Knowledge, Attitude and Practices towards Medical Research among Postgraduate Medical Doctors Working at the Teaching Hospital in Al Karkh State in Baghdad, Iraq

A Cross-Sectional Study

Hind Sarmed Ehsan MB ChB**, Zainab Ahmad Fawzi** FICMS(FM)**, Reem Jameel Hasan** FICMS(FM)

ABSTRACT

Background: Medical research is vital for gaining information in the fields of health and medicine

Objectives: To assess the knowledge, attitudes, and practices among postgraduate medical doctors concerning the medical research in Iraq to determine the obstacles.

Method: A descriptive cross-sectional study was conducted on 250 participants (postgraduate medical doctors) who were working in the teaching hospitals at Al Karkh state in Baghdad, Iraq, from the 1st of February to the end of July 2024 regarding their medical research.

Results: Out of 250 participants, the knowledge regarding medical research was (22.8%) good, (71.6%) moderate and (5.6%) poor. There was an association between knowledge and the workplace. Their attitude (96.8%) was positive and their practice (83.2%) was good. There was a significant association between good practice toward medical research with male (88.8%) and surgical specialty (88.3%). The most frequent obstacles mentioned were lack of time (89%), personal commitments (85.4%), inadequate facilities for research (53.5%) and inadequate mentors/assistants (51.2%). The majority of obstacles were reported to be statistically significant among participants, except inadequate mentors and inadequate facilities

Conclusions: The majority of participants had a moderate level of knowledge regarding medical research, with positively affected by the workplace. The attitude was positive in the vast majority of participants, with no significant influence by socio-demographic parameters. While the practice was good, it was positively influenced by male and surgical specialties. Most obstacles are a lack of time, personal commitments, inadequate facilities and inadequate mentors/assistants.

Keyword: Knowledge, Attitude, Practice, Postgraduate medical doctors, Research.

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Research experience is crucial to the physician's evidence-based practice because it teaches skills such as literature searching, data collection and analysis and critical evaluation of evidence. Training in research abilities and research experience early in a career has been linked to sustained professional academic work, which may help residents make career selections [(1)].

In this regard, medical research provides benefits in the form of new advances in therapies and diagnostic tools. Evidence-based medicine is the methodical discovery, evaluation, and application of current research findings as the foundation of therapeutic decisions [(2)].

Today's doctor should be knowledgeable about literature search procedures to determine the appropriateness of various published studies. Thus, every clinician should seek to contribute to the development of evidence through study [(3)].

It is critical to pique students' interest in research so that high-quality research can be undertaken to improve the national and global medical health care systems [(4)]. This is required since modern medical knowledge is progressing at a rapid pace, and any medical doctor must keep up to date to benefit society as a whole. It also gives students an academic challenge and an opportunity to learn on their own [(5)].

Previous studies in many nations attempted to assess doctors' attitudes, analyze doctors' practices, and identify doctors' barriers and motivations for medical research. It has been reported that doctors' participation in research activities would assist them in developing research abilities, hence improving patient care. As a result, adequate information and reasoning skills, as well as the development of a positive mindset, are essential for conducting the research[(6-8)].

According to studies, gaining research experience during residency and publishing the results increases the likelihood of acceptance into highly competitive residency programs and improves the research output of residents[(9)].

Medical research in recent decades has been laying the understructure for innovations in clinical practice and patient care through evidence-based medicine. Therefore, it is vital to assess medical professionals' knowledge, attitudes and practices in the field of medical research, in addition to the main obstacles in conducting medical research.

Methods

A descriptive cross-sectional study was carried out among 250 participants (postgraduate medical doctors) working in teaching hospitals at Al Karkh State in Baghdad-Iraq (Al-Kadhimiya Teaching Hospital, Central Teaching Hospital of Pediatric and Al-Yarmouk Teaching Hospitals) during six months from the 1st of February 2024 to the end of July 2024. The data collection was done through daily working hours, and spending four hours/day, for 3 days/week.

Inclusion criteria: This study included a sample size of 250 Iraqi doctors who were working in teaching hospitals. The applied questionnaire consisted of the following parts (Appendix 1).

The first part pertained to the socio-demographic information of the doctors, which includes: age, sex, marital status, field of specialty, postgraduate (board) stage and finally workplace.

The second part had questions related to knowledge (which were covered by a total of 10 questions), attitude (which was covered by a total of 8 questions) and practices (covered by a total of 6 questions) about research methodology.

The third part of the questionnaire was related to the barriers faced by the doctors in conducting medical research, which were divided into institutional and personal reasons. The reliability (Cronbach's alpha) on those questions was done. In addition to analyzing statistically the relation between the socio-demographic information with knowledge, attitude and practice of the participants, in addition to barriers, were done.

Exclusion criteria: Medical students undergraduate specialists, specialists' doctors who work in other hospitals.

Ethical considerations: Formal approvals were obtained from scientific committee of the Arab Board of Health & Specializations (No.1902 in 2/10/2024). An official permission was obtained from the Directorate of health of Baghdad and from the included medical institutes. Verbal consent was taken from all participants after explaining the aim of the study, and only those who were willing to participate in the study were included (Appendix 2).

Statistical Analysis: Data was analyzed using SPSS (Statistical Package for Social Science) version 25. The descriptive statistics were presented using tables and graphs measuring frequencies, percentages. The chi-square test was used to find out significance of the association between related categorical variables. A p-

value of less than or equal to 0.05 was considered a determination point for significance. Cronbach- alpha on those questionnaires was done, (Table 1)[10].

Regarding the knowledge section, each questions were answered with a correct answer or an incorrect answer. A correct answer was assigned a score of '1', while an incorrect answer '0'. The cumulative scores were categorized into three levels of proficiency: a score of 75% was classified as good, scores ranging from 74% and 50% were considered moderate, and scores below 50% were deemed poor[11].

For attitude assessment, using agree/ disagree responses with binary response scoring. '1' for correct answer, '0' for incorrect answer and classification based on the median value, where if the data form of attitude is (>4), it was considered a positive level[12].

Regarding the practices, a two–point rating scale issued 0 for (no) answer, 1 for (yes) answer. If the participant gets a score above 60% of the total score in the data form of practices, it is considered a good level[13].

Results

The results of reliability (Cronbach alpha)[10] on those questionnaires were found, (Table 1). The assessment on each question was done in appendix 1.

Table 1: The reliability for knowledge, attitude and practice questions.

Cronbach's Alpha	Number of Items
0.626	27

Tool notes: Cronbach alpha for interpretation if it is > 0.9 = excellent, > 0.8 = good, > 0.7 = acceptable, > 0.6 = questionable, > 0.5 = poor and finally less than 0.5 = unacceptable[10].

In the sociodemographic current study included 250 participants, 125 males and 125 females, mean age of 33.13 (±4.8) years. The included participants were of medical specialty 58.8% and surgical specialty 41.2% majority were married 80%. The workplaces of included participants were distributed between AlKadhmia teaching center (36.4%), Al Yarmouk teaching center (35.2%) and Al Eskan teaching center (28.4%), (Table 2).

Overall percentage of knowledge among participants was good (22.8%), moderate (71.6%), and poor (5.6%), **(**Figure 1).

Figure 1: Knowledge among participants.

Regarding the association between knowledge about medical research and sociodemographic characteristics, revealed significant association was revealed between knowledge and workplace (p value = 0.004), (Table 3).

The percentage of the attitude among participants was positive 96.8% and negative 3.2% towards medical research, (Figure 2).

While assessment of the association between attitude towards medical research and sociodemographic characteristics revealed no significant associations, (Table 4).

In the assessment, the percentage of practice among included participants was good 83.2%, and poor 16.8%, towards medical research, (Figure 3).

The association between practice of medical research and sociodemographic characteristics revealed a significant association between practice with gender

and specialty of participants; p value 0.018 and 0.048, respectively, (Table 5).

Assessment of obstacles or barriers in medical research includes participants revealed that the most frequent obstacles were lack of time, personal commitments and inadequate facilities for research. While most barriers were reported statistically significant associations among the participants in the research except inadequate mentors and inadequate facilities (no significant difference) for research, (Table 6).

Table 2: Distribution of participants by sociodemographic characteristics.

Age (years)	Mean (± SD)	33.13 (±4.8)	
	Range	28 – 36	
		No.	%
Sex	**Male**	125	50
	Female	125	50
Specialty	**Medical**	147	58.8
	Surgical	103	41.2
Stage	**Primary**	19	7.6
	Second	71	28.4
	Third	99	39.6
	Fourth	52	20.8
	Fifth + Final	9	3.6
Marital status	**Married**	200	80
	Single	50	20
Workplace	**Al-Yarmouk teaching center**	88	35.2
	Al-Kadhmia teaching center	91	36.4
	Al Eskan teaching center	71	28.4
Total		**250**	**100**

Table 3: Association between knowledge about medical research and sociodemographic characteristics.

		Good No. %	Moderate No. %	Poor No. %	Total No. %	P value
Sex	**Male**	33(26.4)	86(68.8)	6(4.8)	125(50)	0.371
	Female	24(19.2)	93(74.4)	8(6.4)	125(50)	
Specialty	**Medical**	27(18.4)	110(74.8)	10(6.8)	147(58.8)	0.105
	Surgical	30(29.1)	69(67)	4(3.9)	103(41.2)	
Stage	**Primary**	5(26.3)	12(63.2)	2(10.5)	19(7.6)	0.897
	Second	15(21.2)	51(71.8)	5(7)	71(28.4)	
	Third	22(22.2)	71(71.7)	6(6.1)	99(39.6)	
	Fourth	14(26.9)	37(71.2)	1(1.9)	52(20.8)	
	Fifth	1(16.7)	5(83.3)	0(0)	6(2.4)	
	Final	0 (0)	3(100)	0(0)	3(1.2)	
Marital status	**Married**	47(23.5)	140(70)	13(6.5)	200(80)	0.364
	Single	10(20)	39(78)	1(2)	50(20)	
Workplace	**Al-Yarmouk teaching center**	23(26.1)	55(62.5)	10(11.4)	88(35.2)	**0.004**
	Al-Kadhmia teaching center	13(14.3)	75(82.4)	3(3.3)	91(36.4)	
	Al-Eskan teaching center	21(29.6)	49(69)	1(1.4)	71(28.4)	

Tool notes: Using Chi-square test. P-value more than 0.05=not significant, equal or less than 0.05= significant

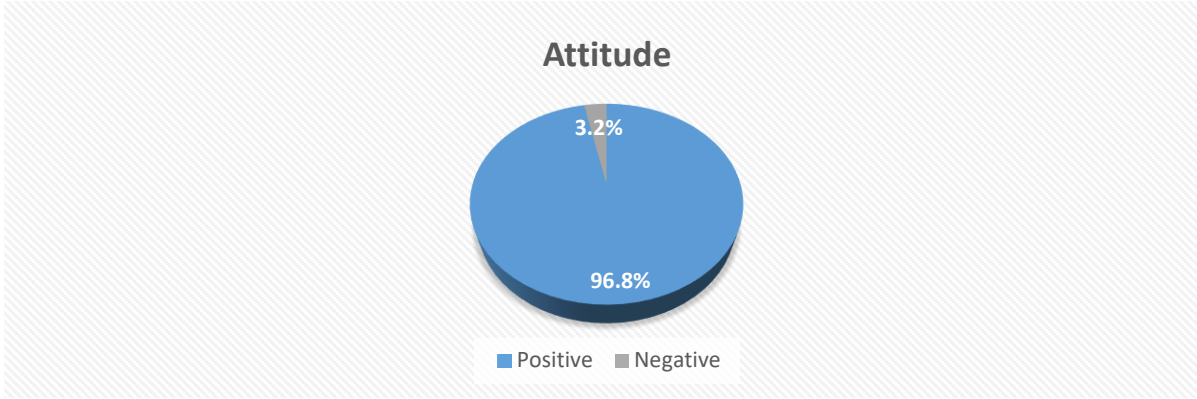

Figure 2: Attitude among participants.

Table 4: Association between attitude towards medical research and sociodemographic characteristics.

		Positive No. (%)	Negative No. (%)	Total No. (%)	P value
Sex	**Male**	122(97.6)	3(2.4)	125(50)	0.472
	Female	120(96)	5(4)	125(50)	
Specialty	**Medical**	142(96.6)	5(3.4)	147(58.8)	0.829
	Surgical	100(97.1)	3(2.9)	103(41.2)	
Stage	**Primary**	18(94.7)	1(5.3)	19(7.6)	0.955
	Second	69(97.2)	2(2.8)	71(28.4)	
	Third	95(96)	4(4)	99(39.6)	
	Fourth	51(98.1)	1(1.9)	52(20.8)	
	Fifth	6(100)	0(0)	6(2.4)	
	Final	3(100)	0(0)	3(1.2)	
Marital status	**Married**	194(97)	6(3)	200(80)	0.719
	Single	48(96)	2(4)	50(20)	
Workplace	**AL-Yarmouk center**	85(96.6)	3(3.4)	88(35.2)	0.264
	Al-Kadhmia center	90(98.9)	1(1.1)	91(36.4)	
	Al Eskan center	67(94.4)	4(5.6)	71(28.4)	

Tool notes: Using Chi-square test. P-value more than 0.05=not significant, equal or less than 0.05= significant

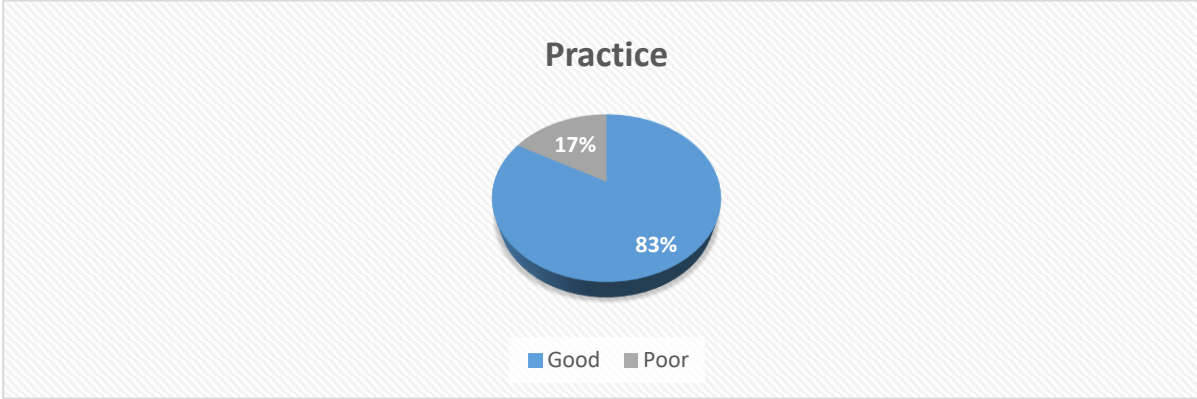

Figure 3: Practice in medical research among participants.

Table 5: Association between practice of medical research and sociodemographic characteristics.

		Good No. (%)	Poor No. (%)	Total No. (%)	P value
Sex	**Male**	111(88.8)	14(11.2)	125(50)	**0.018**
	Female	97(77.6)	28(22.4)	125(50)	
Specialty	**Medical**	117(79.6)	30(20.4)	147(58.8)	**0.048**
	Surgical	91(88.3)	12(11.7)	103(41.2)	
Stage	**Primary**	15(78.9)	4(21.1)	19(7.6)	0.757
	Second	60(84.5)	11(15.5)	71(28.4)	
	Third	80(80.8)	19(19.2)	99(39.6)	
	Fourth	44(84.6)	8(15.4)	52(20.8)	
	Fifth	6(100)	0(0)	6(2.4)	
	Final	3(100)	0(0)	3(1.2)	
Marital status	**Married**	169(84.5)	31(15.5)	200(80)	0.272
	Single	39(78)	11(22)	50(20)	
Workplace	**Al-Yarmouk center**	72(81.8)	16(18.2)	88(35.2)	0.161
	Al-Kadhmia center	72(79.1)	19(20.9)	91(36.4)	
	Al Eskan center	64(90.1)	7(9.9)	71(28.4)	

Tool notes: Using Chi-square test. P-value more than 0.05=not significant, equal or less than 0.05= significant.

Table 6: Assessment of obstacles in medical research among participants.

Types of reasons		**Frequency No. (%)**	**P value**
Institutional reasons	Lack of interest by faculty	97 (38.2)	**3.97×10^{-4}**
	Inadequate mentors/assistants	130 (51.2)	0.527
	Lack of research curriculum	63 (24.8)	**4.42×10^{-15}**
	Inadequate financial support	98 (38.6)	**6.37×10^{-4}**
	Lack of time	226 (89)	**2.24×10^{-37}**
Personal reasons	Lack of interest	69 (27.2)	**1.41×10^{-12}**
	Learning takes up a lot of time	63 (24.8)	**4.42×10^{-15}**
	Inadequate facilities for research	136 (53.5)	0.164
	Personal commitments	217 (85.4)	**2.67×10^{-31}**

Tool notes: Using Chi-square test. P-value more than 0.05=not significant, equal or less than 0.05= significant.

Discussion

Medical research in recent decades has been laying the understructure for innovations in clinical practice and patient care through evidence-based medicine. Therefore, it is vital to assess medical professionals' knowledge, attitudes and practices in the field of medical research, in addition to the main obstacles in conducting medical research.

Regarding sex, our participants were equally divided, 50% males and 50% females. Different results were reported by Saud AlEnazi in Saudi Arabia 53%[6], Khot in India 57.3%[14] and Abdulwahid in Iraq 69.3%[15] who reported that participants were males. While Khalaf in Bahrain[9] reported that 68% of participants were females, which could explain this discrepancy across countries.

The mean age of participants was 33.13 (± 4.8) years. Similar age was reported by Shrestha in Nepal[16], a younger age was reported by Saud AlEnazi in Saudi Arabia[6]

while an older age was reported by Khalaf[9] in Bahrain.

In our study, participants were of medical specialty 58.8% and surgical specialty 41.2%. Similarly, Fayad in Lebanon[17] reported that 40.1% of the postgraduate participants were trainees in medical specialties and 25.8% were surgical trainees. The involvement of resident doctors in the medical branch nearly more common than in the surgical branch and the presence of resident surgical specialists in the operating room most of the time might explain this discrepancy.

The most frequent stages included were the third stage 39.6%, the second stage 28.4%, the fourth stage 20.8%. The distribution of stages is different across countries due to different administrative structures in each country. Saud AlEnazi in Saudi Arabia[6] reported that 61.3% of participants were junior while 36.9% were seniors. Mandhare in India[18] reported that among included participants 7% were final year, 32% were of second year, and 60% were first year resident doctors.

The majority of participants included were married 80%. This came in agreement with Shrestha in Nepal 66.3% [16] and Saud AlEnazi in Saudi Arabia 57.8%[6] of participants were married. Contradicting results were reported by Al Mohtasib in Jordan[19] as 87.3% of participants were single. This can be explained by the inclusion of a large number of junior postgraduate doctors and larger number of included participants.

Knowledge regarding medical research was good 22.8%, moderate 71.6% and poor 5.6%. Similar findings were reported by Mandhare in India[18].

Attitude towards medical research was positive in the vast majority of participants 96.8%. This was consistent with the results of Khalaf in Bahrain[9], Muhammad in Nigeria[20] and AlMohtasib in Jordan[19], who reported that physicians had a positive attitude towards conducting research.

AlMohtasib in Jordan[19] reported that most participants perceive medical research as a facilitator of better health services and patient care 79.9%, while 64.2% believe that research activities should be mandatory during clinical training.

Regarding practice in medical research was good in the majority of participants 83.2%. Different results with poorer quality of practice were reported by Mandhare in India[18]. This can be attributed to a higher workload and more obstacles encountered, especially financially.

The most frequent obstacles or barriers mentioned were lack of time 89%, personal commitments 85.4%, inadequate facilities for research 53.5% and inadequate mentors/assistants 51.2%. Consistent with our results, Saud Al Enazi /Saudi Arabia[6] reported that the most frequent obstacles against conducting research were lack of time 71.9%, inadequate facilities for research 69.6%, lack of a research curriculum 70.3%, and personal commitments 65%. Shrestha in Nepal[16] reported that the major barriers for conducting research were a lack of adequate funding 72.3%, a lack of a well-equipped laboratory 65.1%, and non-inclusion of research as a subject in the medical curriculum 62.7%.

On the other hand, Abdul Wahid in Iraq[15] reported that around half of the participants addressed main obstacles to medical research as shortage in financial and moral support, shortage in research centers and in accuracy in the routine documentation processes. Inclusion of other medical specialties as dentistry and pharmacy in addition to inclusion of specialists and consultants could explain this different finding.

In the current study, there was significant association between knowledge and workplace. While there was significant, association between practice and both of sex and specialty of participants. It showed that male and surgical specialty had positively affected the practice. Similarly,

Saud Al Enazi in Saudi Arabia[6] reported significant association between practice of medical research and sex of the participants.

In conclusions, most participants had a moderate level of knowledge about medical research, with strengths in understanding research aims, group differences, and of p-value. Knowledge was not influenced by age, sex, specialty and training stage, but was positively linked to the workplace. Attitudes were generally positive, with most agreeing on the value of ongoing research, its inclusion in postgraduate exams and their intent to conduct future research. Attitude showed no link to sociodemographic factors.

Research practice was good with many having experience in protocol, posters and workshops. Practice was higher among males and those in surgical specialties, but not influenced by age, residency, stage, or workplace. Common obstacles included lack of time, personal commitments, limited facilities and insufficient mentorship.

Based on the current study results, the recommendations are to conduct larger-scale studies on postgraduate doctors' research knowledge, attitude and practice. Authorities should develop comprehensive plans to address key obstacles and enhance public and professional awareness through the media.

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