Original Research Article

Knowledge attitudes practice and barriers toward conducting research in emergency residents

Abstract

Background: In medical institutes, research is a significant part of postgraduate education. Only a small number of emergency residents were able to publish their study, though. According to reports, some of the barriers to conducting research include a lack of cash and time, inadequate infrastructure, inadequate research expertise and technique, and poor research beliefs.

Objective: The purpose of this study was to assess the clinical residents' knowledge, attitudes, practices, and impediments to conducting research.

Method: The study was conducted in Riyadh, Saudi Arabia, and involved the King Saud Medical City (KSMC), King Salman Hospital, Aliman General Hospital, and Imam Abdulrahman Alfaisal Hospital. The research was a cross-sectional descriptive study. Data about residents was acquired between February 2023 and April 2023. In comparison to other hospitals, KSMC is a notable university hospital in Saudi Arabia with more years of postgraduate training experience. Only ambulatory emergency residents were recruited for this investigation. Data was gathered using a structured questionnaire that had been evaluated beforehand. The survey was modified from a verified survey created by Vodopivec et al. Many developing nations employ the tool for comparable surveys.

Results: 124 residents participated in the study. The participant's background characteristics are displayed in Table 1. The participants' average age was 27. Over 30 was the age range for 69.3% of the participants. Men made up 71.7% of the competitors. Only 22.1% of postgraduate students reported having such training. Additionally, 28% of them had publications, and 54.4% had some experience in research. Research training received during graduate studies had a greater favorable impact on research practice than research training received during undergraduate schooling (p 0.02).

Conclusion: Although the participants had a favorable attitude toward research, their practice was insufficient due to their lack of understanding of it. The gap between a high level of optimism, limited research understanding, and scant research practice need to be filled. Perhaps by enhancing their expertise

while pursuing graduate courses, this can be accomplished. To advance residents' knowledge and research practice, it is advised that they have access to improved financial support and research mentorship.

Introduction

Concerns regarding scientific research have grown in both developed and developing countries because medical research has the potential to improve medical treatment (1). Current knowledge of scientific ideas and procedures is essential for doing research. Residents should be educated on the methods employed in research since they will be using evidence-based medicine as future professionals. Theories and hypotheses can be confirmed or disproved through the deliberate process of scientific inquiry (2).

Disease diagnosis, treatment development, and prevention are all impacted by medical research. It has led to changes in the legislation governing healthcare projects (3). To further medical knowledge, researchers may conduct basic, applied, or translational medical research (4). The literature claims that knowledge, attitude, experience, and research barriers are crucial factors influencing research (5–8).

Residents at the hospitals took involved in research to a lesser level because of their numerous responsibilities, lack of time, and little knowledge with research methodology. When these residents begin their training program, their ability to develop a protocol or proposal is below average. Some regulatory agencies provide financial aid for resident research. Despite the regulatory bodies and institutes offering the required facilities, there is a shortage in both the quantity and quality of residents' research. Possessing sufficient information and a favorable outlook on research are important components in their capacity to carry out further research. This study aimed to assess the research knowledge and barriers of emergency residents toward research conduction.

Method

The study was conducted in Riyadh, Saudi Arabia, and involved the King Saud Medical City (KSMC), King Salman Hospital, Aliman General Hospital, and Imam Abdulrahman Alfaisal Hospital. The research was a cross-sectional descriptive study. Data about residents was acquired between February 2023 and April 2023. In comparison to other hospitals, KSMC is a notable university hospital in Saudi Arabia with more years of postgraduate training experience.

Only emergency residents were recruited for this investigation. Residents with varying medical school backgrounds join graduate training at numerous public hospitals and colleges across the nation. Faculty advisers are assigned in some of the departments to assist the residents with their research. In the departments where research is required, residents are allowed a one-month research leave while undergoing training.

Definitions

Knowledge: The study participants' understanding of research principles or the methods used in scientific inquiry, statistics, literature searches, and critical evaluation of the available evidence (9).

Attitude: How the participants feel about statistics, the process of scientific investigation, literature reviews, and the evaluation of the evidence (9)

Research methodology: The ways in which the study subjects' actions revealed their knowledge and views (9). In this study, "paper presentation and research publication" served as a proxy for practice.

Score on the knowledge test: A knowledge score of 50 out of 100 (50%) is considered "average," and a score over this mark is considered "above average." Knowledge score 'below average' is defined as knowledge score less than 50%.

Data analysis: Data was gathered using a structured questionnaire that had been evaluated beforehand. The survey was modified from a verified survey created by Vodopivec et al. Many developing nations employ the tool for comparable surveys (10). An expert researcher examined the questionnaire before it was pre-tested on 10 emergency residents. The questionnaire's level of difficulty and idea flow were also examined by the inhabitants. Following the feedback from the

pilot study, some of the questionnaire's items underwent minor revisions. Resident profile, knowledge and attitude, research habits, and barriers were the four sections of the questionnaire. Additionally, the questionnaire included demographic information (age, gender, marital status, year of residence, and style of medical school education).

Multiple-choice questions were used to test knowledge. Likert Scale responses for questions about attitudes and barriers included strong agreement, agreement, neither agreeing nor disagreeing, disagreement, and strongly disagreement. 'Yes' or 'No' responses were required in response to questions about research methodology. Using ten questions, information on the participants' knowledge was acquired. Each correct response had a value of 1, while each incorrect response had a value of 0. Data on study methodology and obstacles were gathered using the same scoring technique.

Data analysis: Data were manually cleansed and proofread to ensure the data's quality. They were then entered into the SPSS 24 software. A composite score (total or mean) from the five Likerttype questions was used to determine the Likert scale items. The mean and standard deviations were thus included in the interval scale analysis. Using means, standard deviations, and a single sample t-test with a 95% confidence interval, attitude and barrier questions were evaluated. The frequency, proportions, mean, median, and standard deviation of socio-demographic data were examined. Frequencies and proportions were used to analyze the knowledge and practice questions. When values in the table fell below 5, Fisher's exact value was utilized to look for statistical correlation. In cases where differences were statistically significant, a P value of 0.05 was used.

First, This study was approved by the Institutional Review Board (IRB) of King Saud Medical City (KSMC) number H1RI-04-Apr23-01

Results

124 residents participated in the study. The participant's background characteristics are displayed in Table 1. The participants' average age was 27. Over 30 was the age range for 69.3% of the participants. Men made up 71.7% of the competitors. The percentage of single participants was 79.03%. The majority of the respondents were residents who were just beginning their stay.

The participants in the study had an average Knowledge score of 34.9%. Most respondents (77.4%) said they have participated in research training throughout their undergraduate courses. Only 22.1% of postgraduate students reported having such training. Additionally, 28% of them had publications, and 54.4% had some experience in research.

Table 2 compares knowledge score to demographic information. In terms of knowledge, women outperform men (p 0.02). Marital status, the year of residence, the learning method, and prior research publications had no discernible impact on knowledge score.

Table 3 demonstrates that research training received during graduate studies had a greater favorable impact on research practice than research training received during undergraduate schooling (p 0.02). While understanding of the definitions of "Introduction" and "Sample" in an article was highly rated, knowledge of "scientific hypothesis" and "characteristics of science" received lower marks.

Table1: dempgraphic characteristics

Variable	N	%
Age		
25-29 years	86	69.3
30-34years	34	27.4
35-39 years	4	3.2
Sex		0
Male	89	71.7
Female	35	28.2
Marital status		0
Single	98	79.0
Married	26	20.9
Year of residency		0
Less than 2 years	79	63.7
2-4 years	45	36.2
		0
Mode of Learning		0
Problem based learning	13	10.4
Lecture based learning	8	6.4
Both	103	83.0
previous research publication		0
yes	35	28.2
no	89	71.7

Table 2: knowledge VS demographic variables

Variable	less than average	more than or equal average	95% CI	P value
Age				
25-29 years	69	17		
30-34years	26	8		
35-39 years	2	2		
Sex		0	6.82 (0.44-0.89)	0.02
Male	56	33		
Female	26	9		
Marital status		0	0.4 (0.76-1.79)	0.54
Single	55	43		
Married	13	13		
Year of residency		0	0.94 (0.72-1.34)	0.64
Less than 2 years	57	22		
2-4 years	34	11		
		0		
Mode of Learning		0	1.39 (0.64-1.42)	0.46
Problem based learning	10	3		
Lecture based learning	5	3		
Both	67	36		
previous research publication		0	0.003 (0.001-0.41)	0.01
yes	5	30		
no	79	10		

Table 3 outcomes of previous research training VS publication

Undergraduate study training	**Author not published before**	**Author had published before**	**95% CI**	**P value**
No	19	9	4.26 (0.78-19.1)	
Yes	70	26		0.09
Postgraduate Study Training				
No	68	21	0.13 (0.03-0.66)	0.02
Yes	21	9		

Table 4: Research Barriers

Research Barriers	Percentage
Financial problems	54%
Lack of material	38%
Mentor support problems	85%
Motivation problems	
Insufficient time	72%
Inadequate acknowledgment	62%
Inadequate training	88%
Problems in the research curriculum	41%
Paper work is Complicated	25.30%
Few patients	17.60%

Discussion

The study's findings show that the participants had a positive outlook on research. However, this supposed approach was not evident in the presentation or publication of their findings, which is a gauge of their research expertise and practice. Only a few scientific ideas were fully comprehended by the residents as well. The questionnaire asked the respondents about the definitions of scientific truth, scientific hypotheses, and basic characteristics of science. They were also unfamiliar with the many components of scientific manuscripts.

Statistics revealed that there were gender differences in the research expertise of the public. It seems that female respondents had a stronger background in research. The residents' lack of postgraduate research training was another factor that had an impact on their research practices.

Only 24% of the participants said they had gotten training in research while taking graduate courses. Meher (11), however, discovered that 80.4% of the doctors who participated in the study had taken a course in research methods as a requirement for their graduate degree. The study was carried out in Pakistan's Karachi. The residents in this study had very little experience with graduate research. It was claimed that even so little exposure to research training benefited research methods. However, considerably more is preferred.

The levels of research expertise among study participants who took lecture-based research courses vs problem-based research courses were not noticeably different. According to Abdul Haseeb, et al. (12), problem-based learning is superior to lecture-based learning in terms of obtaining a higher knowledge score in research methodology.

Numerous studies that have been published abroad also point out a contrast between the optimistic sentiments of healthcare professionals and their actual participation in research. Additionally, very few resident doctors reported having their research papers accepted for publication (10).

Only 18.9% of graduate students knew what a research hypothesis was, according to Purushottam et al. (13), who also discovered that only 17.2% and 21.5% of students knew the full forms of MEDLARS and MEDLINE, respectively. This finding is similar to the current data. However, Memarpour, et al.'s study found that 77.8% of respondents had scores that were greater than the mean of the range of possible scores (14). The majority (58%) of local

respondents knew what a study hypothesis was, according to Marathe (10). Insufficient teaching time, inadequate reading time, incompetent teachers, a lack of internet access, and a lack of instructional materials are all factors that may contribute to inadequate research knowledge, according to numerous studies (10).

There was a gender difference in knowledge score in the current investigation. Similar findings were made by Memarpour et al. (14) who discovered that female students had higher levels of research proficiency than their male counterparts. Other studies need to support the discovery.

The study's findings showed that participants had a positive attitude toward medical research, even if this attitude did not translate into practical practice. In the context of a positive mindset, the numerous barriers listed may be the root of the low research practice. Similar findings in this regard have been reported from several countries. For instance, a study from India found that 91.4% of respondents believed that ongoing medical research will improve patient outcomes and that 70.7% of respondents were interested to participating in research methodology workshops (13,15,16). Japanese researchers found that the majority of doctors needed to learn about the fundamentals of clinical research, particularly those that concern statistics (17).

Some of the challenges to conducting research in this study include a lack of mentor assistance, inadequate financing, and a lack of research-related resources. Similar to this, Yetilu de Baessa's (18) evaluation of the third world claimed that study was hampered by a lack of funding and time. In a study conducted in India, residents' workload was found to be a hindrance to their participation in important research activities (19,20). Similar issues were cited by graduate students at Pakistan's Aga Khan University, who said they lacked time, had poor research infrastructure, and had few funding options (21). A shortage of supervisors, time restraints, stress at work, and a lack of training are a few more alleged barriers to conducting research in Saudi Arabia (22).

Conclusion

Despite having a positive attitude toward research, the participants' practice was insufficient because they didn't fully comprehend it. There is a need to bridge the knowledge gap between a high level of optimism, little research practice, and limited research understanding. This might be accomplished by helping them become more skilled while they pursue graduate-level

coursework. It is proposed that residents have access to better financial support and research mentorship in order to increase their knowledge and research practice.

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