

3 ORIGINAL ARTICLE

4 Research experience, attitude, and  
5 perceived barriers among emergency  
6 medicine residents in Kuwait: a cross-  
7 sectional study

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11 ABSTRACT

12 **Objective:** This study aimed to explore the research status of residents in the Kuwait Board of Emergency  
13 Medicine (KBEM) program and also evaluated their involvement in research activities, highlighting barriers  
14 that influence involvement in research.

15 **Methods:** A cross-sectional survey was conducted among residents enrolled in the KBEM residency program.  
16 All residents were invited to participate. Data were collected using a self-administered online questionnaire  
17 assessing demographics, previous research experience, attitude toward research, perceived barriers, and rec-  
18 ommendations for improving research involvement.

19 **Results:** Among 50 eligible residents, 40 completed the survey (80% response rate). Participants were pre-  
20 dominantly female (60%) and senior residents (60%). Overall attitudes toward research were positive, with  
21 senior residents showing significantly greater agreement on one attitude item compared with junior residents  
22 ( $4.46 \pm 0.51$  vs.  $4.13 \pm 0.89$ ;  $p = 0.009$ ). Key barriers included limited time, insufficient research training, and  
23 inconsistent mentorship. Additional research training and workshops were the most commonly recommended  
24 intervention (55.6%), followed by financial support and protected research time (16.7% each).

25 **Conclusion:** KBEM residents demonstrated positive attitude toward research; however, their involvement  
26 remain affected by barriers related to time, training, and mentorship. Structured research training, protected  
27 time, formalized mentorship, and improved research infrastructure might facilitate resident participation in  
28 scholarly activity.

29 **Keywords:** Emergency medicine, residency training, research, scholarly activity, research barriers, medical  
30 education

31 Introduction

32 Medical research is vital for improving patient care,  
33 driving innovation, and fostering interprofessional  
34 collaboration. Consequently, the physician's role in  
35 research serves as a bridge between clinical practice and  
36 scientific inquiry, advancing medical knowledge, refining  
37 clinical skills, and shaping healthcare policy [1].

38 Emergency medicine (EM) is a rapidly evolving specialty  
39 that requires continuous improvement in diagnostic  
40 tools, treatment modalities, and clinical guidelines to  
41 optimize patient outcomes and safety. This ongoing need

for advancement underscores the critical importance  
of sustained research efforts in the field. Exposure to

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research typically begins during medical school and continues throughout residency training [2].

As residency training represents a cornerstone of medical education, research activities, particularly those aligned with personal and clinical interests, begin to develop and become more focused during this period [3]. The Royal College of Physicians and Surgeons of Canada, through the CanMEDS framework, defines scholarly activity as “a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence and contributing to scholarship” [4]. In the United States, the Accreditation Council for Graduate Medical Education (ACGME) mandates the integration of research activities into residency training curricula [5].

Despite this recognition of research importance, resident participation in academic research remains frequently constrained by multifaceted institutional and professional barriers. These obstacles include deficits in intrinsic motivation, restricted time, inadequate formal mentorship, limited faculty availability, lack of funding, and the absence of a standardized research curriculum [6]. Studies involving EM residency programs have highlighted similar obstacles faced by EM trainees [7–9].

In 2011, the Kuwait Board of Emergency Medicine (KBEM) was established under the Kuwait Institute for Medical Specializations (KIMS), offering a five-year residency training program [10]. However, since its inception, no published studies have specifically evaluated research status, attitudes, and barriers among KBEM residents.

This study aimed to explore the research status and evaluate research involvement among residents in the KBEM program, while highlighting the barriers that influence their participation in scholarly activities.

## Subjects and Methods

This was a cross-sectional survey designed to assess the current research status, attitudes, and perceived barriers to research among residents in the KBEM residency program. The questionnaire was adapted from a validated instrument used in previous research [11], and permission to use the survey was obtained from the author.

The study was conducted at the Kuwait Institute for Medical Specializations (KIMS) and included all EM residents from postgraduate year 1 (PGY-1) to PGY-5 enrolled in the KBEM program during the study period. Participants were invited through institutional email.

All residents enrolled in the KBEM program during the study period were eligible to participate if they agreed voluntarily and completed the online survey. Residents who declined participation or submitted incomplete surveys were excluded.

Data were collected using a self-administered online questionnaire via Google Forms. The questionnaire link was sent via email to all current EM residents from 1 April 12 to May 6, 2026, with weekly reminders to maximize the response rate. Participation was voluntary, and responses were collected anonymously.

The questionnaire comprised five sections: (1) participant demographics and characteristics, (2) previous research experience evaluated via dichotomous yes/no questions, (3) attitudes toward research, (4) perceived barriers to conducting research, and (5) open-ended suggestions or recommendations for improving research involvement. Variables in the third and fourth sections were measured using a five-point Likert scale ranging from “strongly disagree” to “strongly agree,” with a neutral midpoint.

Before accessing the questionnaire, all participants were provided with an information and consent statement outlining the purpose of the study, the voluntary nature of participation, and the confidentiality of the collected data.

Continuous variables were expressed as mean  $\pm$  standard deviation (SD) based on normality testing using the Kolmogorov–Smirnov test, and categorical data were presented as frequencies and percentages. Group comparisons were performed using the Mann–Whitney *U* test, Kruskal–Wallis test, chi-square test, or Fisher’s exact test, as appropriate. Spearman’s rank correlation coefficient was used to evaluate correlations, and multivariate linear regression identified predictors of total attitude and barrier scores. Cronbach’s alpha assessed internal consistency. Statistical significance was set at a two-sided *p*-value  $<0.05$ . All analyses were conducted using IBM SPSS Statistics (version 22; IBM Corp., Armonk, NY, USA).

## Results

Of the 50 residents enrolled in the KBEM program, 40 (80%) completed the survey. The mean age of participants was 30.88 years (SD 2.83). Most participants were female (24, 60%) and single (24, 60%). The majority had graduated from medical schools outside Kuwait (29, 72.5%). Residents were distributed across all training years. For subsequent analyses, PGY-1 and

**Table 1.** Demographics of the residents among KBEM (N = 40).

| Characteristic                  | Frequency (n)     | Percentage (%) |
|---------------------------------|-------------------|----------------|
| <b>Gender</b>                   |                   |                |
| Male                            | 16                | 40.0           |
| Female                          | 24                | 60.0           |
| <b>Social status</b>            |                   |                |
| Single                          | 24                | 60.0           |
| Divorced                        | 1                 | 2.5            |
| Married                         | 15                | 37.5           |
| <b>Graduation</b>               |                   |                |
| In Kuwait                       | 11                | 27.5           |
| Outside Kuwait                  | 29                | 72.5           |
| <b>Years of residency</b>       |                   |                |
| PGY-1                           | 7                 | 17.5           |
| PGY-2                           | 9                 | 22.5           |
| PGY-3                           | 9                 | 22.5           |
| PGY-4                           | 10                | 25.0           |
| PGY-5                           | 5                 | 12.5           |
| <b>Age (years), mean and SD</b> | 30.88 $\pm$ 2.830 |                |

PGY-2 residents were categorized as junior residents (16, 40.0%), while PGY-3 to PGY-5 residents were categorized as senior residents (24, 60.0%) (Table 1).

Residents reported substantial prior involvement in various research activities, with data collection being the most frequently reported activity among both males (81.8%) and females (90.5%). Cross-sectional studies were the most commonly employed methodological design across both genders. Significant gender differences were observed in two areas: females were more likely to have never worked on a funded project compared with males (85.7% vs. 28.6%,  $p = 0.017$ ), and females had significantly higher rates of publication than males (63.6% vs. 23.1%,  $p = 0.035$ ) (Table 2).

Overall, both junior (PGY-1 and PGY-2) and senior (PGY-3, PGY-4, and PGY-5) residents expressed positive attitude toward research, with mean scores generally above the midpoint of the scale and no significant differences for most items. For several questions, seniors had slightly higher mean scores than juniors, particularly for items reflecting the perceived importance of research. A significant difference was observed for one attitude

item (Q6), where seniors showed higher agreement than juniors ( $4.46 \pm 0.51$  vs.  $4.13 \pm 0.89$ ;  $p = 0.009$ ) (Table 3).

Residents reported multiple perceived barriers toward engaging in research, but junior and senior participants showed broadly similar patterns. Lack of free time during working hours to conduct research was among the most strongly endorsed barriers, with mean scores of  $4.44 \pm 0.73$  among junior residents and  $4.54 \pm 0.66$  among senior residents. The burden of other educational activities and regulations associated with obtaining ethical approval were also highly rated barriers. In contrast, lack of proficiency in English received comparatively lower ratings ( $2.06 \pm 0.85$  among junior residents and  $2.46 \pm 1.18$  among senior residents). Although the magnitude of perceived barriers varied across individual items, no statistically significant differences were observed between junior and senior residents for any of the assessed barriers (all  $p > 0.05$ ). (Table 4).

The optional open-ended question regarding recommendations or suggestions for enhancing research involvement was answered by 13 participants (32.5%), with a total of 18 recommendations. Responses were

**Table 2.** Prior experience in research.

| Characteristic                            | Male n/N (%) | Female n/N (%) | p-Value       |
|-------------------------------------------|--------------|----------------|---------------|
| <b>Involvement in research activities</b> |              |                |               |
| Concept and study design                  | 4/7 (57.1)   | 13/18 (72.2)   | 0.640         |
| Drafting a proposal                       | 5/8 (62.5)   | 12/18 (66.7)   | 1.000         |
| Data collection                           | 9/11 (81.8)  | 19/21 (90.5)   | 0.593         |
| Data analysis                             | 4/8 (50.0)   | 13/18 (72.2)   | 0.382         |
| Manuscript writing                        | 6/9 (66.7)   | 13/20 (65.0)   | 1.000         |
| Publication                               | 3/7 (42.9)   | 8/19 (42.1)    | 1.000         |
| <b>Methodology employed</b>               |              |                |               |
| Experimental study                        | 2/7 (28.6)   | 3/9 (33.3)     | 1.000         |
| Cross-sectional study                     | 6/8 (75.0)   | 8/13 (61.5)    | 0.656         |
| Cohort study                              | 1/6 (16.7)   | 2/9 (22.2)     | 1.000         |
| Randomized clinical trial                 | 2/8 (25.0)   | 6/12 (50.0)    | 0.373         |
| Qualitative study                         | 1/7 (14.3)   | 4/9 (44.4)     | 0.308         |
| <b>Study timing</b>                       |              |                |               |
| Prospective                               | 3/8 (37.5)   | 6/12 (50.0)    | 0.670         |
| Retrospective                             | 7/9 (77.8)   | 8/13 (61.5)    | 0.648         |
| Mixed                                     | 4/8 (50.0)   | 5/10 (50.0)    | 1.000         |
| <b>Funding source</b>                     |              |                |               |
| Self-funded                               | 8/9 (88.9)   | 8/13 (61.5)    | 0.333         |
| External funding                          | 3/8 (37.5)   | 1/9 (11.1)     | 0.294         |
| Never funded                              | 2/7 (28.6)   | 12/14 (85.7)   | <b>0.017*</b> |
| <b>Data collection sites</b>              |              |                |               |
| District hospital                         | 4/8 (50.0)   | 6/13 (46.2)    | 1.000         |
| Tertiary hospital                         | 3/8 (37.5)   | 3/10 (30.0)    | 1.000         |
| Multicenter                               | 4/9 (44.4)   | 10/14 (71.4)   | 0.383         |
| <b>Publication history</b>                |              |                |               |
| Published a project                       | 3/13 (23.1)  | 14/22 (63.6)   | <b>0.035*</b> |

Note: Percentages were calculated based on the number of responses available for each individual item; denominators therefore vary across items and are presented as n/N. The denominators (N) represent the number of respondents who answered each specific item; participants could leave non-applicable items unanswered.

\*Statistically significant difference between males and females ( $p < 0.05$ ).

**Table 3.** Attitudes towards research.

| Section 3                                                                                           |                   | Juniors <i>n</i> = 16 (%) | Seniors <i>n</i> = 24 (%) | <i>p</i> -Value |
|-----------------------------------------------------------------------------------------------------|-------------------|---------------------------|---------------------------|-----------------|
| <b>Q1: Research is an asset to a fellowship position application</b>                                | Strongly disagree | 1 (6.3)                   | 0 (0.0)                   | 0.297           |
|                                                                                                     | Disagree          | 2 (12.5)                  | 0 (0.0)                   |                 |
|                                                                                                     | Neutral           | 5 (31.3)                  | 9 (37.5)                  |                 |
|                                                                                                     | Agree             | 5 (31.3)                  | 10 (41.7)                 |                 |
|                                                                                                     | Strongly agree    | 3 (18.8)                  | 5 (20.8)                  |                 |
|                                                                                                     | Mean $\pm$ SD     | 3.44 $\pm$ 1.15           | 3.83 $\pm$ 0.76           |                 |
| <b>Q2: Research is an important component of emergency medicine residency and clinical training</b> | Strongly disagree | 1 (6.3)                   | 0 (0.0)                   | 0.398           |
|                                                                                                     | Disagree          | 1 (6.3)                   | 0 (0.0)                   |                 |
|                                                                                                     | Neutral           | 8 (50.0)                  | 10 (41.7)                 |                 |
|                                                                                                     | Agree             | 3 (18.8)                  | 6 (25.0)                  |                 |
|                                                                                                     | Strongly agree    | 3 (18.8)                  | 8 (33.3)                  |                 |
|                                                                                                     | Mean $\pm$ SD     | 3.38 $\pm$ 1.09           | 3.92 $\pm$ 0.88           |                 |
| <b>Q3: Research improves clinical proficiency and quality of patient care</b>                       | Strongly disagree | 1 (6.3)                   | 0 (0.0)                   | 0.146           |
|                                                                                                     | Disagree          | 1 (6.3)                   | 0 (0.0)                   |                 |
|                                                                                                     | Neutral           | 1 (6.3)                   | 8 (33.3)                  |                 |
|                                                                                                     | Agree             | 8 (50.0)                  | 8 (33.3)                  |                 |
|                                                                                                     | Strongly agree    | 5 (31.3)                  | 8 (33.3)                  |                 |
|                                                                                                     | Mean $\pm$ SD     | 3.94 $\pm$ 1.12           | 4.00 $\pm$ 0.83           |                 |
| <b>Q4: Research develops essential skills for lifelong learning</b>                                 | Disagree          | 1 (6.3)                   | 0 (0.0)                   | 0.585           |
|                                                                                                     | Neutral           | 3 (18.8)                  | 7 (29.2)                  |                 |
|                                                                                                     | Agree             | 7 (43.8)                  | 10 (41.7)                 |                 |
|                                                                                                     | Strongly agree    | 5 (31.3)                  | 7 (29.2)                  |                 |
|                                                                                                     | Mean $\pm$ SD     | 4.00 $\pm$ 0.89           | 4.00 $\pm$ 0.78           |                 |
| <b>Q5: Research develops critical thinking</b>                                                      | Strongly disagree | 1 (6.3)                   | 0 (0.0)                   | 0.536           |
|                                                                                                     | Neutral           | 4 (25.0)                  | 4 (16.7)                  |                 |
|                                                                                                     | Agree             | 6 (37.5)                  | 12 (50.0)                 |                 |
|                                                                                                     | Strongly agree    | 5 (31.3)                  | 8 (33.3)                  |                 |
|                                                                                                     | Mean $\pm$ SD     | 3.88 $\pm$ 1.09           | 4.17 $\pm$ 0.70           |                 |
| <b>Q6: Research allows the advancement of scientific/medical knowledge and education</b>            | Neutral           | 5 (31.3)                  | 0 (0.0)                   | 0.009           |
|                                                                                                     | Agree             | 4 (25.0)                  | 13 (54.2)                 |                 |
|                                                                                                     | Strongly agree    | 7 (43.8)                  | 11 (45.8)                 |                 |
|                                                                                                     | Mean $\pm$ SD     | 4.13 $\pm$ 0.89           | 4.46 $\pm$ 0.51           |                 |
| <b>Q7: Research facilitates training of residents to be clinician investigators/scientists</b>      | Strongly disagree | 1 (6.3)                   | 0 (0.0)                   | 0.445           |
|                                                                                                     | Disagree          | 0 (0.0)                   | 1 (4.2)                   |                 |
|                                                                                                     | Neutral           | 2 (12.5)                  | 7 (29.2)                  |                 |
|                                                                                                     | Agree             | 8 (50.0)                  | 9 (37.5)                  |                 |
|                                                                                                     | Strongly agree    | 5 (31.3)                  | 7 (29.2)                  |                 |
|                                                                                                     | Mean $\pm$ SD     | 4.00 $\pm$ 1.03           | 3.92 $\pm$ 0.88           |                 |

classified into four categories: education and training, funding, time, and miscellaneous. Provision of research education and training was identified as the most frequent suggestion, accounting for 10 of 18 recommendations (55.6%). Financial support, with 3 of 18 recommendations (16.7%), and protected time for research, with 3 of 18 recommendations (16.7%), were also cited. The remaining 2 recommendations (11.1%) were categorized as miscellaneous and included facilitating administrative workload and structured mentorship (Table 5).

## Discussion

KBEM trainees reported substantial prior involvement in core research activities, including data collection,

manuscript writing, and proposal drafting, and demonstrated generally positive attitude towards scholarly activity, with mean attitude scores above the scale midpoint across both junior and senior levels.

Female residents had higher total attitude scores and higher publication rates despite less exposure to funded projects, suggesting strong intrinsic motivation and engagement among females in this study. Similarly, international survey data highlighted a distinct gender gap in scholarly productivity during radiology residency, with female trainees demonstrating lower rates of academic engagement and fewer original publications than their male peers [12]. Findings from a US multi-institutional survey underscored the necessity of targeted

research training for female EM residents, given that many reported limited experience with grant writing and principal investigator roles. Additionally, these data justified prioritizing research mentorship and professional development initiatives for female residents and faculty [13].

In this study, residents identified multiple barriers, particularly limited time, insufficient formal training, and inconsistent mentorship, with barrier scores in the neutral-to-agree range and similar profiles across training levels. These findings closely mirror reports from Australasian EM trainees, internal medicine residents,

**Table 4.** Perceived barriers.

| Section 4                                                                                 |                   | Juniors <i>n</i> = 16 (%) | Seniors <i>n</i> = 24 (%) | <i>p</i> -Value |
|-------------------------------------------------------------------------------------------|-------------------|---------------------------|---------------------------|-----------------|
| Q1: The burden of other educational activities (e.g., exams)                              | Strongly disagree | 0 (0.0)                   | 1 (4.2)                   | 0.822           |
|                                                                                           | Disagree          | 0 (0.0)                   | 1 (4.2)                   |                 |
|                                                                                           | Neutral           | 3 (18.8)                  | 5 (20.8)                  |                 |
|                                                                                           | Agree             | 5 (31.3)                  | 6 (25.0)                  |                 |
|                                                                                           | Strongly agree    | 8 (50.0)                  | 11 (45.8)                 |                 |
|                                                                                           | Mean $\pm$ SD     | 4.31 $\pm$ 0.79           | 4.04 $\pm$ 1.12           |                 |
| Q2: Lack of research projects conducted by the department                                 | Disagree          | 2 (12.5)                  | 4 (16.7)                  | 0.361           |
|                                                                                           | Neutral           | 6 (37.5)                  | 7 (29.2)                  |                 |
|                                                                                           | Agree             | 4 (25.0)                  | 11 (45.8)                 |                 |
|                                                                                           | Strongly agree    | 4 (25.0)                  | 2 (8.3)                   |                 |
|                                                                                           | Mean $\pm$ SD     | 3.63 $\pm$ 1.02           | 3.46 $\pm$ 0.88           |                 |
| Q3: Lack of education in research                                                         | Disagree          | 0 (0.0)                   | 3 (12.5)                  | 0.168           |
|                                                                                           | Neutral           | 7 (43.8)                  | 6 (25.0)                  |                 |
|                                                                                           | Agree             | 4 (25.0)                  | 11 (45.8)                 |                 |
|                                                                                           | Strongly agree    | 5 (31.3)                  | 4 (16.7)                  |                 |
|                                                                                           | Mean $\pm$ SD     | 3.88 $\pm$ 0.89           | 3.67 $\pm$ 0.92           |                 |
| Q4: Lack of proficiency in English                                                        | Strongly disagree | 4 (25.0)                  | 6 (25.0)                  | 0.596           |
|                                                                                           | Disagree          | 8 (50.0)                  | 7 (29.2)                  |                 |
|                                                                                           | Neutral           | 3 (18.8)                  | 6 (25.0)                  |                 |
|                                                                                           | Agree             | 1 (6.3)                   | 4 (16.7)                  |                 |
|                                                                                           | Strongly agree    | 0 (0.0)                   | 1 (4.2)                   |                 |
|                                                                                           | Mean $\pm$ SD     | 2.06 $\pm$ 0.85           | 2.46 $\pm$ 1.18           |                 |
| Q5: Lack of funds for research                                                            | Strongly disagree | 0 (0.0)                   | 1 (4.2)                   | 0.770           |
|                                                                                           | Disagree          | 2 (12.5)                  | 2 (8.3)                   |                 |
|                                                                                           | Neutral           | 5 (31.3)                  | 6 (25.0)                  |                 |
|                                                                                           | Agree             | 2 (12.5)                  | 6 (25.0)                  |                 |
|                                                                                           | Strongly agree    | 7 (43.8)                  | 9 (37.5)                  |                 |
|                                                                                           | Mean $\pm$ SD     | 3.88 $\pm$ 1.15           | 3.83 $\pm$ 1.17           |                 |
| Q6: Lack of personal interest                                                             | Strongly disagree | 0 (0.0)                   | 2 (8.3)                   | 0.541           |
|                                                                                           | Disagree          | 2 (12.5)                  | 4 (16.7)                  |                 |
|                                                                                           | Neutral           | 9 (56.3)                  | 9 (37.5)                  |                 |
|                                                                                           | Agree             | 4 (25.0)                  | 5 (20.8)                  |                 |
|                                                                                           | Strongly agree    | 1 (6.3)                   | 4 (16.7)                  |                 |
|                                                                                           | Mean $\pm$ SD     | 3.25 $\pm$ 0.77           | 3.21 $\pm$ 1.18           |                 |
| Q7: Unfamiliarity with the acceptance criteria and published articles in various journals | Disagree          | 2 (12.5)                  | 3 (12.5)                  | 0.310           |
|                                                                                           | Neutral           | 6 (37.5)                  | 5 (20.8)                  |                 |
|                                                                                           | Agree             | 7 (43.8)                  | 9 (37.5)                  |                 |
|                                                                                           | Strongly agree    | 1 (6.3)                   | 7 (29.2)                  |                 |
|                                                                                           | Mean $\pm$ SD     | 3.44 $\pm$ 0.81           | 3.83 $\pm$ 1.01           |                 |
| Q8: No observed effect of the results of research activities in clinical practice         | Strongly disagree | 0 (0.0)                   | 2 (8.3)                   | 0.167           |
|                                                                                           | Disagree          | 3 (18.8)                  | 6 (25.0)                  |                 |
|                                                                                           | Neutral           | 6 (37.5)                  | 11 (45.8)                 |                 |
|                                                                                           | Agree             | 2 (12.5)                  | 4 (16.7)                  |                 |
|                                                                                           | Strongly agree    | 5 (31.3)                  | 1 (4.2)                   |                 |
|                                                                                           | Mean $\pm$ SD     | 3.56 $\pm$ 1.15           | 2.83 $\pm$ 0.96           |                 |

| Section 4                                                  |                   | Juniors <i>n</i> = 16 (%) | Seniors <i>n</i> = 24 (%) | <i>p</i> -Value |
|------------------------------------------------------------|-------------------|---------------------------|---------------------------|-----------------|
| Q9: Too many regulations during obtaining ethical approval | Disagree          | 2 (12.5)                  | 0 (0.0)                   | 0.358           |
|                                                            | Neutral           | 3 (18.8)                  | 5 (20.8)                  |                 |
|                                                            | Agree             | 4 (25.0)                  | 6 (25.0)                  |                 |
|                                                            | Strongly agree    | 7 (43.8)                  | 13 (54.2)                 |                 |
|                                                            | Mean $\pm$ SD     | 4.00 $\pm$ 1.10           | 4.33 $\pm$ 0.82           |                 |
| Q10: Lack of research skills                               | Strongly disagree | 0 (0.0)                   | 1 (4.2)                   | 0.888           |
|                                                            | Disagree          | 2 (12.5)                  | 4 (16.7)                  |                 |
|                                                            | Neutral           | 6 (37.5)                  | 8 (33.3)                  |                 |
|                                                            | Agree             | 6 (37.5)                  | 7 (29.2)                  |                 |
|                                                            | Strongly agree    | 2 (12.5)                  | 4 (16.7)                  |                 |
|                                                            | Mean $\pm$ SD     | 3.50 $\pm$ 0.89           | 3.38 $\pm$ 1.10           |                 |
| Q11: Lack of society cooperation with researchers          | Strongly disagree | 0 (0.0)                   | 1 (4.2)                   | 0.527           |
|                                                            | Disagree          | 2 (12.5)                  | 2 (8.3)                   |                 |
|                                                            | Neutral           | 2 (12.5)                  | 7 (29.2)                  |                 |
|                                                            | Agree             | 8 (50.0)                  | 7 (29.2)                  |                 |
|                                                            | Strongly agree    | 4 (25.0)                  | 7 (29.2)                  |                 |
|                                                            | Mean $\pm$ SD     | 3.88 $\pm$ 0.96           | 3.71 $\pm$ 1.12           |                 |
| Q12: Lack of mentors and senior supervisors                | Strongly disagree | 0 (0.0)                   | 1 (4.2)                   | 0.426           |
|                                                            | Disagree          | 3 (18.8)                  | 2 (8.3)                   |                 |
|                                                            | Neutral           | 9 (56.3)                  | 9 (37.5)                  |                 |
|                                                            | Agree             | 3 (18.8)                  | 10 (41.7)                 |                 |
|                                                            | Strongly agree    | 1 (6.3)                   | 2 (8.3)                   |                 |
|                                                            | Mean $\pm$ SD     | 3.13 $\pm$ 0.81           | 3.42 $\pm$ 0.93           |                 |
| Q13: Lack of free time during working hours to do research | Neutral           | 2 (12.5)                  | 2 (8.3)                   | 0.886           |
|                                                            | Agree             | 5 (31.3)                  | 7 (29.2)                  |                 |
|                                                            | Strongly agree    | 9 (56.3)                  | 15 (62.5)                 |                 |
|                                                            | Mean $\pm$ SD     | 4.44 $\pm$ 0.73           | 4.54 $\pm$ 0.66           |                 |
| Q14: Inability to identify topics and ideas of research    | Disagree          | 1 (6.3)                   | 5 (20.8)                  | 0.363           |
|                                                            | Neutral           | 9 (56.3)                  | 9 (37.5)                  |                 |
|                                                            | Agree             | 2 (12.5)                  | 6 (25.0)                  |                 |
|                                                            | Strongly agree    | 4 (25.0)                  | 4 (16.7)                  |                 |
|                                                            | Mean $\pm$ SD     | 3.56 $\pm$ 0.96           | 3.38 $\pm$ 1.01           |                 |

**Table 5.** Free text recommendations and suggestions by residents.

| Category               | Frequency ( <i>n</i> ) | Percentage (%) |
|------------------------|------------------------|----------------|
| Education and Training | 10                     | 55.6           |
| Funding                | 3                      | 16.7           |
| Time                   | 3                      | 16.7           |
| Miscellaneous          | 2                      | 11.1           |
| Total                  | 18                     | 100            |

and global emergency care experts, where lack of time, skills gaps, paucity of mentors, and constrained research infrastructure are consistently cited as primary obstacles to resident research [7, 14, 15]. The KBEM pattern therefore appeared typical of emerging EM training environments rather than uniquely local.

The absence of significant differences in barrier scores between junior and senior trainees suggested that these constraints were program-wide rather than stage-specific, echoing findings that organizational and cultural barriers were more pervasive than individual-level factors [9].

Consequently, residency teaching program faculty must explicitly consider these systemic factors when designing and implementing scholarly activity initiatives.

The residents' suggestions for improving the research environment included greater access to training and workshops, financial support, protected research time, streamlined ethics processes, and enhanced access to scientific resources. These recommendations align with interventions that have successfully increased resident scholarly output in other EM programs. Published models emphasized appointing a dedicated research director, embedding a staged research pathway, providing structured methodological teaching and protected nonclinical time, and supporting residents through research days, seed funding, and mentor networks [14–17]. Additionally, implementing a structured EM residency research program has been shown to enhance trainee competencies in study design and statistical methodology, thereby driving academic and clinical productivity [18]. A nationwide US survey evaluating scholarly activity within EM residency programs revealed a critical need for greater departmental support,

with authors recommending that the ACGME provide standardized guidelines for scholarly activity best practices [16].

Finally, this study contributed a novel perspective from a relatively young EM residency program in the Arabian Gulf region, where EM has expanded rapidly but data on resident research status remain limited. By documenting both strengths, high response rate, positive attitude, and prior experience, and weaknesses including the time constraints, mentorship gaps, and infrastructure limitations, the KBEM findings added to the growing body of evidence that EM residency programs requires intentional, system-level strategies to transform research from an aspirational requirement into a practical, achievable component of training.

Future work should explore faculty perspectives, program-level outcomes, and longitudinal tracking of scholarly activity to evaluate the impact of any interventions introduced in KBEM and comparable programs.

This study was limited by its single-program design, modest sample size, and reliance on self-reported data without objective output metrics, which might restrict generalizability and introduce recall or social desirability bias. Nonetheless, the high response rate and inclusion of all training years offer a useful snapshot of research status and barriers in KBEM and highlighted clear, literature-supported targets for programmatic improvement.

## Conclusion

KBEM residents demonstrated positive attitude and strong baseline exposure to scholarly activities, yet face global residency challenges including limited protected time, resource constraints, and insufficient mentorship. Overcoming these barriers requires implementing a structured, longitudinal research curriculum featuring early orientation for junior residents, standardized senior project pathways, and collaborative trainee networks. Supported by institutional infrastructure and formalized mentorship, these interventions can transform research into an integral component of EM training. Future multicenter research using objective metrics must evaluate these interventions to establish KBEM as a regional leader in academic EM.

## List of Abbreviations

ACGME Accreditation Council for Graduate Medical Education

EM emergency medicine

IRB Institutional Review Board

KBEM Kuwait Board of Emergency Medicine

KIMS Kuwait Institute for Medical Specializations

PGY postgraduate year

SA scholarly activity

SD standard deviation

SPSS Statistical Package for the Social Sciences

US United States

## Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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