

Attitudes, knowledge, and obstacles regarding medical research among medical students at the Faculty of Medicine and Health Sciences, Ibb University, Ibb, Yemen

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ABSTRACT

Background and Objectives: Research by medical students in Yemen is limited both in terms of quantity and quality. In this light, the early recruitment of medical students into research activities can encourage them to become academically adept and professionally renowned physicians. Therefore, the aim of this study was to evaluate the knowledge, attitudes, and obstacles regarding medical research among medical undergraduates in the Faculty of Medicine and Health Sciences, Ibb University, Yemen.

Materials and Methods: For the purpose of this study, a cross-sectional survey was conducted among medical students at the Faculty of Medicine and Health Sciences, Ibb University, Yemen. This survey involved medical students at their 3rd, 4th, 5th, and 6th academic years, who participated in this study from August 01, 2022, to September 30, 2022. The permission to conduct the survey was obtained from the Dean of the Faculty of Medicine and Health Sciences, Ibb University. The data gathered from the survey were analyzed using descriptive statistics. **Results:** About 174 (92.6%) respondents completed the survey questionnaire. The mean age of these respondents was 23.34 years. Notably, most of them demonstrated low levels of concomitant knowledge despite having positive attitudes toward medical research. Only a few students agreed with the following statements in the questionnaire: there is allotted time to pursue research (14.9% agreed); there is adequate training in research methodology (12.1% agreed); there are sufficient reward/motivations for participation in research (9.2% agreed); there is adequate training on writing a manuscript (9.2% agreed); there is adequate training on the performance of simple statistical analysis (10.4% agreed); research mentors are readily available (16.6% agreed); and it is easy to obtain a permit to conduct research from an institution (20.7% agreed). In addition, less than half of the respondents agreed with the statement that adequate medical research facilities exist in Yemen (39.1%). **Conclusion:** Most of the respondents in this study showed low levels of knowledge regarding research, despite having positive attitudes toward it. The primary barriers hindering research practices were the following: lack of allotted time to pursue research, lack of adequate training on writing a manuscript, and lack of training on the performance of simple statistical analysis. Moreover, the survey respondents noted a lack of research mentors and difficulties in getting approval for conducting research from their institution.

Key words: Attitude, Awareness, Knowledge, Medical students, Obstacles, Research

Research by medical students is an extremely crucial element in the advancement and improvement of a nation's public health services. However, the available literature shows that clinicians' interest and involvement in research has declined in the recent years, both in Europe and at a global level [1-4]. To counteract this trend, early recruitment of medical students in research activities is proposed regarding modern undergraduate medical education in developed nations. Some authors also believe that research should be incorporated into medical schools and residency program curricula [5,6]. Further studies have shown that research experiences during medical school and subsequent

publication opportunities increase medical students' chances of getting accepted into highly competitive residency programs in developed countries [7,8]. To overcome the obstacles regarding research among medical students, many studies have been conducted in different countries to assess the students' attitudes, understand their practices, and determine the barriers to medical research for undergraduates [9,10].

In developing countries like Yemen, medical school curricula mainly focus on clinical medicine and the development of practical skills, prioritizing them over research activities. Indeed, research-related topics are generally considered as supplementary issues, often offered as electives rather than a mandatory part of curricula. A review of related literature shows that there exists

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only one study related to the attitudes, practices, and barriers regarding medical research for Yemeni medical students [11]. Therefore, this study aimed to address the research gap by conducting a survey among medical students at the Faculty of Medicine and Health Sciences, Ibb University, Yemen.

MATERIALS AND METHODS

Study Design, Setting, and Population

For this study, a cross-sectional survey was carried out among medical students at the Faculty of Medicine and Health Sciences, Ibb University. It involved students at their 3rd, 4th, 5th, and 6th academic years who participated in a period starting from August 01, 2022, and ending on September 30, 2022. The permission to conduct this survey was obtained from the Dean of the Faculty of Medicine and Health Sciences, Ibb University.

Sample Size

The total number of students in the 3rd, 4th, 5th, and 6th academic years is 364. Thereafter, the sample size was calculated by adopting a 95% confidence level and 5% margin of error with a response distribution of 50% for the total population of medical students ($n=364$). Hence, the estimated sample size comprised 188 students who were selected for the survey.

Questionnaire

This study's survey was conducted using a self-administered questionnaire in the English language. This questionnaire consisted of two parts: The first part requested demographic information including age, sex, and the academic years of the respondents, whereas the second part included 18 questions about their interpretations of attitudes and barriers regarding medical research, evaluated in a Likert scale format (i.e., strongly agree, agree, neutral, disagree, and strongly disagree). According to the Cronbach's alpha test, the reliability of this questionnaire was 96%. In addition, the questionnaire was validated by a panel of professionals with immense experience in research.

Data Collection

The above-mentioned questionnaire was distributed to the selected medical students, who were given 60 min to fill and return it. It should be noted that participation in this survey was completely voluntary, with confidentiality and anonymity guaranteed. To that end, a consent form was added at the beginning of the questionnaire explaining the purpose of this study and requesting the students' participation.

Data Analysis

SPSS (v.21, SPSS Inc., Chicago, IL, USA) was chosen as the tool for statistical analysis in this study, using descriptive statistics.

The demographic data were analyzed in terms of frequency, proportions, mean, and standard deviation, while the Likert scale responses were calculated using a composite score (sum or mean) from the five Likert-type items.

RESULTS

Demographic Profile of Participants

Of the 188 students selected for the survey, 174 (92.6%) responded to and returned the questionnaire. The mean age of the respondents was 23.34 ± 1.43 years (20-28 years). Of the 174 respondents, 90 (51.7%) were male. A summary of the demographic data of respondents is given in Table 1.

Attitudes of Respondents toward Medical Research

Most students agreed (or strongly agreed) that conducting medical research promotes critical thinking (76.4%; mean=3.87), improves patient care (70.1%; mean=3.90), facilitates acceptance into a residency of choice (74.2%; mean=3.98), arouses self-interest and motivation for research (56.4%; mean=3.56), and facilitates changes in health policy (65%; mean=3.82). Table 2 summarizes the attitudes of the respondents toward medical research.

Students' Obstacles to Medical Research (Knowledge)

Less than half of the survey respondents agreed (or strongly agreed) that they were aware of research methodology (26.5%; mean=2.78), that they could formulate a research protocol (24.7%; mean=2.60), that they could evaluate a scientific literature (25.2%; mean=2.63), that they could perform simple statistical analysis (41.3%; mean=2.98), and that they could successfully write a research paper (29.3%; mean=2.82). Table 3 displays the knowledge of the respondents regarding medical research.

College-Related Obstacles to Medical Research

In particular, the responding medical students commented on the obstacles to medical research. Only a few students agreed (or strongly agreed) with the following statements: there is

Table 1: Demographic profile of participants (n=174)

Variable	Frequency (%) / Mean $\pm$ SD (range)
Age	23.34 ± 1.43 (20-28)
Sex	
M	90 (51.7)
F	84 (48.3)
Academic year	
3 rd	47 (27.0)
4 th	55 (31.6)
5 th	44 (25.3)
6 th	28 (16.1)

allotted time to pursue research (14.9% agreed; mean=2.17); there is adequate training in research methodology (12.1% agreed; mean=1.93); there are sufficient reward/motivations for participation in research (9.2% agreed; mean=1.75); there is adequate training on writing a manuscript (9.2% agreed; mean=1.89); there is adequate training on the performance of simple statistical analysis (10.4% agreed; mean=2.03); research mentors are readily available (16.6% agreed; mean=2.10); and it is easy to obtain a permit to conduct research from their institution (20.7% agreed; mean=2.40). In addition, less than half of the respondents agreed (or strongly agreed) to the statement that adequate medical research facilities (internet and journals) exist in Yemen (39.1% agreed; mean=2.87) (Table 4).

DISCUSSION

Overall, experts have observed a noticeable decline in medical research activities in the recent years. Developing countries, in particular, report limited high-quality medical research. Specifically in Yemen, medical research is still in its infancy; this situation may be considered as the result of poverty, lack of resources, lack of access to literature, and poor knowledge regarding the fundamentals of medical research practice [10,12,13]. In fact, this study was the second of its kind that investigated the attitudes of medical students toward medical research in

Yemen and addressed the barriers inhibiting such students from learning about and conducting such research. It indicated that understanding the perceptions and attitudes of students toward medical research could facilitate the improvement of research practices among future physicians.

The published data about medical students' attitudes toward medical research during graduation (from different medical schools) showed that most of them exhibited positive attitudes toward such research activities [10,14-17]. Similarly, the findings of the present study showed that most of the participants had positive attitudes toward research, reflecting the high levels of their perceived self-efficacy (i.e., the confidence to carry out the courses of action necessary to accomplish the desired goals [18,19]). However, a considerable number of the study participants chose to remain neutral regarding questions on attitudes toward medical research. Nevertheless, this finding indicated that although the majority of participants considered medical research as valuable, many were hesitant and confused regarding their ability to demonstrate positive attitudes toward such research.

Ideally, positive attitudes toward medical research should be accompanied by the acceptable knowledge and skills required to embark on such endeavors. However, the results of this report indicated that medical students had limited knowledge of the numerous aspects relevant to the field of medical research.

Table 2: Attitude of respondents toward research

Importance of research (attitude)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean
Promotes critical thinking	4 (2.3)	16 (9.2)	21 (12.1)	91 (52.3)	42 (24.1)	3.87
Improves patients' care	4 (2.3)	20 (11.5)	28 (16.1)	60 (34.5)	62 (35.6)	3.90
Facilitate acceptance into a residency of choice	5 (2.9)	9 (5.2)	31 (17.8)	68 (39.1)	61 (35.1)	3.98
Helps to changes health policy	4 (2.3)	16 (9.2)	41 (23.6)	60 (34.5)	53 (30.5)	3.82
You have self-interest and motivation for research	10 (5.7)	26 (14.9)	40 (23.0)	53 (30.5)	45 (25.9)	3.56

Table 3: Knowledge of respondents toward research

Obstacles related to the student (knowledge)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean
You are aware of research methodology	21 (12.1)	56 (32.2)	51 (29.3)	33 (19.0)	13 (7.5)	2.78
You can formulate a research protocol	33 (19.0)	61 (35.1)	37 (21.3)	28 (16.1)	15 (8.6)	2.60
You can evaluate a scientific literature	35 (20.1)	53 (30.5)	42 (24.1)	30 (17.2)	14 (8.0)	2.63
You can perform simple statistical analysis	24 (13.8)	41 (23.6)	37 (21.3)	58 (33.3)	14 (8.0)	2.98
You can write a research paper	30 (17.2)	40 (23.0)	53 (30.5)	33 (19.0)	18 (10.3)	2.82

Table 4: Obstacles to research

Obstacles related to the college	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean
There is allotted time to pursue research	58 (33.3)	62 (35.6)	28 (16.1)	18 (10.3)	8 (4.6)	2.17
There is adequate training in research methodology	78 (44.8)	61 (35.1)	14 (8.0)	12 (6.9)	9 (5.2)	1.93
There are adequate facilities for research (Internet, and journals)	42 (24.1)	30 (17.2)	34 (19.5)	44 (25.3)	24 (13.8)	2.87
There are enough rewards/motivations to participate in research	99 (56.9)	42 (24.1)	17 (9.8)	9 (5.2)	7 (4.0)	1.75
There is adequate training on how to write a manuscript	85 (48.9)	47 (27.0)	26 (14.9)	9 (5.2)	7 (4.0)	1.89
There is adequate training on how to perform simple statistical analysis	68 (39.1)	56 (32.2)	32 (18.4)	13 (7.5)	5 (2.9)	2.03
Research mentors are easily available	67 (38.5)	57 (32.8)	21 (12.1)	23 (13.2)	6 (3.4)	2.10
It is easy to obtain approval for conducting a research from college	50 (28.7)	48 (27.6)	40 (23.0)	29 (16.7)	7 (4.0)	2.40

Moreover, the results of this study are compatible with those found by other studies conducted in countries with the same educational situation; for instance, low knowledge levels and high degrees of positive attitudes regarding medical research were also observed in Egypt, Pakistan, India, and the Gulf countries [17-21].

To be precise, the uniformity of the barriers to research faced by medical students becomes apparent from the above-mentioned studies performed in several countries. Overcoming those barriers is the key to encouraging students' and residents' participation in medical research. One of the main barriers reported by students trying to engage in medical research is the lack of allocated time, due to the overwhelming duration of other educational tasks. Even in this study, this barrier was reported as a debilitating obstacle, similar to the findings of other studies [16-21].

On the other hand, one limitation of this study is that it included students from only one college, leading to a modest sample size. Future studies should include a multi-college design to assess the extent to which the results of this study are generalizable.

Despite this limitation, this study offers interesting insights into the research practices of medical students in the Faculty of Medicine and Health Sciences, Ibb University. Its results provide the policy makers and administrators at Ibb University with essential information about the barriers encountered by medical students in pursuing medical research. Using such data, administrators can improve students' participation in the future medical research activities.

CONCLUSION

The medical students in the Faculty of Medicine and Health Sciences, Ibb University, showed low levels of related knowledge despite having positive attitudes toward medical research. Reportedly, the main obstacles toward medical research were as follows: the lack of allotted time to pursue research, the lack of adequate training in research methodology, the lack of knowledge on writing a manuscript, and the lack of expertise regarding the performance of simple statistical analysis. Moreover, the study participants revealed a lack of research mentors and difficulties in obtaining approval for conducting medical research from their institution. Therefore, the streamlined integration of research into curricular activities, the provision of requisite training in research methodology, and the provision of good-quality mentorship by the educational staff in institutions can help medical students overcome the barriers to medical research and enable them to increase their concomitant productivity.

AUTHORS' CONTRIBUTIONS

Al-Shoaibi I wrote the proposal, analyzed the data, and wrote the final manuscript. Abdo BA proposed the idea, reviewed the literature, and aided in the data collection. Abdullah AM aided in the data collection, research proposal writing, and data entry. All authors read the manuscript and agree to its publication.

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