

Perception, Attitude, and Practice Toward Community Research Among Medical Students in Hadhramout University, Yemen

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Abstract

Background

Research is an important element in the improvement of the quality health services provided to the public. It is documented that, globally, medical students apply research in their school life. This study aimed to assess perception, attitude, and practice toward community research among medical Students at Hadhramout University.

Methods

This is a cross-sectional descriptive study was conducted among medical students in Hadhramout University in Al-Mukalla district, Yemen during the academic year 2016-2017. A self-administered pilot-tested questionnaire was used for data collection to assess perception, attitude, and practice toward the community research during the educational year 2016-2017.

Result

A total of 265 completed responses were received. The majority had a low Knowledge score (72%). However, the majority had a positive attitude toward research (90.9%). Eighty-three reported participations in research work. However, (44.4%) expressed research interest. Many barriers were highlighted by students including; lack of time (78.4%) and lack of training in statistics (75.9%).

Conclusion

the majority of students had a positive attitude toward research. However, the majority of them had low knowledge scores. Also, some barriers need to be evaluated to improve the involvement of students in research activities. Lack of time was seen to be the most significant barrier to pursuing research.

Background

Research is the generation of new knowledge, science, or invention by using scientific methods and skills. (1, 2) Health research training is an important component of medical education to inculcate critical thinking and reasoning skills. (3, 4, 5) The scientific research methodology including topic selection, analysis and statement of the problem, literature review, formulation of the research objectives, determining study designs, study population and sample size determination, and data collection, processing, and analysis. (1, 6)

The health research seeks to answer questions about the health state, disease, or risk factors; it also directs us to the causes of ill health and the effectiveness of prevention and curative intervention and

also has an impact on health care programs policy and services.^(7,8) Moreover, research will broaden students' scientific training helping them to pursue their careers in academic medicine.⁽⁹⁾

During the last decade, there has been a renewed emphasis on the medical student research experience and many programs have been developed in different countries such as those two large United States programs that have sought to engage students during this critical period of training are the National Institutes of Health (NIH) sponsored Medical Student Research Fellowship Programs (MSRFs)⁽¹⁰⁾ and the Doris Duke Clinical Research Fellowship (CRF) Program,⁽¹¹⁾ other examples are those which developed in Europe⁽¹²⁾ and the Netherlands.⁽¹³⁾

Many students agreed that there would be no progress of humankind without the progress of science and the basis of medical progress is the use of scientific methodology and the knowledge of scientific methodology is essential for obtaining accurate objective data so the research was important in the medical field. The student who had a high attitude science will tend to be highly involved in research activities.

However, some students do not agree that research will be a part of the future, and most of them not present any research.^(2, 14, 15) Some of them agreed that some participation in research was likely valuable within their medical education so they showed the research should be being mandatory in curriculum and more time in medical school should be set aside to allow participation in research endeavors to improve research skills, attaining research publication and reinforce a teamwork spirit.^(2,14-16)

One of the most important factors underlying any study is the researchers' beliefs, as it is these that motivate them to undertake a study in the first place.⁽¹⁷⁾ The attitude to health research stems from the researchers' curiosity and interest in a particular subject or their wish to solve a problem within a community.⁽¹⁸⁾

Students have faced many barriers when conducting the research activities as no enough time, supervisor, guidance, inadequate training in research methodology, hard to publish research during medical school,⁽¹⁹⁾ uncertainty about the ability to complete a study (lack of research self-efficacy),⁽²⁰⁾ lack of research interest⁽²¹⁾ and limited access to data sources (i.e., internet), materials and equipment.⁽²²⁾

Research is an important element in the improvement of the quality health services provided to the public. It is documented that, globally, medical students apply research in their school life. To our knowledge, there was no previous published research that addressed the issue in Yemen, and given the role of research in health care programs, this study aims to assess perception, attitude, and practice toward community research among medical students in Hadhramout University College of Medicine (HUCOM) during the academic year 2016-2017.

Methods

Study design: Cross-sectional study among the last three years of medical students of Hadramout University in Yemen.

Study subjects: All 418 students were enrolled in the study, 154 students from the fourth year, 134 students from the fifth year, and 130 students from the sixth year.

Data collection: The data collected by using a self-administered pre-tested questionnaire which was designed and validated by experts from different universities in the Arab world. The questionnaire was divided into seven sections as the following: section 1. Personal data (Age, Gender, academic level, Name not included), section 2. student's perception toward research, section 3. students' attitude toward research, section 4. students practice toward research, section 5. barriers toward research, section 6. relevance of the undergraduates' research and section 7. Suggestions to improve engagement of students in research.

Knowledge and attitude score: The knowledge score consisted of 6 items. Each correct answer was given a score of 1, while zero for the wrong answer. The total knowledge score ranged from 0 to 6 and then was classified as High knowledge score (above or equal to the mean), and low knowledge (if it was below the mean). Attitudes towards research were assessed by 8 questions. The answers were measured by a 5-point Likert scale ranging from strongly disagree (score 1) to strongly agree (score 5). So the range of the total attitude score was ranged from 0 to 40, then it was classified as Positive attitude (above or equal to the mean), and negative attitude (if it was below the mean).

Data Analysis: The collected data were checked, coded, entered, and analyzed using a statistical package for social science (SPSS v20). Frequencies, mean and standard deviation are the descriptive statistical tools used as appropriate. The outcome variables were students' knowledge and attitude while gender and the academic level were the main independent variables. Statistical tests used for analysis were t-test for continuous variables and one-way analysis of variance (ANOVA) for multiple comparisons. For all purposes, the criteria of significance were considered at a P-value of 0.05.

Results

Out of 418 questionnaires distributed, 265 students respond and return filled questionnaires giving the response rate of 66.5%. (104 fourth-year students 86 fifth-year students, 75 sixth-year students). The mean age of participants is 23.9 years (± 1.5) The majority of students were in the age group 23 -26 years, 134 of students (50.6%) were males and (49.4%) were females. (Table 1)

Table 1
The demographical characteristic of the participant

Characteristics		Frequency	Percentage
Age group	20-22	37	14.2%
(Mean age (23.9±1.5)	23-25	191	73.5%
	26-29	32	12.3%
Sex	Male	134	50.6
	Female	131	49.4
Academic year	6 year	75	28.3
	5 year	86	32.5
	4 year	104	39.2

The students' knowledge about research. The highest percentage of the students (74.5%) knew about the research concept and of them knew the importance of a representative sample (58.7%) but only 23.3% of students understand the role of sample size in the generalizability of the obtained results. About 53% of the students be able to define descriptive statistics in contrast to inferential districts that only 34.4% of students define. Regarding research ethics, only 30.6% were able to identify the correct definition of participant students knew about the informed consent. (Table 2)

Table 2
The student's knowledge about research

Question	Answers	No and % of students	
		No	%
Research is defined as:	a. Scientific Systematic Methodological approach for gaining new information or solve a problem. *	193	74.5%
	b. Gaining new information that affects health to make interventions	35	13.5%
	c. Scientific method for data collection	31	12.0%
Sampling should be:	a. Representative of the reference population. *	152	58.7%
	b. The reference population is not needed for research	37	14.3%
	c. Large enough regardless of method of selection	70	27.0%
The sample size is needed for:	a. Making data generalizable on the reference population. *	106	41.2%
	b. To be able to have a sound methodology for the research	60	23.3%
	c. To make data comparable with other studies in the same field	91	35.4%
Descriptive statistics are:	a. Making conclusions about populations using data from a sample drawn from the population	74	28.5%
	b. Data that helps describe, show or summarize patterns of certain phenomena. *	138	53.1%
	c. A method for testing the hypothesis	48	18.5%
Inferential statistics is:	a. Making conclusions about populations using data from a sample drawn from the population. *	74	34.4%
	b. Data that helps describe, show or summarize patterns of certain phenomena	138	32.4%
	c. A method to describe the variation	48	33.2%
Informed consent is:	a. A document by which a study participant voluntarily confirms his or her willingness to participate in particular research, after having been informed of all aspects of the research that are relevant to the study	63	23.8%
	b. A process by which a study participant voluntarily confirms his or her willingness to participate in particular research, after having been informed of all aspects of the research that are relevant to the study	106	40.0%
	c. A document and a process by which a study participant voluntarily confirms his or her willingness to participate in particular research, after having been informed of all aspects of the research that are relevant to the study. *	81	30.6%

*Correct answer

The student's attitudes toward research.

About 41.8% of students strongly agreed that engaging medical students in research are important. (37.4%) strongly agreed that studying research methodology course is important. Additionally, (38.3%) agreed that understanding research increases the burden of the overloaded curriculum on medical students. When asked about whether medical students can plan, conduct research without supervision, (33.2%) disagreed, and only (5.8%) strongly agreed. (30.4%) students agreed that research participation should be compulsory to all medical students. (39.3%) also agreed that understanding statistics is important to analyze and interpret data. (30.7%) agreed that research is interesting and (38.9%) that they have learned most when undertaking research. (Table 3)

Table 3
The student's attitude toward research

Items	Strongly agree F (%)	Agree F (%)	Not determined F (%)	Disagree F (%)	Strongly disagree F (%)
Engaging medical students in research is important	110(41.8)	90 (34.2)	31 (11.8)	25 (9.5)	7 (2.7)
Studying research methodology course is important	98(37.4)	96(36.6)	42(16)	17(6.5)	9(3.4)
Understanding research increases the burden of the overloaded curriculum on medical student	76(29.1)	100(38.3)	47(18)	24(9.2)	14(5.4)
Medical students can plan, conduct research without supervision	15(5.8)	35(13.5)	34(20.8)	86(33.2)	69(26.6)
Research participation should be compulsory to all medical students.	48(18.7)	78(30.4)	67(26.1)	39(13.2)	25(9.7)
Understanding statistics is important for me to analyze and interpret data	93(36.2)	101(39.3)	39(12.8)	20(7.8)	10(3.9)
I am very interested in research	35(13.5)	80(30.7)	59(22.6)	45(17.2)	42(16.1)
I have learned most when undertaking my research	57(21.8)	102(38.9)	49(18.7)	27(10.3)	27(10.3)

Regarding the distribution of medical students in Hadhramout University on the Knowledge and attitude Scale. The overall mean scores of students on knowledge and attitude were 2.72 ± 1.22 and 27.66 ± 5.31 respectively. The majority of students had low Knowledge scores (72%). However, the majority of them had a positive attitude toward research (90.9%). (Table 4)

Table 4
Knowledge and attitude Scale

Item		Frequency	Percent
Knowledge	High	73	28.0%
	Low	188	72.0%
$(\text{mean} \pm \text{SD})$			2.72 ± 1.22
Attitude	Positive	240	90.9 %
	Negative	24	9.1 %
$(\text{mean} \pm \text{SD})$			27.66 ± 5.31

The present study found that there was a significant difference between sex in terms of knowledge score with Female students (2.99 ± 1.24) having greater knowledge than males (2.45 ± 1.16) (P-value 0.000), but there was no significant difference between sex regarding attitude score (P-value .064). (Table 5)

Table 5
Gender variation in Knowledge and attitude score regarding Research among medical students

Knowledge and attitude	Male	Female	T-value	P-value
Knowledge score mean (SD)*	2.45 ± 1.16	2.99 ± 1.24	-3.613	.000**
Attitude score mean (SD)	27.06 ± 5.55	28.27 ± 5.01	-1.860	.064
*SD = Standard Deviation				
**Significant at p-value <0.05				

There was no significant difference regarding knowledge of and attitude to research concerning academic years (as p-value .243 and .719 respectively). (Table 6)

Table 6. Analysis of variance of knowledge and attitude score regarding research among medical students by academic years

Item	Academic years			T value	P-value
	Fourth-year	Fifth-year	Sixth year		
Knowledge score mean (SD)	2.87±1.09	2.65±1.21	2.57±1.40	1.422	.243
Attitude score mean (SD)	27.62±5.56	27.37±4.96	28.05±5.39	.330	.719

The students' practice toward the research process. (48.3%) frequently participated in developing a research proposal,(45%) sometimes conducting research work, (57%) frequently participated in data collection, (39.2%) frequently participated in data entry, (37.2%) participated in statistical analysis, and (41.2%) sometimes participated in writing the research final report, (42.2%) never presented a research paper in a conference or college meeting, (56.4%) never participated in publishing a research paper in a journal, (39.8%) sometimes calculated the sample size, (40.1%) never designed tables and graphs correctly. (Table 7)

Table 7 The student's practice toward research

Items	Frequently	Sometimes	Never
	F (%)	F (%)	F (%)
I participated in developing a research proposal	127(48.3)	114(43.3)	22(8.4)
I participated in conducting research work (in general)	99(38.1)	117(45)	44(16.9)
I participated in the data collection stage	149(57)	79(30.9)	31(12.1)
I participated in data entry using a statistical software program	102(39.2)	79(30.4)	79(30.4)
I participated in the statistical analysis of the obtained data	98(37.5)	97(37.2)	66(25.3)
I participated in writing the research final report	82(31.3)	108(41.2)	72(27.5)
I presented a research paper at a conference or my college meeting	63(24.4)	86(33.3)	109(42.2)
I participated in publishing a research paper in a journal	43(16.7)	69(26.8)	145(56.4)
I calculated the sample size correctly	87(33.3)	104(39.8)	70(26.8)
I designed tables and graphs correctly	61(23.3)	96(36.6)	105(40.1)

The varied barriers to conducting research. Time was seen to be the most significant barrier to pursuing research (78.4%) as only (24.6%) of participants agreed that there was adequate time set aside. While lack of training statics (75.9%) ranked second and curriculum overload (73.4%) came in the third majority. Furthermore, only (28%) of Participants disagreed that there was a lack of a competent supervisor whereas (72%) agreed that. Another minor perceived barrier agreed by the students was inadequate training in research methodology (66.5%), poor access to the internet (61.5%), and no interest in research (57.1%). (Table 8)

Table 8 The student's barriers to research

Items	Yes	No
	F (%)	F (%)
Lack of a competent supervisor	188(72)	73(28)
Lack of fund	152(61.5)	95(38.5)
Lack of personal computer	115(44.4)	144(55.6)
Lack of training in statistics	198(75.9)	61(24.1)
Lack of time	203(78.4)	56(21.6)
Curriculum overload	188(73.4)	68(26.6)
Lack of institutional motivation	182(70.8)	75(29.2)
Lack of training in research methodology	173(66.5)	87(33.5)
Difficulty in formulating the research questions and objectives	122(47.3)	137(52.7)
No interest	149(57.1)	122(42.9)
Shortage of references	156(59.3)	107(40.7)
Poor Libraries	179(67.7)	84(32.3)
Poor access to the internet	161(61.5)	101(38.5)

The student's relevance of the undergraduates' research. About 45.8% of students frequently addressing a common problem in their country through research, a high percentage (61.2%) of students sometimes addressing feasible sample in research, (44.1%)of students sometimes had enough time to complete research, (46.7%) of students sometimes had a budget to pay their research,(43.5%) of students had never published their researches in journals. (Table 9)

Table 9
The student's relevance of the undergraduates 'research

Items	Frequently	Sometimes	Never
	F (%)	F (%)	F (%)
I am addressing a common problem in my country	120(45.8)	110(42)	32(12.2)
I am addressing feasible sample	68(26.7)	156(61.2)	31(12.1)
The time that I planned is enough to complete the research work and obtain valid data	67(26.2)	113(44.1)	76(29.7)
The budget of my research is within my ability to pay.	81(31.5)	120(46.7)	56(21.8)
My researches are published or accepted for publication in peer-reviewed journals	53(20.5)	96(37.1)	110(43.5)

The student's suggestions to improve engagement of undergraduates in research. An (84.9%) of students suggested that specifying sessions for supervisor research meetings must be considered, (73.9%) of students suggested performing Research methodology course, (76.2%) of students suggested to specify enough time in the curriculum plan to conduct research, (71.4%) of students suggested extra training in advanced statistics, (76.5%) of students suggested providing sources for financial support. Other suggestions were provided by the student. For example, some suggested a course on how to publish research in a journal other saw that research should be done in post-graduation due to curriculum overload. (Table10)

Table 10
The student's suggestions to improve engagement of undergraduates in research

Items	Important	Not important
	%	%
Allocate specific sessions for supervisor research meetings	83.0	14.7
Teaching Research methodology course	72.8	25.7
Specify enough time in the curriculum plan to conduct research	74.7	23.4
Provide extra training in advanced statistics	69.8	27.9
Provide sources for financial support	75.1	23.0
Other suggestion:		
1. Course on how to publish our research in a journal.		
2. The research should be done for postgraduate due to curriculum overload		
3. Publish the best research in HUCOM journal.		

Discussion

This study addresses medical students' knowledge, attitude, and practices regarding research in medical colleges of Hadhramout University. Specifically, this study has embarked upon assessing the knowledge of medical students regarding research concepts and their attitudes toward research. Additionally, it aims to describe the variations in research practices among medical students and to identify their perceived barriers to conducting research. Finally, the study sought out to suggest recommendations for best research practices among medical students at Hadhramout University.

In the present study knowledge about research was explored. The majority of students understood the concept of research, sampling representation, and descriptive statistics. This finding was similar to research done by Louise N. Burgoyne et al. which found that the largest proportion of students in the study understood the term 'research'⁽²⁰⁾. However, students in our study couldn't understand the concepts of inferential statistics, informed consent, or the need for sampling in methodology. Majumdar A et al. found similar results where knowledge in areas related to data entry and analysis software and scales of measurement Performances in study designs and sampling techniques were also not satisfactory. ⁽²⁴⁾

The result of this study revealed that the vast majority of medical students had a positive attitude toward research. However, the majority of them had low knowledge scores. This finding is inconsistent with the findings of several studies. ^(2, 23, 24) Research has been done previously showing that students with a prior degree or research experience have better attitudes towards research (Siemens et al, 2010). ⁽¹⁹⁾ On top of that, students who had a high attitude toward science will tend to be highly involved in research activities (Pruskil et al, 2009) ⁽²⁵⁾, and teaching research methodology improve the student's attitude toward research (Vujaklija et al, 2010). ⁽²⁶⁾ Since conducting research is mandatory in Hadhramout University such findings are understandable.

In the current study; female students had greater knowledge than males while the attitudes to research did not differ. Similar results were obtained by Amin et al. ⁽²⁾ and Memarpouret a study. ⁽²²⁾ However, studies in Pakistan and the USA revealed male medical students showed a better attitude to research than their female peers. ^(18, 27, 28, 29) The differences may be related to data collection from different populations, variations in sample size ⁽²⁸⁾, and the increasing of acceptance female students in our medical universities.

When addressing the research practice more than three-quarters of participants reported that they have participated in research activities. This may be due to the mandatory community research course done in the early years of scientific education, and a similar policy appears to be implemented in many universities. ^(2, 28) Considerations of research in the curriculum vary across countries and universities. ^(17, 30) it was documented that involved of the medical student to research in further reformed curriculum. ⁽²⁵⁾ Vujaklija et al., Khan et al., and Wang and Guo stated that assessed projects and mandatory research improve experience and training in research, have a positive impact on students, and motivate them to undertake further research in the future. ^(26, 27, 31)

The student perceived barriers in conducting research were explored. Time was seen to be the most significant barrier to pursuing research. Followed by a lack of training statics, curriculum overload, lack of a competent supervisor, poor access to the internet, and lack of competent supervisor. Similar results have also been reported in other studies. (2, 19, 22, 32) Lack of time came up as an important barrier, and students not interested in conducting research often identified time constraints as the reason. (32) The finding revealed that 74.7% of students recommended specifying enough time in the curriculum plan to conduct research.

The student pointed out several recommendations for improvement of undergraduate engagement in research with the allocation of the specific session for research supervisor meetings having the highest recommendation. Also, they recommended being provided with extra training in advanced statistics and the provision of financial support. These recommendations were addressed by several studies. The limitation of this study includes the fact that our questionnaire did not target a full assessment of the students' knowledge. Although we exclusively used closed-ended questions. As well as, we only assessed the encountered barriers

Conclusions

This study concludes that the vast majority of medical students had a positive attitude toward research. However, the majority of them had low knowledge scores. Also, some barriers need to be evaluated to improve the involvement of students in research activities. Time was seen to be the most significant barrier to pursuing research, student suggested that specifying sessions for supervisor research meetings must be considered, most students suggested to specify enough time in the curriculum plan to conduct research they also suggested extra training in advanced statistics. Additionally, we recommend encouraging faculty to take an active interest in all aspects of student research design, data collection, statistical analysis, and preparation of scientific manuscripts. Further researches should be done to find out the motives of research conduction, which would encourage students to take part in clinical research can be of benefit. Studies like ours should be conducted regularly because they provide an assessment tool for all efforts exerted to increase student participation in research.

Abbreviations

ANOVA Analysis Of Variance

CRF Clinical Research Fellowship

HUCOM Hadhramout University College Of medicine

NIH National Institutes of Health

SPSS Statistical Package for Social Science

Declarations

Ethics approval and consent to participate

The research proposal was approved by Hadramout University College of Medicine (HUCOM) department of community medicine. The objectives of the study were clarified for the participant. We ensured that the information of those who agreed to participate in this study was kept in the strictest confidence and used for the benefit of the community. Students give their consent to participate verbally.

Consent for publication

Not Applicable

Availability of data and materials

All data sets are available and can be shared by requesting it from the corresponding author by email.

Competing interests

Authors declared that there is no conflict of interest.

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Authors' contributions

Bin-Ghouth A and Batarfi SA contributed in research conceptualization, methodology, data analysis and writing the first and final report. Abonemi AH, Maknoon AS, Alkhanbashi AS, Khred Alwi A, Bawazer Abdulla A, Ba-Jaber Abdulla A, Resq Abdulla A, Maknoon E A, Badheeb Kh A, Maha Salah Alkathiri MA, Ba-Rbaa MA, Dhaiban M, Omar Ali Bagumaish OA, Basalasel OS, Ba-rady RA, Algadry S and Bazanboor TO contributed in data collection, analysis and reviewing the first draft. All authors have read and approved the manuscript

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