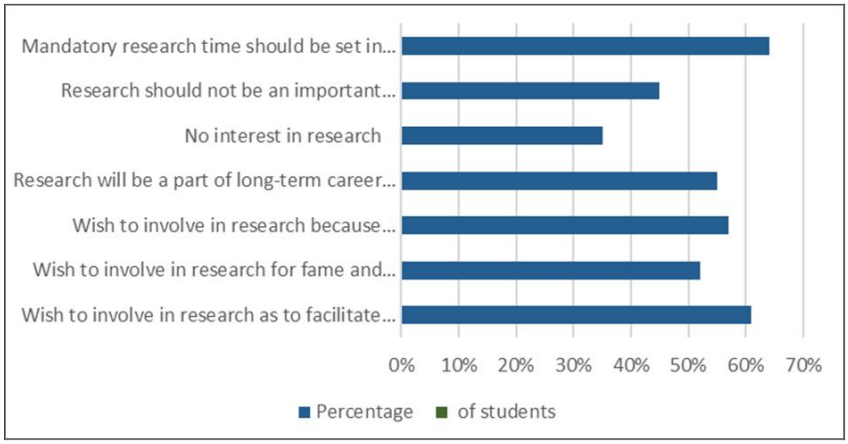

Fig. 3. Demographic data and research experience of University students

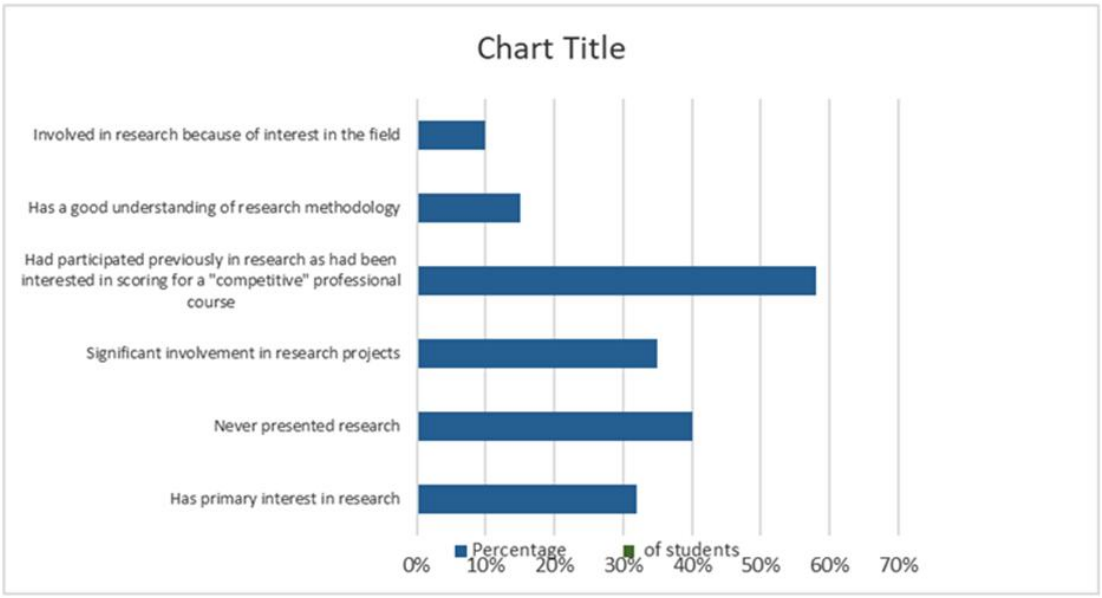

Fig. 4. Attitudes regarding research interest of University students

medical care [1]. Studies have shown that research experience during medical school is strongly associated with postgraduate research initiatives [2-3] and future career achievements in academic medicine [4]. To fill the void of physician-scientists in developing countries, initiatives are being taken to motivate medical students to undertake careers in research [5]. Various strategies are being employed for this purpose, which includes compulsory and supplementary research tasks, pupils category in cataloged manuscripts, formulation of the graduate educational meeting, change of medical syllabus to incorporate building of capacity for research and holding of workshops on different aspects of conducting research [6]. Our study is extremely important because understanding the perceptions and attitudes of students toward this issue can lead to improvement of research practices among future physicians. Our results are comparable to the results of a study performed in Canada. This study found that although the majority of medical students felt that involvement in research activities was likely to benefit in their education, only nearly half them noted that research will play a significant role in their future career, and only one third agreed that more time should be set aside in medical school to facilitate more research experience [7].

Even if research experience as a student does not lead to a career in academic medicine, the experience can help improve a student's skills in searching and critically appraising the medical literature and independent learning [8-9]. Such exposure to research as a student can also help identify future careers, establish important contacts and secure better residency positions. Research is not considered a part of the medical curriculum in many developing countries. In a study from India, for example, 91% of interns reported no research experience in medical school [10]. Thus, students in India are rarely exposed to research at the stage of their academic development when such exposure could encourage further research [11].

In the Canadian study, 43% of those involved stated that the main reason to participate in research during medical school was to get accepted into a residency of choice [7]. And almost the same reason was found in our study as well. We believe that finding ways to overcome the obstacles the students face is that they are needed to be motivated to participate in research. Medical schools should update their curricula to include the teaching of research methodology, and to allocate specific time for research. The results of our study can lead to an increased involvement of medical students in research. Work has been performed by *Shu-Ching* Wang and *Yuh*-Jen *Guo* [12]. As they needed to survey the effect of a required research component such as a dissertation or educational project on students' attitude towards research methods classes and research. They summarized that students can come across major hurdles while learning the research methods and applying learned knowledge. They also noted that pupils experienced immediate and long-term effects from any adverse influences they meet in research methods classes and showed a reduced level of interest to actively engage in research methods classes and activities. Students at the undergraduate level usually tend to view research method's courses in a negative way. Nevertheless, comprehension of these viewpoints is required to help instructors facilitate the learning of research principles for their students by enabling them to create more positive attitudes toward such courses [13].

Similar findings were seen in our study as well. With an aim for best practice principles, the utility of power-point presentations and other forms of teaching in which information is transmitted one way from a teacher to student are considered in sufficient and not *efficient;* such activities imply that learners

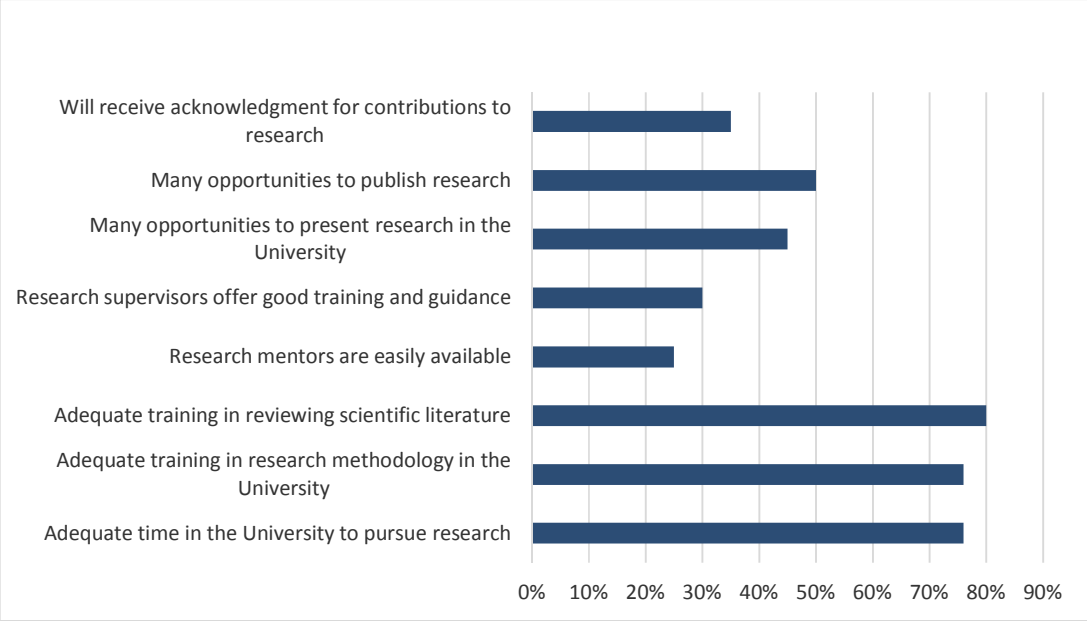

Fig. 5. Comparison of attitudes regarding barriers of research of University students

are passive recipients of knowledge. In contrast, with the implementation of best practices within the teaching/learning environment, the focus is on experiential and active learning in which learners are interacting, discussing and collaborating as well as critically *analyzing* and evaluating. In such a *situation* context, which is favorable for learning, the teacher performs several different roles and there is more emphasis on higher order thinking. For these reasons, motivating the students to get interested in research is based on the work of [14]. with their focus on principles of best practices related to the five elements, "student-centered", "experiential", "holistic", "authentic" and "challenging," which address various aspects of student-centered teaching and learning. The curriculum requires critical reformation and inclusion of research module as an essential prerequisite for any student taking a medical course. The university medical curriculum is physically and mentally demanding and the frequent clinical exams force students to prioritize the major demands of the curriculum ahead of research activities. These circumstances will result in a decreased interest to conduct research. Allocating a fixed-time in the academic calendar for student research may minimize the time obstacle and enable more interaction between students and their supervisors. Recruiting research support staff can provide additional awareness of the practical application of research. Motivating students' research activity can fill the void of clinician scientists and help developing countries to achieve self-reliance in health research. The small group learning model may also reduce the barriers to student research (e.g. funding, obtaining ethical and administration approval, finding study subjects) and would make better use of available, but limited resources (e.g. human, time and infrastructure).

A considerable amount of influence of research exists on internships, but the literature is limited by lacking arduous studies on student views and impact in their career by being involved in research during the internship period. Evidence indicates that internships improve students' getting easy *employments,* academic outcomes, and career crystallization, but the evidence is less regarding the effects of being an interested researcher during internships on *employment* and on wages. Studies have suggested that institutions hoping to scale up internship programs should ensure adequate training of interns in research field as well to make them lifelong learners and be updated in the field of academics [15]. Work-based learning, whether in the form of research or continued medical education program, is currently one of the most influential ideas in public higher education and workforce development policy. The central idea behind this advocacy for research as work-based learning for interns is that hands-on experiences in authentic, real-world contexts are an important complement to academic programs and classroom teaching – an idea expressed by educational researchers and learning scientists for decades [16]. Internships, in particular, are often touted as being a win-win-win situation: Students can get real-world job experience and establish professional networks, educators get their students opportunities to translate theory into practice, and employers get inexpensive and educated workers that may turn into new hires. Additionally, internships are increasingly seen as a central strategy in solving the so-called "skills gap," such that newly trained workers would fill open positions, boost local economies and essentially fix the many ailments facing local labor markets. With these apparent benefits for universities to adopt research during the internship period, one could argue that higher education is poised to enter the "era of the internship".

Medical training in research which streams for a practitioner that is a stream for patient care has as its primary objective to train scientist-practitioners skilled in core competencies surrounding the pursuit of scientific knowledge. The training model in research can be focused on: i) rigorous training in research methodology, experimental design and statistics; and ii) clinical training opportunities. Medical training streams for the practitioner who comes under other stream attending only to medical research. The Research and Clinical Training stream for them can focus on scientific inquiry and can be aimed at training first-rate professional scientist-practitioner while providing them with the necessary clinical knowledge to become professional providers of research services. Training in this stream involves interaction between the clinicians and governmental organizations. Medical research stream may also represent, a new concept responding to a perceived need to establish a link between physicians and non-medical researchers, the aim being to produce a cadre of researchers with a good clinical background and scientific education to take up posts in public research organizations.

This particularly applies, notably to *biomedical* research, which is developing rapidly.

Future research: A number of interesting developments are planned for the future based on our findings of this study. Associated with the reform of undergraduate medical education there is an increasing need to develop postgraduate education at this stage in our University hence the same study is planned to be done for post-graduate students to be able to commence the process of continuing postgraduate education to maintain the practitioners' enthusiasm. Linked to this idea is the realization of the need to assess the perception and attitude of our faculty also towards research in our university and develop trained medical educators to improve research methodology and research sources and difficulties faced by the students after analyzing their feedback.It would be valuable to assess the students' attitudes towards other research types as translational and community-based research. Studies like ours should be conducted on a regular basis because they provide an assessment tool for all efforts, exerted to increase student participation in clinical research.

5. CONCLUSION

To conclude, the basic explanation of this research study is that the idea of viewpoints is multifaceted in nature. The eventual analysis of the relationships between viewpoints and pupil accomplishment in research is an important area that still needs to be examined further. Finally, it would also be useful to inspect the process of viewpoint change of students, and what it is based on, by collecting student data at various points of time in the semester. Even though Students at the undergraduate level usually tend to view research methods courses in a negative way , an understanding of these viewpoints is needed to help instructors facilitate the learning of research for their students, by enabling them to create more positive attitudes toward such courses. It would be valuable to assess the students' attitudes towards other research types as *translation* and community-based research. Studies like ours should be conducted on a regular basis because they provide an assessment tool for all efforts, exerted to increase student participation in clinical research.

To conclude, the basic explanation of this research study is that the idea of viewpoints is multifaceted in nature. The eventual analysis of the relationships between viewpoints and pupil accomplishment in research is an important area that still needs to be examined further. Finally, it would also be useful to inspect the process of viewpoint change of students, and what it is based on, by collecting student data at various points of time in the semester. *Even though* Students at the undergraduate level usually tend to view research method courses in a negative way, an understanding of these viewpoints is needed to help instructors facilitate the learning of research for their students, by enabling them to create more positive attitudes toward such courses.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history/22814