

Barriers to Conducting and Publishing Scientific Research among Nursing Staff at King Abdulaziz Hospital, Al-Ahsa, Saudi Arabia: A Cross-Sectional Study

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Abstract

Background: Nursing research and scholarly publication underpin evidence-based practice, yet many nurses report barriers that limit their engagement in conducting and disseminating research. Data on these barriers among hospital-based nurses in Saudi Arabia's Eastern Province remain limited. **Objectives:** This study aimed to identify the barriers nurses face in conducting and publishing scientific research at King Abdulaziz Hospital, Al-Ahsa; to assess the impact of these barriers; and to examine their association with nurses' socio-demographic and professional characteristics. **Methods:** A quantitative, descriptive, cross-sectional study was conducted among 127 nursing staff (33.0% response rate from a target population of 385), recruited via convenience sampling. Data were collected using a 45-item structured, self-administered questionnaire adapted from Hakami (2023) and distributed through Microsoft Forms. Thirty-four barrier items were scored on a 4-point scale (strongly disagree = 0, disagree = 0, agree = 1, strongly agree = 2); an overall score $\geq 60\%$ of the maximum was classified as "high barrier." Descriptive statistics, chi-square tests, independent-samples t-tests, and one-way ANOVA were used ($\alpha = .05$). **Results:** Respondents were predominantly female (90.6%) and non-Saudi (85.8%), with a mean age of 40.9 years ($SD = 9.3$). The most highly endorsed barriers were limited training courses on publishing (85.0% agreement), insufficient time to conduct research (82.7%), high cost of publication (83.5%), and lack of clarity around journal guidelines (89.8%). Only 10 respondents (7.9%) met the high-barrier threshold overall; mean total barrier score was 25.6 ($SD = 12.9$) of 68 (37.7% of maximum). No demographic variable was significantly associated with the high/low barrier classification, although age group was significantly associated with the continuous barrier score, $F(3, 123) = 3.80, p = .012$, with nurses younger than 30 years reporting the highest scores. **Conclusion:** Structural and institutional barriers — particularly insufficient training, time, and financial support — are more salient than personal writing or language barriers among this nursing population. Targeted institutional interventions, especially for early-career nurses, are recommended to strengthen nursing research capacity.

Keywords: Nursing research; research barriers; publication barriers; evidence-based practice; nurse education; Saudi Arabia; cross-sectional study.

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INTRODUCTION

The integration of research into nursing practice is critical for improving patient care and ensuring that healthcare delivery systems are grounded in the most up-to-date evidence. Over the years, the role of nurses has evolved significantly, with increasing emphasis placed on the need for scientific research to inform clinical decisions. However, despite the established necessity for nurses to engage in research activities, barriers persist that impede their involvement in both conducting and

publishing research. A wide range of studies has documented that nurses experience challenges such as limited access to research resources, inadequate training in research methodologies, and insufficient mentorship, which hinder their ability to contribute to academic scholarship (Yusof *et al.*, 2025; Ma & Garcia, 2024; Oluwasanu *et al.*, 2024). Understanding and addressing the barriers that prevent nurses from fully participating in the research and publication process is therefore a pertinent problem for nursing administration and

education (Metersky *et al.*, 2024; Akingbade *et al.*, 2024; Mbalinda *et al.*, 2024).

Prior work among nursing faculty in Saudi Arabia identified structural, motivational, and process-related barriers to research and publication, and produced a validated instrument for measuring them (Hakami, 2023). Comparable barriers workload limited institutional support, and constrained research time have also been documented among hospital-based nurses elsewhere in the region, for example in a cross-sectional survey of nurses' participation in clinical research in Malaysia (Nor *et al.*, 2021). Early-career nurses appear to feel underprepared for research engagement immediately following qualification (Gautam *et al.*, 2023; Sakamoto, 2021), while formal training in research methodology and scientific publishing has been associated with a stronger evidence-based practice orientation among nurses (Ünal & Teskereci, 2021).

Despite this evidence base, empirical data quantifying the specific barriers experienced by hospital nursing staff — as opposed to nursing faculty or nursing students in the Eastern Province of Saudi Arabia remain scarce. Nurses represent the largest professional group within the healthcare workforce and are uniquely positioned to generate practice-relevant, patient-centered research; understanding the barriers they face in conducting and publishing scientific research is therefore essential for developing institution-level interventions that can strengthen a research-oriented culture and, ultimately, improve evidence-based patient care (Watson, 2018; Sallam, 2023).

The aim of this study was to utilize the resources of nursing staff employed at King Abdulaziz Hospital, Al-Ahsa, Ministry of National Guard Health Affairs (MNGHA), to gather data that would provide the basis for developing targeted interventions addressing the identified barriers and potentially inform local nursing research policy. The specific objectives were to: (1) identify the specific barriers that nurses face in conducting and publishing scientific research; (2) assess the impact of these barriers on nurses' research activities; and (3) analyze the association between demographic characteristics and the barriers nurses face in conducting and publishing scientific research.

EXPERIMENTAL SECTION (MATERIALS AND METHODS)

Study Design and Setting. A quantitative, descriptive, cross-sectional study design was used. The study was conducted at King Abdulaziz Hospital, located in Al-Ahsa, in the Eastern Province of Saudi Arabia, over a two-week period in April 2025.

Study Population and Sampling. The target population comprised all nursing staff employed at King Abdulaziz Hospital, including registered nurses, nursing assistants, and nurse practitioners (N = 385). Nurses who

voluntarily consented to participate were included; nurses on extended leave or absent from work for more than three months, and those with incomplete or missing data relevant to the study, were excluded. A convenience sampling technique was used to obtain the study sample. A total of 127 nurses completed the questionnaire, yielding a response rate of 33.0%.

Instrument. Data were collected using a structured, self-administered questionnaire adapted from an instrument previously developed and validated by Hakami (2023) to assess barriers to conducting and publishing scientific research among nursing faculty members in Saudi Arabia. The questionnaire was pilot tested with twelve nursing education staff members to establish its validity and reliability for the present population and was subsequently reviewed by a statistician and two faculty members to improve accuracy and measurability; internal consistency was acceptable (Cronbach's alpha > 0.7).

The final instrument comprised two parts. Part One collected socio-demographic and professional data (gender, age, nationality, nursing specialty, marital status, qualification, prior training in research methodology, prior training in scientific publishing, attempts to publish in a SCOPUS/Web of Science-indexed journal, and publication history). Part Two comprised 34 items measuring perceived barriers to conducting scientific research and to publishing, grouped thematically around writing and language skills, motivation and attitudes, training and institutional support, the manuscript submission and journal-selection process, the peer-review process, and rejection-related experiences. Each item was rated on a 4-point scale: strongly disagree, disagree, agree, and strongly agree.

Data Collection Procedure. Permission from the Nursing Service in-charge was obtained by the principal investigator through email prior to data collection. Informed consent and data collection were facilitated through an online survey created using Microsoft Forms and distributed via MNGHA email to nursing staff. To ensure confidentiality, no personal identifiers (names, badge numbers, or email addresses) were recorded. Reminder emails were sent to non-responding nurses to enhance the response rate. Collected data were exported and manually verified for accuracy; any suspicious, inconsistent, or invalid responses were excluded prior to analysis.

Scoring. Each of the 34 barrier items was scored as follows: strongly disagree = 0, disagree = 0, agree = 1, and strongly agree = 2, producing item scores ranging from 0 to 2 and a possible total barrier score ranging from 0 to 68. Higher scores indicate a higher perceived barrier. An overall score $\geq 60\%$ of the maximum possible score was classified a priori as "high barrier," and a score < 60% was classified as "low barrier," consistent with the scoring protocol specified in the approved study

proposal. For descriptive and interpretive purposes, the 34 items were further grouped by the authors into six thematic domains Writing and Language Skills (7 items), Motivation and Attitudinal factors (4 items), Training and Institutional Support (6 items), Submission and Journal Process (8 items), Peer Review Process (6 items), and Rejection-Related barriers (3 items) with domain scores expressed as a percentage of each domain's maximum possible score. These domains were derived by the authors for analytic purposes and do not constitute independently validated subscales of the original instrument.

Statistical Analysis. Data were analyzed using descriptive statistics (frequencies, percentages, means, and standard deviations) to summarize demographic characteristics and barrier scores. Chi-square tests of independence were used to examine the association between categorical demographic variables and the dichotomous (high/low) barrier classification. Because the high-barrier group was small ($n = 10$), producing several expected cell counts below 5, independent-samples t -tests and one-way ANOVA on the continuous percentage barrier score were also conducted as supplementary analyses less sensitive to small cell counts. A significance level of $\alpha = .05$ was used throughout.

Ethical Considerations. Institutional approval was obtained from the hospital administration in accordance with institutional research governance standards prior to data collection. All participants provided informed consent electronically before completing the questionnaire. Participation was voluntary and anonymous, and data were stored securely on a password-protected database accessible only to the principal investigator, to protect respondent confidentiality.

RESULTS AND DISCUSSION

Sample Characteristics. A total of 127 nursing staff completed the questionnaire (response rate = 33.0%). As summarized in Table 1, respondents were predominantly female (90.6%), non-Saudi (85.8%), and held a bachelor's degree (73.2%). The mean age was 40.9 years ($SD = 9.3$, range = 24–63). The largest specialty groups represented were Medical & Surgical (36.2%) and Critical Care (26.8%). Most respondents had not received formal training in research methodology (63.0%) or in scientific publishing (89.8%), and the large majority had never attempted (91.3%) or achieved (93.7%) publication in a SCOPUS/Web of Science-indexed journal, underscoring the limited research and publication experience within this workforce.

Table 1: Socio-Demographic and Professional Characteristics of Respondents (N = 127)

Characteristic	Category	n	%
Gender	Female	115	90.6
	Male	12	9.4
Age group (years)	< 30	12	9.4
	30–39	51	40.2
	40–49	35	27.6
	≥ 50	29	22.8
Nationality	Non-Saudi	109	85.8
	Saudi	18	14.2
Marital status	Married	72	56.7
	Single	50	39.4
	Divorced	5	3.9
Qualification	Bachelor's Degree	93	73.2
	Diploma	24	18.9
	Master's Degree	10	7.9
Research methodology training	Yes	47	37.0
	No	80	63.0
Publishing training	Yes	13	10.2
	No	114	89.8
Previously published an article	Yes	10	7.9
	No	117	92.1

Note. Age was reported as a continuous variable ($M = 40.9$, $SD = 9.3$, range = 24–63).

Perceived Barriers to Conducting and Publishing Research. Table 2 presents the ten most highly rated barrier items. The most strongly endorsed barrier was limited training courses on publishing ($M = 1.08$ on a 0–2 scale; 85.0% agreed or strongly agreed), followed by recognition of the importance of publishing research without corresponding institutional support (M

$= 1.04$; 88.2%), insufficient time to conduct scientific research ($M = 1.02$; 82.7%), high cost of publication ($M = 1.01$; 83.5%), and the perception that each journal has its own specific and often unclear guidelines ($M = 0.98$; 89.8%). Conversely, the least endorsed barriers concerned personal writing and language competence: difficulty expressing ideas in English ($M = 0.38$; 33.1%)

and not knowing how to write references or citations ($M = 0.46$; 40.9%). This pattern indicates that, for this hospital-based nursing workforce, structural and institutional constraints training availability, protected time, and financial cost were more salient barriers than

personal writing or language skill, a distinction consistent with barriers reported among nursing faculty in Saudi Arabia using the same instrument (Hakami, 2023).

Table 2: Ten Most Highly Rated Barriers to Conducting and Publishing Scientific Research (N = 127)

Barrier item	M (0–2)	Agree/Strongly Agree (%)
Limited training courses on publishing	1.08	85.0
Recognized the importance of publishing research	1.04	88.2
Insufficient time to conduct scientific research	1.02	82.7
High cost of publications	1.01	83.5
Each journal has a specific guideline	0.98	89.8
I do not know the steps of scientific publishing	0.98	82.7
Limited training courses on scientific writing	0.95	77.2
Scientific publishing is always linked to career advancements	0.95	81.1
Insufficient financial rewards for scientific publication	0.94	76.4
Difficulty understanding the mechanism of reviewing research in journal	0.89	76.4

Note. Item scores range from 0 (low barrier) to 2 (high barrier); strongly disagree and disagree were both coded 0, agree = 1, and strongly agree = 2.

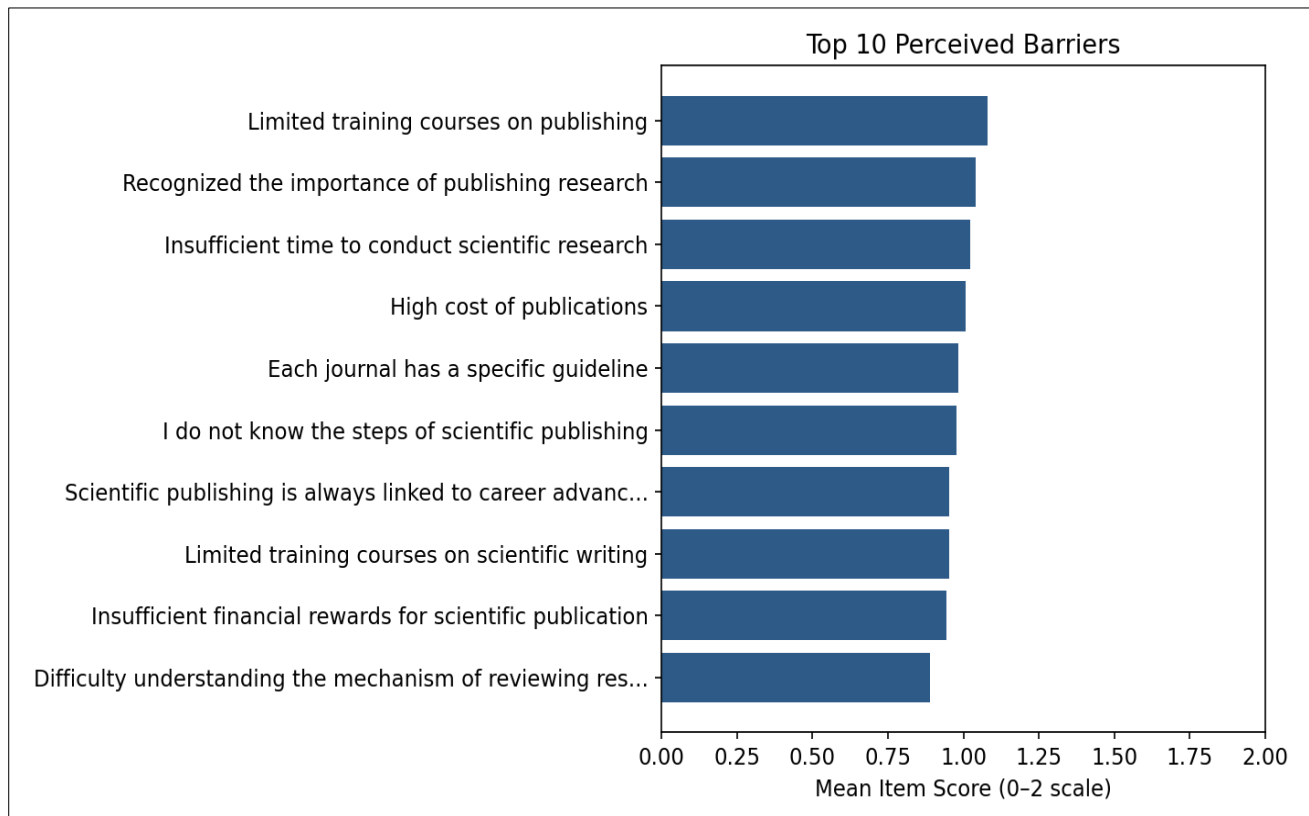


Figure 1: Mean item scores for the ten most highly rated barriers to conducting and publishing scientific research

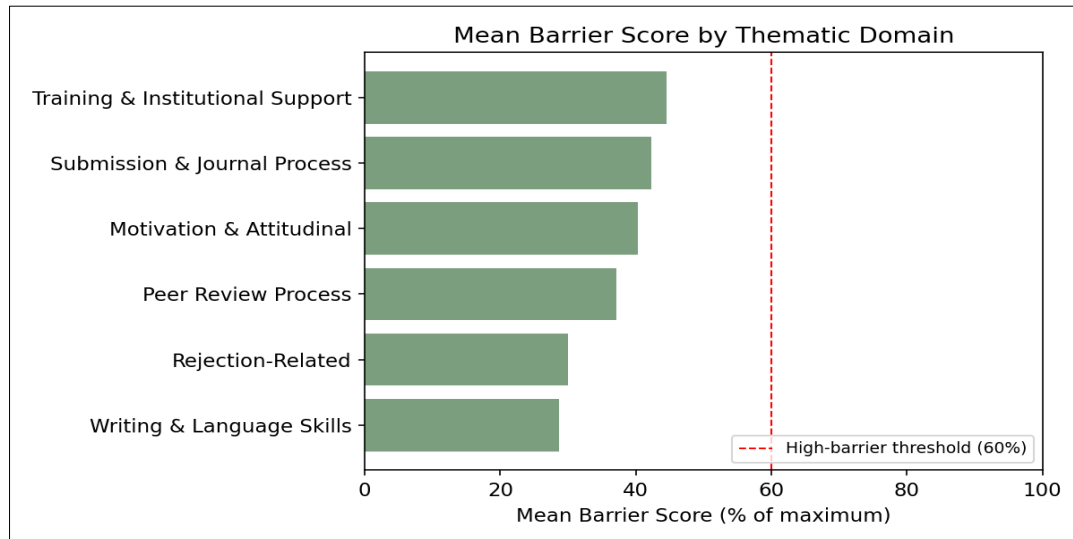
Domain-Level Barriers. When the 34 items were grouped into six thematic domains (Table 3, Figure 2), Training and Institutional Support barriers produced the highest mean domain score (44.6% of maximum), followed by Submission and Journal Process barriers (42.3%) and Motivation/Attitudinal barriers (40.4%). Writing and Language Skills barriers had the lowest mean domain score (28.7%). This domain-level pattern

reinforces the item-level finding that structural and institutional factors, rather than individual writing competence, represent the principal barriers to research engagement in this sample, echoing findings from a survey of factors influencing nurses' participation in clinical research in a Malaysian hospital setting, where workload and institutional support were identified as the dominant constraints (Nor *et al.*, 2021).

Table 3: Mean Barrier Scores by Thematic Domain (N = 127)

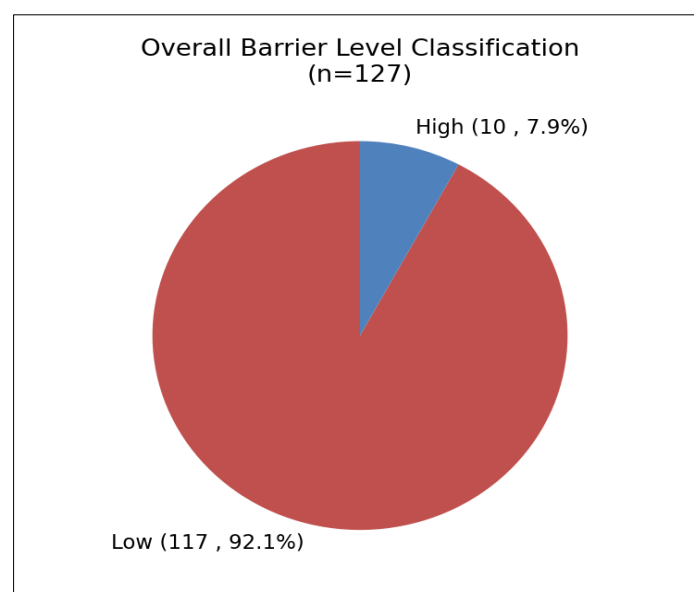
Domain	No. of items	M (%)	SD (%)	% classified high ($\geq 60\%$)
Training & Institutional Support	6	44.6	21.8	17.3
Submission & Journal Process	8	42.3	21.3	10.2
Motivation & Attitudinal	4	40.4	20.2	13.4
Peer Review Process	6	37.1	23.1	8.7
Rejection-Related	3	30.1	23.8	7.9
Writing & Language Skills	7	28.7	23.6	7.1

Note. Domain scores are expressed as a percentage of each domain's maximum possible score.

**Figure 2: Mean barrier score by thematic domain, with the 60% high-barrier threshold indicated**

Overall, Barrier Classification. On the overall 34-item scale (possible range 0–68), the mean total barrier score was 25.6 (SD = 12.9), corresponding to a mean percentage score of 37.7% (SD = 18.9%). Applying the pre-specified 60% cut-off, only 10 respondents (7.9%) were classified as experiencing an overall “high” level of barriers, while 117 (92.1%) were classified as “low” (Figure 3). This contrast with the

item-level findings where several individual barriers were endorsed by 75–90% of respondents indicates that, while specific practical barriers are widely experienced, most respondents did not endorse a sufficiently broad and intense combination of barriers across all 34 items to be classified as experiencing an overall high level of barriers.

**Figure 3: Overall classification of respondents into high- and low-barrier groups using the 60% cut-off (N = 127)**

Association with Demographic and Professional Characteristics. Chi-square tests of independence examining the association between the dichotomous (high/low) barrier classification and demographic and professional variables (Table 4) found no statistically significant associations (all $p > .05$).

However, because only 10 respondents were classified as “high barrier,” several expected cell counts were below 5 in every test performed, limiting the reliability of the chi-square approximation; results should be interpreted with caution.

Table 4: Chi-Square Tests of Association Between Demographic Variables and High/Low Barrier Classification

Variable	χ^2	df	p
Gender	0.00	1	.999
Age group	3.03	3	.388
Nationality	0.01	1	.938
Specialty group	6.44	7	.489
Marital status	0.45	2	.799
Qualification	1.73	2	.422
Research methodology training	0.02	1	.891
Publishing training	0.32	1	.569

As a supplementary, less cell-count-sensitive analysis, the continuous percentage barrier score was compared across groups using t-tests and one-way ANOVA (Table 5). Most comparisons were non-significant. Nurses with research-methodology training reported a numerically lower mean barrier score than those without ($M = 34.2\%$ vs. 39.7%), though this difference did not reach conventional significance, $t(97.9) = -1.68$, $p = .097$; similarly, nurses with publishing training reported a lower mean score than those without ($M = 31.1\%$ vs. 38.4%), $t(17.7) = -1.89$, $p = .073$. Both trends are directionally consistent with evidence that formal research and publishing training is associated with reduced perceived barriers to nursing scholarship (Ünal & Teskereci, 2021), although the present study may have been underpowered to detect these effects given the small number of trained nurses ($n = 47$ and $n = 13$, respectively).

Age group was the only variable significantly associated with barrier score, $F(3, 123) = 3.80$, $p = .012$

(Figure 4). Nurses younger than 30 years reported the highest mean barrier score ($M = 48.8\%$, $SD = 19.1\%$), followed by nurses aged 50 years and older ($M = 41.8\%$), those aged 40–49 years ($M = 39.0\%$), and nurses aged 30–39 years, who reported the lowest mean score ($M = 31.8\%$). This non-monotonic pattern suggests that the youngest, most recently qualified nurses in this sample who have had the least cumulative exposure to research training, mentorship, and publishing opportunities experience the greatest barriers, consistent with reports that early-career nurses often feel the least prepared for research engagement (Gautam *et al.*, 2023; Sakamoto, 2021). The relative decline in barriers among nurses aged 30–39 may reflect accumulating clinical and professional experience without yet facing the generational differences in exposure to digital submission systems and structured methodology training that may explain the modest rise again among nurses aged 50 and older. As this study was cross-sectional, these explanations remain speculative and warrant further investigation.

Table 5: Supplementary Comparisons of Continuous (%) Barrier Score by Demographic and Training Variables

Variable	Groups compared	Test statistic	p
Gender	Female vs. Male	$t(13.5) = 0.82$	.431
Nationality	Non-Saudi vs. Saudi	$t(24.6) = -1.57$	.127
Research methodology training	Yes vs. No	$t(97.9) = -1.68$	.097
Publishing training	Yes vs. No	$t(17.7) = -1.89$	.073
Marital status	Married vs. Single vs. Divorced	$F(2, 124) = 0.25$	.777
Qualification	Bachelor's vs. Diploma vs. Master's	$F(2, 124) = 0.24$	.784
Age group	< 30 vs. 30–39 vs. 40–49 vs. ≥50	$F(3, 123) = 3.80$	.012*
Specialty group	8 specialty groups	$F(7, 119) = 0.75$	.629

Note. * $p < .05$. *t* tests used Welch's correction for unequal variances; ANOVAs are one-way and unadjusted for multiple comparisons.

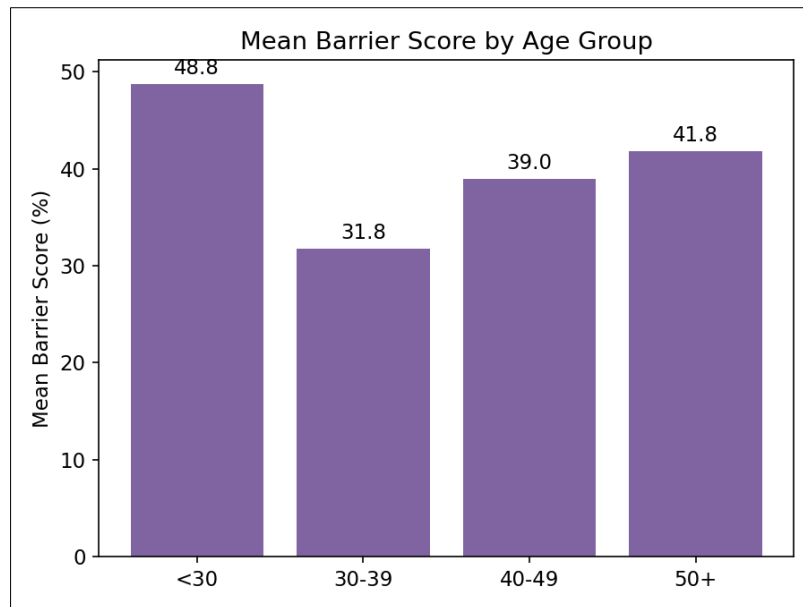


Figure 4: Mean barrier score (%) by age group.

Overall Interpretation. Taken together, these findings suggest that nurses at King Abdulaziz Hospital, Al-Ahsa, experience research and publication barriers that are predominantly structural and institutional insufficient training, time, and financial support, and unclear submission and review processes rather than rooted in individual writing or English-language competence. This distinction is important for intervention planning, as it suggests that resources may be more effectively directed toward protected research time, financial support for publication, and structured, accessible training pathways than toward English-language or academic-writing remediation alone (Watson, 2018). The absence of significant demographic associations for most variables is broadly consistent with prior research suggesting that nursing research barriers are largely structural and organizational rather than individually determined by gender, marital status, or specialty (Metersky *et al.*, 2024; Mbalinda *et al.*, 2024), while the significant age-group finding highlights early-career nurses as a group warranting particular attention from nursing education and research leadership.

Limitations

This study has several limitations. The sample was drawn from a single hospital using convenience sampling, limiting generalizability to other facilities or regions. The response rate (33.0%) raises the possibility of non-response bias. The small high-barrier group ($n = 10$) limited the statistical power and reliability of the chi-square analyses, several of which had expected cell counts below 5. The six thematic domains used for interpretation were derived by the authors and were not independently validated subscales of the original instrument. Self-reported barrier data are subject to social desirability and recall bias. Finally, the cross-sectional design does not permit causal inference

regarding the relationship between demographic or training variables and perceived barriers.

CONCLUSION

Nursing staff at King Abdulaziz Hospital, Al-Ahsa, perceive multiple barriers to conducting and publishing scientific research, with structural and institutional factors limited training on publishing, insufficient protected time, high publication costs, and unclear submission and review processes emerging as the most salient concerns, rather than personal writing or English-language competence. While only a small proportion of respondents met a stringent overall high-barrier threshold, the majority endorsed several specific, practical barriers, indicating that targeted institutional action remains warranted. Age group, but not other demographic or professional characteristics, was significantly associated with barrier scores, with the youngest nurses reporting the greatest barriers. Nursing leadership should consider expanding structured research and publishing training, allocating protected research time, providing financial support for publication, standardizing guidance on the submission and peer-review process, and offering targeted mentorship for early-career nurses. Periodic re-assessment, ideally extended across additional facilities within the Ministry of National Guard Health Affairs system, is recommended to monitor the impact of such interventions and to build a larger evidence base to guide nursing research policy.

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