



Challenges and Barriers Facing Scientific Research at Medical Faculty at University of Benghazi, Libya

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ABSTRACT

Background: The provision of healthcare depends on scientific research. Nevertheless, medical students might not engage in research during their training, which could have a detrimental impact on their comprehension of the significance of research and their capacity to carry out research projects in the future.

Aims of study: To analyze the perspective, attitudes and behaviors of the medical students regarding research and the problems which may be a barrier in performing research.

Subjects & Methods: A self-administered, pre-coded, and pre-tested questionnaire was used in a cross-sectional study. The study was carried out at Benghazi Medical Center (BMC) and the Faculty of Medicine (FM). The population in 2020 includes medical students, interns, postgraduate students, physicians who had graduated, specialists, and faculty members (in both basic and clinical domains).

Findings: Of the 227 respondents in the sample, 63.4 were female and 36.6% were male, with a mean age of 29 $\pm$ 6.3 years. According to the current study, 203 respondents (89.4%) agreed and strongly agreed that conducting scientific research is significant, and 85.6% agreed and strongly agreed that undergraduate research is required. The scientific research barriers at Benghazi university were more than half of respondents agree and strongly believe there was no enough training for research methods, 47.4% agreed that Lack of professional supervision, and 50.4% agreed that limited accessibility to data.

Conclusion: Despite the fact that every respondent acknowledged the value of research, student research still faces numerous challenges, as does research at Benghazi University's medical faculty. The researchers recommended that the medical faculty offer more training programs to instruct undergraduate and graduate physicians in research techniques, as well as financial support and supervisors for faculty members.

Keywords: Perception; Attitude; Research; Self-administered; Questionnaire

INTRODUCTION

In order to improve the delivery of healthcare, research is crucial. However, medical students may

not participate in research during their training, which can negatively affect their knowledge of the

relevance of research and their future ability to execute research projects [1]. The only known method for expanding human knowledge in the fields of biology and medicine is research. The success of nations and civilizations in terms of medical practice and healthcare delivery is closely linked to biomedical research activity and output [3]. Medical professionals may have more research-intensive careers if they were exposed to the fundamentals of research earlier [3]. Furthermore, a number of studies have shown that medical students who participate in research during their undergraduate years are more productive in their future jobs [4]. Numerous challenges have been identified as impeding a student's capacity to carry out research. Lack of mentorship, insufficient time for extracurricular activities, and inadequate research training-which is more common in developing nations-are a few of these challenges [4-6]. The primary barrier to conducting research is still a lack of resources [7,8]. Medical clinics and hospitals suffer from a lack of evidence-based care that might enhance patients' lives because crucial health care-related data are not adequately researched in these low-resource nations [7,8].

Similar to other underdeveloped nations, Libya contributes very little to the world's storehouse of biomedical knowledge and research. A study conducted at Sabratha University in Libya looked into what is currently preventing postgraduate students from conducting scientific research. The most important issues are the lack of a strategic strategy for scientific research, the restricted budget for research, insufficient infrastructure, and the inferior research skills of faculty members. However, the difficulties facing scientific research have been exacerbated by the absence of private funding for research and the political unrest in Libya [9].

Aim

The study's objectives were to evaluate the attitudes and obstacles that Benghazi University Libya 2020's teaching staff, medical students, and physicians have about scientific research.

MATERIALS AND METHODS

Research design: A self-administered questionnaire that had been pre-coded and pretested was used in a cross-sectional descriptive study.

Research setting (place-time): The investigation was carried out at the FM Faculty of Medicine, Benghazi Medical Center (BMC) and Benghazi University (BU).

Study population: The study population in 2020 consisted of students, interns, postgraduate students, graduated physicians, and faculty members (in both basic and clinical domains).

Data collection: The medical school faculty members received the questionnaires. The research instrument was a questionnaire created by the researcher that included closed-ended questions divided into two sections: the study population's attitude and the respondents' fundamental characteristics. Based on their characteristics, the barriers were divided into six groups.

The questionnaire

Research tool composed of five major elements:

- The socio-demographic portion comprises questions asking about gender, region, job area, specialty, and age.
- Questions concerning barriers that every participant confront at his/her institution/country that influences his/her function in the study field.
- Concerns over healthcare providers' roles in the field of research and the opportunities and strengths they have at their institution or nation.

Ethical issue: Before the poll began, written agreement was obtained from each respondent. The subject was carefully informed by the investigators that the following actions would be taken:

- A view on the significance of scientific medical research.
- Being aware of the most significant issues affecting scientific research at the University of Benghazi's Faculty of Medicine. Verify that participants were given the chance to ask questions regarding the study and that all of their inquiries were addressed.

They highlighted that consent was given freely and voluntarily and that no one was coerced into giving it.

Statistical analysis

A five-point Likert scale (from completely disagree to completely agree) was used to gather the respondents' attitudes. Five was the greatest score, while one was the lowest. Researchers disseminated and gathered the self-administrated questionnaire. The participants' responses were used to determine the worth of the characteristics associated with effective research activity obstacles and to evaluate

the correlation between the mean rank attitude score and certain personal parameters.

RESULTS

Respondents' socio-demographic characteristics

According to the current study, of the 227 respondents in the sample, 179 (78.9%) came from Benghazi University's medical department, 34

(15%) from BMC, and 14 (6.2%) from Al-Jala Hospital. 169 (74.4%) of the respondents were between the ages of 23 and 29, with a mean age of 29 ± 6.3 years, a minimum age of 23, and a maximum age of 58. According to the current study, 120 (52.8%) were students, 43 (18.9) were graduating doctors, specialists, and consultants, 17 (7.5%) were teaching staff, and nearly two-thirds (144, or 63.4%) were female and slightly more than one-third (83, or 36.6%) were male (Table 1).

Table 1: Respondents' socio-demographic characteristics (n=227).

Characteristics	Number (%)
Place of work	
a) Medical collage Benghazi	179(78.9)
b) Benghazi medical center (BMC)	34(15)
c) Al-Jala hospital	14(6.2)
Age interval/years	
a) 20-29	169(74.4)
b) 30-39	44(19.4)
c) 40-49	5(2.2)
d) ≥ 50	9(4)
Mean age $\pm$ SD	29 ± 6.3 Years
Sex	
a) Male	83(36.6)
b) female	144(63.4)
Marital status	
a) married	34(15.1)
b) single	191(84.1)
c) divorce	2(0.8)
Occupation	
d) Teaching staff	17(7.5)
e) Physician	43(18.9)
f) Interns' students	47(20.7)
g) Students	120(52.8)
Education	
a) Undergraduate	113(49.8)
b) Graduate	54(23.8)
c) Postgraduate	41(18.1)
d) Higher	19(8.4)
Specialty	
a) Students	170(74.9)
b) Basic	14(6.5)
c) Surgery	12(5.2)
d) Medicine	13(5.7)
e) Gynecology & obstetric	8(3.5)

f) Community	5(2.2)
g) Pediatric	2(0.9)
h) forensic	1(0.4)
Years of experience	
a) Students (no experience)	172(75.8)
b) <10y	41(18.1)
c) 10-<20y	9(3.9)
d) >20y	5(2.2)

Respondents' opinion about the importance of scientific research

According to the current study, 203 respondents (89.4%) agreed and strongly agreed that doing scientific research is significant, and 191 respondents (85.6%) agreed and strongly agreed that undergraduate research is necessary. Participating in research or publishing a scientific paper is crucial, according to 189 (82.6%) of the investigators. Nearly three quarters of respondents (170, or 74.9%) agreed and strongly agreed that research

methodology should be included in the curriculum, 118 (52%) and 60 (26.4%) agreed and strongly agreed, respectively, that research will be a part of their career goals, and 82 (36%) agreed that conducting research always requires a lot of money (Table 2). The current study found a highly significant relationship ($p=.001$ and $.0001$ for Analysis of Variance (ANOVA) test Figures 1 and 2) between the respondents' occupation and education level and the mean research importance attitude score in Benghazi, Libya (Figure 1 & Figure 2).

Table 2: Respondents' opinion about the importance of scientific research.

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Do you think that the scientific research is important?	10(4.4)	5(2.2)	9(4.0)	85(37.4)	118(52)
Research in undergraduate is necessary.	2(.9)	9(4.0)	25(11.0)	129(56.8)	62(27.3)
Participating in research or publishing scientific paper is important	3(1.3)	7(3.1)	27(11.9)	108(47.6)	81(35.7)
Research methodology should be a part of curriculum-	1(.4)	15(6.6)	40(17.6)	121(53.3)	49(21.6)
Research will be a part of my career goals.	2(.9)	17(7.5)	30(13.2)	118(52)	60(26.4)
Conducting research always needs a lot of money	9(3.9)	44(19.3)	67(29.4)	82(36)	26(11.4)

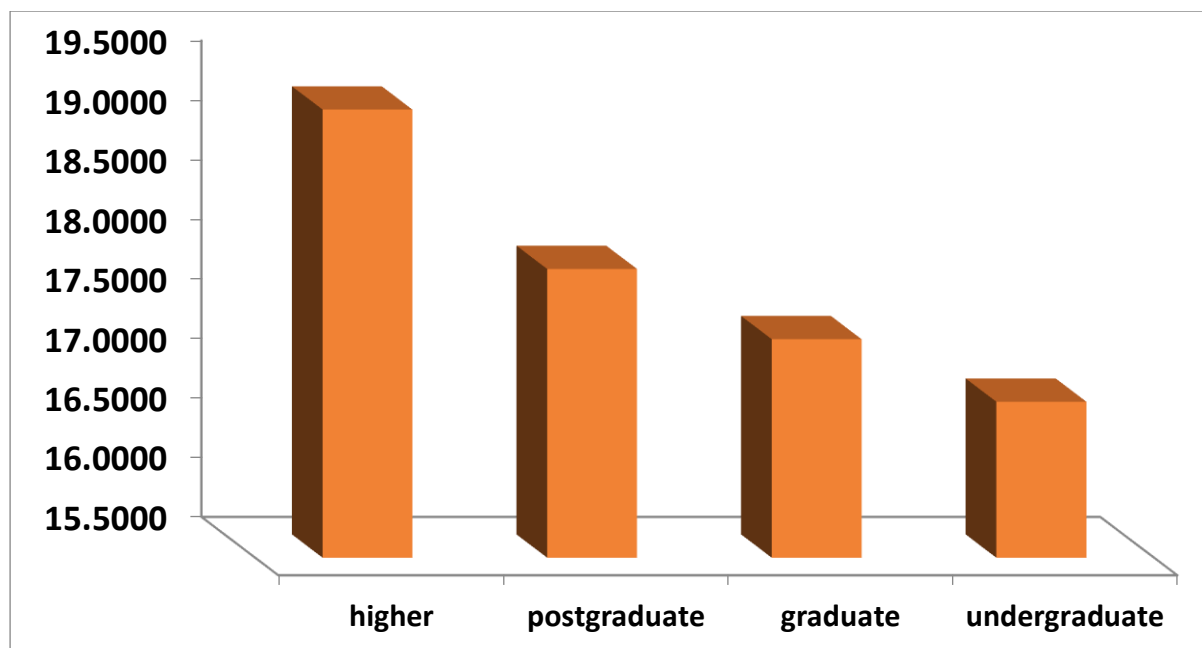


Figure 1: The relation between the respondents' education level and the mean research importance attitude score at Benghazi, Libya.

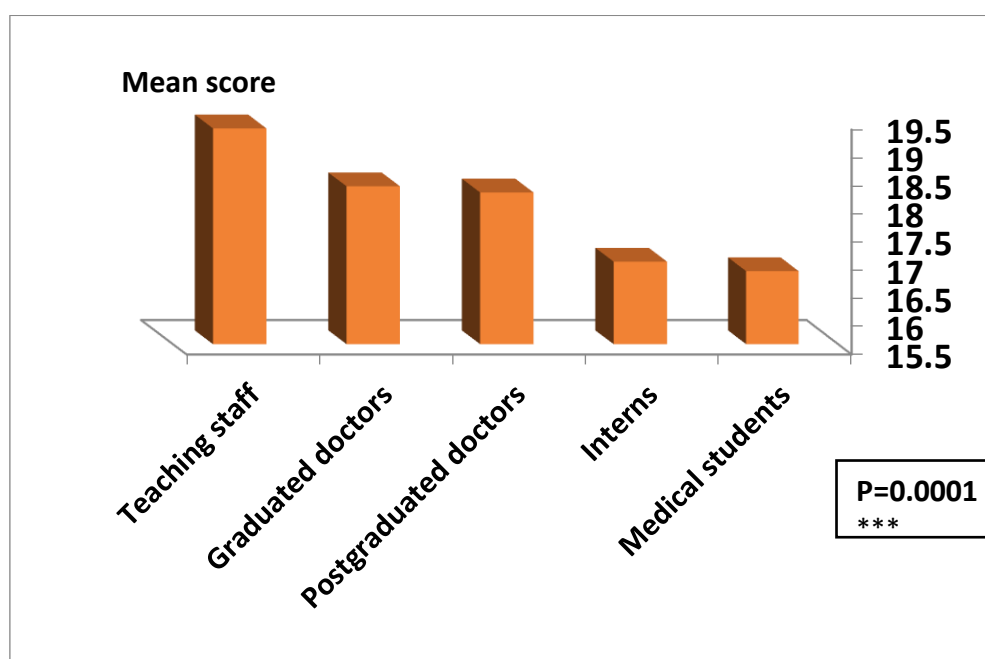


Figure 2: The relation between the respondent's occupation and the Mean research importance attitude score at Benghazi University Libya.

Respondents' opinion about scientific research barriers at Benghazi

In the current study, 138 respondents (60.6%) agreed and strongly agreed that there was insufficient training for research methodology, 82 respondents (34.4%) agreed and strongly agreed that there was insufficient time to evaluate scientific literature in medical school, and 76 respondents (32.7%) agreed

and strongly agreed that there are plenty of opportunities to participate in medical research at medical faculty. According to the current study, 62 respondents (27.2%) agreed and strongly agreed that the medical faculty lacks adequate facilities for research, 108 respondents (47.4%) agreed that there is a lack of professional supervision, half of respondents (115 respondents, 50.4%) agreed that data accessibility is poor, more than half (124

respondents, 54.4%) agreed that it is difficult to follow up with patients, and 102 respondents (44.7%) agreed that it is difficult to obtain study approval. There is insufficient funding for medical research in the medical faculty, according to 108 respondents (47.4%). More than half of respondents, 124 (54.4%), agreed that researchers' attention is not being paid to community issues, and 99 (43.4%)

stated that the primary individual barrier to research activities is the spirit of individualism and lack of interest in the group. More than three thirds of respondents-164, or 68%-agreed and strongly agreed that conducting research is fascinating, and 159, or 69.8%, agreed and strongly agreed that they lack motivation to conduct research (Table 3).

Table 3: Respondents opinion about scientific research barriers at faculty of medicine at Benghazi University.

Questions	strongly disagree No. (%)	Disagree No. (%)	Neutral No. (%)	Agree No. (%)	Strongly Agree No. (%)
No adequate training for Research methodology	8(3.5)	46(20.2)	30(13.2)	87(38.2)	51(22.4)
There is no adequate time to evaluate Scientific literature in medical school	27(11.8)	84(36.8)	37(16.2)	69(30.3)	13(4.4)
There are many opportunities to participate in medical research in medical school	24(10.5)	89(39.0)	40(17.5)	62(27.2)	12(5.5)
No adequate facilities for research in the medical faculty.	31(13.6)	94(41.2)	38(16.7)	42(18.4)	20(8.8)
Lack of training research courses	9(3.9)	24(10.5)	25(11.0)	113(49.6)	55(24.1)
Lack of professional supervision	5(2.2)	37(16.2)	35(15.4)	108(47.4)	40(17.5)
Poor accessibility to data	4(1.8)	25(11.0)	34(14.9)	115(50.4)	50(21.9)
Difficulty of following up with patients	4(1.8)	22(9.6)	37(16.2)	124(54.4)	41(18)
Difficulty obtaining approval for the study	5(2.2)	25(11.0)	63(27.6)	102(44.7)	27(11.8)
Lack of financial support of medical research in the faculty of medicine	7(3.0)	13(5.7)	28(12.3)	108(47.4)	72(30.6)
The spirit of individualism and lack of interest in-group.	9(3.9)	30(13.2)	53(23.2)	99(43.4)	37(16.2)
Attention of researchers is not address to community problems	6(2.6)	18(7.9)	45(9.7)	124(54.4)	35(15.4)
Do you think that doing research is interesting?	9(3.9)	24(10.5)	24(10.5)	10(44.3)	54(23.7)
I am not motivated to do research	9(3.9)	24(10.5)	36(15.8)	101(44.3)	58(25.5)

Respondents' opinion towards clinical research methodology and clinical practice

More than three quarters of respondents 181(79.3%) agreed and strongly agreed that treating clinical problems can be easier if the scientific method is appropriately followed, 185(81.2%) agreed and strongly agreed clinical research skills can considerably improve the physician's clinical practices. More than half of respondents (125, or 54.8%) agreed that all medical advancements are predicated on the appropriate application of scientific methodology, and 115, or 50.4%, agreed

that clinical research technique ought to be a knowledge prerequisite for all doctors. The majority of responders (118, or 51.8%) concurred that obtaining accurate clinical data requires familiarity with the clinical research methodology. More than half of respondents (121, 53.1%) agreed that undergraduate students should take part in clinical research projects; 89 (39.0%) agreed that adhering to the scientific research methodology adds difficulty to clinical research practice; and half of respondents (115, 50.4%) agreed that restricting medical practice to scientific findings only makes the practicing physicians narrow-minded (Table 4).

Table 4: Respondents opinion towards clinical research methodology and practice.

Questions	strongly disagree No. (%)	Disagree No. (%)	Neutral No. (%)	Agree No. (%)	Strongly Agree No. (%)
No adequate training for Research methodology	8(3.5)	46(20.2)	30(13.2)	87(38.2)	51(22.4)

There is no adequate time to evaluate Scientific literature in medical school	27(11.8)	84(36.8)	37(16.2)	69(30.3)	13(4.4)
There are many opportunities to participate in medical research in medical school	24(10.5)	89(39.0)	40(17.5)	62(27.2)	12(5.5)
No adequate facilities for research in the medical faculty.	31(13.6)	94(41.2)	38(16.7)	42(18.4)	20(8.8)
Lack of training research courses	9(3.9)	24(10.5)	25(11.0)	113(49.6)	55(24.1)
Lack of professional supervision	5(2.2)	37(16.2)	35(15.4)	108(47.4)	40(17.5)
Poor accessibility to data	4(1.8)	25(11.0)	34(14.9)	115(50.4)	50(21.9)
Difficulty of following up with patients	4(1.8)	22(9.6)	37(16.2)	124(54.4)	41(18)
Difficulty obtaining approval for the study	5(2.2)	25(11.0)	63(27.6)	102(44.7)	27(11.8)
Lack of financial support of medical research in the faculty of medicine	7(3.0)	13(5.7)	28(12.3)	108(47.4)	72(30.6)
The spirit of individualism and lack of interest in-group.	9(3.9)	30(13.2)	53(23.2)	99(43.4)	37(16.2)
Attention of researchers is not address to community problems	6(2.6)	18(7.9)	45(9.7)	124(54.4)	35(15.4)
Do you think that doing research is interesting?	9(3.9)	24(10.5)	24(10.5)	10(44.3)	54(23.7)
I am not motivated to do research	9(3.9)	24(10.5)	36(15.8)	101(44.3)	58(25.5)

DISCUSSION

The present study focuses on the perspectives, attitudes and practices of medical students and instructional staff toward research and the barriers and obstacles facing them.

According to the current study, 89.4% of respondents agreed and strongly agreed that conducting scientific research is important, 84.1% agreed and strongly agreed that undergraduate research is essential, and nearly three quadrants (74.9%) agreed that research methodology should be covered in the curriculum. AlGhamdi K M. et al, reported slightly higher results: 97.1% of senior medical students at King Saud University in Riyadh, Saudi Arabia, agreed that research is important in the medical field, and 91.9% of students thought that research methodology should be taught in medical school [6].

The researchers in this study discovered that 8.4% agreed and strongly agreed that research will be a part of their career aspirations, and 82.6% agreed and strongly agreed that publishing scientific papers or participating in research is vital. AlGhamdi K M. et al, showed nearly identical results: 87.7% of Saudi Arab medical students thought that undertaking research during medical school was significant, and 67.4% said that it should be required for all medical students [6]. Waaijer et al, compared the publications of 4145 MD graduates from all eight Dutch university medical centers between 2005 and 2008 that were indexed in the Web of Science and published six years prior to and six years following

graduation [7]. They reported that students who had published before graduating 1.9 times as likely to publish, published more papers, and had a somewhat higher citation impact after graduation.

Research is not considered a part of the medical curriculum in many underdeveloped nations. For instance, Chaturvedi and Aggarwal found that 91% of interns in medical school lacked research experience [8]. Thus, students in India are rarely exposed to research at the point of their academic growth when such exposure could inspire continued research [9]. According to Siemens et al, in the Canadian study, 43% of respondents agreed that the primary motivation for conducting research during medical school was to help them be accepted into their preferred residency; only 31% of all respondents felt that there was sufficient time allotted for research endeavors; only 15% of respondents felt that medical school provided adequate training in research methodology; only 44% of respondents agreed that it was relatively easy to find a research mentor [10].

According to Siemens et al, medical students' unfavorable attitudes toward research have been proven to act as a learning barrier linked to subpar research performance [10]. The majority of medical students are unaware of the importance of research in healthcare. Lack of student conferences and research workshops on how to create and organize research papers is among the reasons for such negative sentiments. The young researchers' encouragement is insufficient. Due to the demanding curriculum, time constraints were perceived as a

major obstacle to conducting research while medical school. Medical students are less inclined to participate in research as a result of this factor [10]. Only 44% of medical students believed that research would have a major impact on their future careers, and only 38% agreed that more time should be set aside in medical school to facilitate more research experience, according to the Canadian study, even though the majority of medical students believed that involvement in research activities was probably beneficial to their education. According to Siemens et al, just 88 (55.3%) of them engaged in research while in medical school, despite the fact that the majority of them thought that research was crucial in the medical sector and a boost to their careers (167, 97.1%).

According to Frishman and Houlden et al, even if a student's research experience does not result in a career in academic medicine, it can enhance their ability to search and evaluate the medical literature and engage in autonomous learning [11,12]. As a student, this kind of research exposure can also assist identify prospective vocations, make valuable contacts, and land better residency jobs [11,12]. Only 116 people (7.4%) agreed that research should be required for all medical students, according to Frishman [11]. In the Canadian study, 24% of participants said they had no interest in conducting any research, and 43% said they had no substantial engagement in research initiatives throughout medical school [10]. While, in Germany, medical students contributed 28% of the publications of one institution, including first authorship in 7.8% of papers [13].

Middle Eastern medical students' attitudes, behaviors, barriers, and beliefs regarding research. not only tackled a previously overlooked problem in our area, but also made an effort to thoroughly evaluate it in order to identify solutions for the challenges that kids encounter. Medical students may get more involved in research as a result of these initiatives [6].

According to the current study, respondents' mean attitude scores for the significance of research and its application in clinical practice were v. good (3.9 and 3.8), respectively, while their overall attitude toward research hurdles was good (3.4). According to respondents' opinion in the present study the scientific research barriers at faculty of medicine Benghazi university were (60.6%) agree and strongly agree there was no adequate training for research methodology, 34.4% agree and strongly agree that no adequate time , 27.2%) agree and strongly agree that no adequate facilities for research in the medical faculty, 47.4% agreed that Lack of professional supervision, 50.4% agreed that poor

accessibility to data, 54.4% agreed that difficulty of following up with patients, 44.7% agreed that difficulty obtaining approval for the study, 47.4% of respondents agreed that lack of financial support of medical research in the faculty of medicine. Regarding the other personal aspects, 43.4% of respondents said that the primary individual obstacle to research activities is the spirit of individualism and lack of interest in the group, and more than half of respondents (54.4%) thought that researchers do not pay attention to community problems. However, 69.8% of respondents agreed and strongly agreed that they are not driven to conduct research, whereas 68% agreed and strongly agreed that conducting research is intriguing.

Regarding clinical research, the current study found that 81.2% agreed and strongly agreed that clinical research skills can greatly improve the clinical practices of physicians, and 79.3% agreed and strongly agreed that managing clinical problems can be easier if the scientific approach is properly followed. 50.4% of respondents believed that clinical research technique should be a required knowledge requirement for all physicians, and more than half of respondents (54.8%) felt that all medical improvements are founded on the appropriate use of scientific methodology. More than half of respondents (51.8%) believed that being aligned with the clinical research methodology is crucial to obtain reliable clinical data [14].

According to Abushouk AI et al, study on the attitudes of Ain Shams University Egypt's Faculty of Medicine students regarding the obstacles to scientific research, the majority of students (74.2%) concur that undergraduates ought to take part in clinical research. Only 23.8% of respondents said they participated in similar activities, nevertheless. Pupils' knowledge scores were low. They identified a number of obstacles that prevent people from participating in research, such as a lack of funds, time, and appropriate mentoring. According to Sheikh et al, medical students at King Edward Medical University in Pakistan showed a strong correlation between their lack of interest and the absence of internet facilities [15].

CONCLUSION

Despite the fact that all of the study's participants concur on the value of scientific research, conducting research at the university level is still difficult, and the University of Benghazi's Faculty of Medicine has numerous challenges. In addition to providing supervisors, facilities, and funding for faculty members to conduct research projects, the researchers recommended that the Faculty of Medicine offer more training programs to teach

graduate and undergraduate physicians about research methodologies. establishing research facilities and promoting collaboration.

DECLARATIONS

Conflict of interest

None

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None

Author contributions

The authors contributed to the conception, design, analysis, interpretation, and writing of this manuscript.

Consent for publication

Not applicable.

Declaration of interest

The authors declare no conflicts of interest related to this work.

Availability of data and materials

All data generated or analysed during this study are included in this published article.

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