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Libyan Medical Students' Knowledge, Attitude, and Barrier Toward Clinical Research

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Abstract

BACKGROUND: Undergraduate involvement in research necessitates better understanding of their potential, as well as the anticipated barriers they will face. The objective of this study was to assess medical undergraduates' knowledge, attitudes, and research barriers.

METHODS: This was a cross-sectional study conducted on medical students from the University of Tripoli, Libya, where a self-administered questionnaire was used to evaluate the students' knowledge, attitudes, and perceived barriers. Filled questionnaires were received from the medical undergraduates of different faculties of medical specialties. Data were analyzed using descriptive statistics.

RESULTS: A total of completed questionnaires were received from 120 undergraduate medical students. The overall result of knowledge among them was encouragingly good (51%). Majority of the students taught that the main barriers in conducting research were lack of awareness (71.7%), lack of self-interest (56.7%), lack of faculty encouragement for research (84.2%), insufficient time (59.2%), and difficulty in obtaining resources and data for research (68.3%).

CONCLUSION: Participants in the current study showed a moderate knowledge level with associated positive attitudes toward research. This attitude needs to be transformed into better knowledge and appropriate practice.

Keywords:

Knowledge, medical students, PubMed, research

Introduction

In today's world, where medical progress is occurring at an unprecedented rate, staying up to date on advanced medical technologies has become critical. Therefore, health research has become an important component of medical education. Research also yields new findings with the potential to influence healthcare. Thus, encouraging medical students to conduct research as part of their medical careers can help them achieve self-sufficiency in healthcare and aid in the development process.[1]

The updated knowledge of scientific principles and methods is essential for the conduct of research. Medical students should be aware of the methods in carrying out research as they will be future doctors who will have to practice evidence-based medicine in patient care. Scientific research is the systematic approach by which theories and hypotheses can be proved or disapproved.[2] Research in medicine has an impact on prevention, diagnosis, and newer treatment for the medical ailments. It has brought reforms in policies for healthcare programs.[3]

Medical research can be basic, applied, or translational research conducted to aid and support the development of knowledge in

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the field of medicine.[4] Medical knowledge and training should be up to date as they are important for doctors in their duty of care for patients and provide the best available effective treatment based on the "best available evidence." Furthermore, every doctor should contribute to the generation of evidence by conducting research.[5] Barriers to research among medical students were found to include inadequate knowledge of study design, time limitations, restricted funding support, lack of research training, lack of mentors, lack of research self-efficacy, lack of interest, and limited access to data sources.[6]

Unfortunately, the insufficient attention to research by a government and the educated members of a community may contribute to scientific and knowledge lags. The shortfall in basic and valuable research may reflect factors as attitude to, knowledge of, and barriers toward research.[7]

One of the most important factors for conducting research is the researchers' beliefs, where attitude to health research come from the researchers' curiosity and interest in a particular subject or their wish to solve a problem within a community, then the adequate knowledge about research principles. The final factor affecting the performance of research lies in the barriers against researchers. Previous studies of medical students showed that they had inadequate knowledge of the scientific inquiry process.[7]

Given the emerging role of research in healthcare, it is imperative to conduct studies that signify the current status toward conducting research. Therefore, the present study was meant to assess the knowledge, attitude, and barrier toward research in medical students of Libya. By assessing these factors, we can help make research more appealing to medical students to increase the number of skilled researchers in the future.

Methods

Study design and setting

This was a prospective, questionnaire-based study conducted to assess the knowledge and attitude of medical students at the University of Tripoli, Libya, toward research. Eligible criteria were students attended medical classes (medicine, pharmacy, and health) at the University of Tripoli. Students from other nonmedical or visitors were excluded. This study was approved by the Research Committee of the Faculty of Medical Technology, University of Tripoli. Verbal consent form to participate in this study was obtained from all participants.

Questionnaire development and content

About 120 questionnaires were distributed to medical students, aiming at assessing their knowledge, attitude, and barrier toward research. The questionnaire was based on the previous study into three sections. The first section was related to the knowledge on research. The values of this section were knowledge of research through 10 questions ranging from basic knowledge of research types, knowledge of research writing methods, references, research problem, research objectives, and requirements for the ethics of scientific research.

The second section was about attitude and included questions to assess the situation and the questions based on the perceived importance of the scientific right in the minds of students in aspects of their education, life, and medical profession and the type of research they preferred.

Furthermore, the third section focused on barriers to research assessed through five questions. Questions focused on the factors that limit the student's role in research, whether it is a lack of research ideas, problems in conducting research (i.e., lack of access to research equipment and materials), time constraints, etc.

Statistical analysis

Data were descriptively analyzed using Statistical Package for the Social Sciences (SPSS) (IBM Corp. Released 2021. IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY: IBM Corp). Data were presented as percentage and count.

Results

Patient demographics

The number of completed questionnaires received was 120 from undergraduate medical students. Among the study population, 52 (43.3%) respondents were males and 68 (56.7%) were females. Distribution of students depending on the study mode were medical (55, 45.8%), pharm (22, 18.3%), and health sciences (43, 35.8%) [Table 1].

Table 1: Demographic characteristics of the studied population (*n*=120)

Variables	*n* (%)
Age	
18-24	52 (43.33)
25-29	68 (56.66)
Gender	
Male	52 (43.3)
Female	68 (56.7)
Type of study	
Medicine	55 (45.8)
Pharmacy	22 (18.3)
Health	43 (35.8)

Medical students' response toward knowledge

The knowledge of research was investigated through 10 questions related to types of research, research hypotheses and problems, research references, and ethics of scientific research [Table 2]. Majority of students (60%) responded that they know about the type of research. 32.5% responded that they also know the meaning of study hypothesis. Most of the students had insufficient knowledge of the research problem about (40.8%). Majority of students (80%) responded that they know about the study of objectives.

With regard of the knowledge about SPSS, we found that the majority of them (57.5%) did not know what is the meaning of SPSS. Similarly, most of them did not know what is the meaning of PubMed (70.8%); PubMed is the major database for social academic students. Regarding the question about participate of research proposal, most of the students responded that they know what is the meaning of research proposal (73.3%). Similarly, 51.7% of the students responded that they also know the part of scientific paper.

Table 2: Medical students' response toward knowledge domains

Statements	Yes answers, *n* (%)	No answers, *n* (%)
Do you know the types of research?	72 (60)	48 (40)
Do you know what is the research hypothesis?	39 (32.5)	81 (67.5)
Do you know the meaning of problem statement?	49 (40.8)	71 (59.2)
Do you know study objectives?	96 (80)	24 (20)
Do you know SPSS?	51 (42.5)	69 (57.5)
Do you know PubMed?	35 (29.2)	85 (70.8)
Do you know what is research proposal?	88 (73.3)	32 (26.7)
Do you know the parts of scientific paper?	62 (51.7)	58 (48.3)
Do you know the citation types?	67 (55.8)	53 (44.2)
Do you know the ethics of research?	53 (44.2)	67 (55.8)

SPSS: Statistical Package for the Social Science

Regarding the statement of citation type, we found that the most of participants know about the citation types (55.8%). Likewise, the majority of them did not know the meaning of ethics of research (55.8%).

In Table 3, attitudes toward the research were evaluated through four questions according to the student's attitude regarding degree of the attitude. The results found that the majority of students (57.4%) advise to have research as a part of MBBS curriculum. Further, most of them (88.2%) consent that the research will help in better understanding our subject. Similarly, the majority of them said that the research will help one's clinical practice later (81.7%), while minority of them consent that the research is not waste of time and does not disturb studies (44.2%).

As shown in Table 4, the barriers between the student and the research were evaluated through five questions. The question was summarized and then converted into a percentage to represent the barriers. The result reported that majority of them had a lack of awareness (71.7%). Correspondingly, most of them lack self-interest (56.7%). However, majority of them said that there is a lack of faculty encouragement for research (84.2%). Majority of them said that there is lack of time (59.2%). In addition, most of them said that there is difficult to find resources and data for research (68.3%). investigated the barriers of students about medical research.

Discussion

Research is an extremely important element in the advancement of better healthcare services provided to the public. An adequate level of knowledge, positive attitude, and reasoning skills plays an important role in carrying out research.[8] In this study, we aimed to assess the knowledge, attitude, and barriers of medical students toward medical research throughout 120 medical students.

Table 3: Medical students' response towards attitude domains

Statements	*n* (%) of total agree	*n* (%) of agree	*n* (%) of neutral	*n* (%) of disagree	*n* (%) of total disagree
Research should be part of MBBS curriculum	37 (30.8)	32 (26.6)	26 (21.6)	17 (14.1)	8 (6.6)
Research will help in better understanding of subject	68 (56.6)	38 (31.6)	12 (10)	0	2 (1.66)
Research will help in one's clinical practice later	71 (59.2)	27 (22.5)	9 (7.5)	10 (8.1)	3 (2.5)
It is not waste of time and does not disturb studies	24 (20)	29 (24.2)	27 (22.5)	29 (24.1)	11 (9.2)

Table 4: Medical students' response toward barriers of doing research

Statements	*n* (%) of total agree	*n* (%) of agree	*n* (%) of neutral	*n* (%) of disagree	*n* (%) of total disagree
Lack of awareness	47 (39.2)	39 (32.5)	15 (12.5)	13 (10.8)	6 (5)
Lack of self-interest	33 (27.5)	35 (29.2)	18 (15)	22 (18.3)	12 (10)
Lack of faculty encouragement	69 (57.5)	32 (26.7)	9 (7.5)	7 (5.8)	3 (2.5)
Lake of time	42 (35)	29 (24.2)	24 (20)	17 (14.2)	8 (6.7)
Difficult to find resources and data	52 (43.3)	30 (25)	13 (10.8)	14 (11.7)	11 (9.2)

The overall result of knowledge among them was encouragingly good (51%), where about 60% of the students knew the types of research. This result was similar to another study conducted on undergraduate students in Egypt who have demonstrated moderate level of knowledge in terms of research (mean score 43.4%).[9]

In the current study, only 32.5% and 40.8% of students knew the definition of research hypothesis and problem statement, respectively, whereas 29.2% of students knew the PubMed and 42.5% knew the statistical analysis tool SPSS. Nearly half of (51.7%) the students knew what is part of scientific paper, 55.8% of them knew the rule of citation types, and 44.2% of them knew the ethics meaning in the research. These findings were in agreement with the results of Wahdan *et al*., on students of Ain Shams University, Egypt, who reported moderate level of knowledge and attitude (mean score 43.4 ± 22.5 and 45.8 ± 18.6, respectively).[9] Similarly, a study conducted by Vodopivec *et al*. revealed that there is lack of knowledge on the scientific method and communication in medicine.[10]

The attitude of participant toward medical research was investigated in the current study, and the findings exhibited that the majority of students (57.4%) responded that they advise to have research as a part of MBBS curriculum. In addition, most of them (88.2%) consent that the research will help in better understanding our subject. Similarly, the majority of them said that the research will help one's clinical practice later (81.7%), while most of the students felt the importance of research in clinical practice and agreed to spend time for research. This finding was similar to the study done in South Africa that reported the importance of research interest by most of the participants.[11] Minority of them consent that the research is not waste of time and does not disturb studies (44.2%).

The current study also investigated the barriers of students toward medical research and revealed that the majority of them taught that the main barriers in conducting research were lack of awareness (71.7%), lack of self-interest (56.7%), lack of faculty encouragement for research (84.2%), insufficient time (59.2%), and the difficulty in obtaining resources and data for research (68.3%). In agreement to our study, Kyaw Soe *et al*. showed that the barriers such as the lack of time (79.9%), lack of knowledge and skills (72.1%), lack of funding (72.0%) and facilities (63.6%), and lack of rewards (55.8%) were cited by majority of the students.[12] Evidence also showed that the existence of barriers brings the gap between theory of scientific research and practice of conducting it.[13] The barriers to participate in scientific research can be classified as extrinsic[14] such as lack of training in research methodology, lack of time due to overburdened with educational activities, lack of rewards and incentives, lack of infrastructure and facilities, inadequate support by organization/institute, access to library and publications, and inadequate supervision and mentorship.[15]

There were some limitations in this study: the study was conducted in one medical institution; therefore, the findings cannot be applicable to other institutions with the different environment. This was a cross-sectional study; therefore, we could neither observe the changes over time nor inference of causality.

Conclusion

The undergraduate medical students had moderate level of knowledge and positive attitudes toward medical research. Lack of awareness, lack of faculty encouragement for research, and the difficulty in obtaining resources and data for research were the major barriers. These barriers need to be addressed by providing proper supervision, research funding, and awards, as well as providing access to electronic databases to encourage the undergraduate students participating in research activities. It is recommended to organize research workshops, frequent research presentations, and journal clubs to provide knowledge and skills needed for the medical students to implement the scientific research in the future.

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Conflicts of interest

There are no conflicts of interest.

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