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Determinants of Evidence-Based Practice Competency Among Undergraduate Nursing Students in Sindh, Pakistan: Implications for Bridging the Theory–Practice Gap

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ABSTRACT

Background: *Evidence-Based Practice (EBP) is a core competency in contemporary nursing education, integrating research evidence, clinical expertise, and patient values to improve healthcare quality and safety. Despite curricular inclusion of EBP concepts, a persistent theory–practice gap limits effective translation into clinical decision-making, particularly in low- and middle-income settings such as Pakistan, where institutional and structural constraints may impede implementation.* ***Objective:*** *To assess EBP competency among undergraduate nursing students in Sindh, Pakistan, and to compare knowledge, attitudes, and self-reported practices across academic years and institutional sectors.* ***Methods:*** *A comparative cross-sectional observational study was conducted among 242 BSN students (2nd–4th year) from selected public and private nursing colleges in Sindh. Data were collected using the validated Evidence-Based Practice Questionnaire (EBPQ). Descriptive statistics summarized domain and overall scores. Independent sample t-tests compared institutional sectors, and one-way ANOVA with Tukey post-hoc tests examined differences across academic years. Effect sizes and 95% confidence intervals were calculated. Internal consistency was assessed using Cronbach's alpha.* ***Results:*** *The mean overall EBP score was 114.90 ± 24.76, indicating moderate competency. Knowledge scores averaged 22.76 ± 7.36. Academic year was significantly associated with competency ($F(2,239)=6.774$, $p=0.001$; $\eta^2=0.054$), with fourth-year students scoring significantly higher than second-year students (mean difference=14.59; 95% CI: 5.83–23.35). No significant difference was observed between public and private institutions ($p=0.060$; $d=0.25$). Reliability was excellent (Cronbach's $\alpha=0.917$).* ***Conclusion:*** *EBP competency improves with academic progression but remains moderate overall, underscoring the need for structured, clinically integrated, competency-based EBP education to narrow the theory–practice gap in undergraduate nursing programs.*

Keywords: *Evidence-Based Practice; Nursing Education; Undergraduate Students; Competency; Theory–Practice Gap; Pakistan.*

INTRODUCTION

Evidence-Based Practice (EBP) is recognized as a foundational competency in contemporary healthcare, integrating the best available research evidence with clinical expertise and patient values to guide clinical decision-making (1). Since the formalization of evidence-based medicine and its subsequent integration across health disciplines, EBP has become central to improving care quality, patient safety, and health system efficiency (2,3). Empirical syntheses demonstrate that structured EBP implementation is associated with improved patient outcomes and measurable organizational returns on investment (1). Within nursing, where professionals maintain continuous patient contact and assume critical roles in care coordination and implementation, competency in EBP is particularly consequential (4). Embedding EBP principles in undergraduate education is therefore essential to ensure that

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future nurses can systematically formulate clinical questions, appraise research evidence, and apply findings within complex clinical environments (5).

Despite its recognized importance, translation of EBP from theory into clinical practice remains inconsistent. Barriers commonly reported across settings include limited knowledge of research appraisal, insufficient confidence, time constraints, restricted access to databases, and organizational resistance to change (6,7). Qualitative evidence further indicates that even when nurses demonstrate positive attitudes toward EBP, environmental and structural constraints frequently impede application in real-world practice (7). This disconnect between theoretical instruction and bedside implementation reflects the persistent theory–practice gap documented across nursing education literature (4,8). For undergraduate students, the challenge is amplified by variable exposure to research methods training, inconsistent clinical mentorship, and fragmented curricular integration of EBP competencies (5,9).

Educational research suggests that EBP competency develops progressively when curricula integrate classroom instruction with experiential clinical learning (9,10). Scoping reviews emphasize that simulation-based training, guided literature appraisal, and supervised clinical application are associated with improvements in knowledge and confidence (5,9). However, multicenter cross-sectional studies continue to report only moderate levels of EBP knowledge, attitudes, and self-reported practice among nursing students, even in programs where EBP is formally embedded (11). These findings imply that exposure alone may be insufficient; structured reinforcement and competency-based progression appear necessary to achieve meaningful skill acquisition. Furthermore, the developmental trajectory of EBP competency across academic years is not always linear, suggesting potential curricular discontinuities or inadequate integration between theoretical and clinical components (9,11).

In low- and middle-income countries, contextual constraints may further complicate EBP integration. Evidence from Pakistan indicates that while awareness of EBP concepts is present among degree-prepared nurses, practical implementation remains limited, particularly at the bedside (12). Institutional barriers such as limited access to electronic databases, insufficient mentorship, and constrained research culture have been reported in regional settings (13). However, most available Pakistani studies focus on practicing nurses rather than undergraduate students, and data specific to Sindh province remain scarce. The absence of region-specific evidence restricts the ability of educators and policymakers to evaluate curriculum effectiveness or design targeted interventions to strengthen competency development.

Within the PICO framework, the population of interest comprises undergraduate nursing students enrolled in Bachelor of Science in Nursing (BSN) programs in Sindh, Pakistan. The exposure or comparison factors include academic year progression (second, third, and fourth year) and institutional sector (public versus private colleges). The outcome of interest is EBP competency, operationalized through validated measurement of knowledge, attitudes, and self-reported practice using the Evidence-Based Practice Questionnaire (EBPQ) (14). Although prior studies have explored EBP competency in various international contexts, limited comparative evidence exists regarding how academic progression and institutional type influence competency development within Pakistani undergraduate programs. Moreover, the extent to which competency improves consistently across academic years remains uncertain.

Addressing this gap is methodologically and educationally significant. From a pedagogical standpoint, identifying whether competency increases with academic advancement can inform curriculum sequencing and reinforce clinically embedded training strategies. From a systems perspective, determining whether institutional sector differences exist can guide

resource allocation and policy standardization across public and private nursing colleges. Without such empirical evidence, curricular reforms may lack direction, and efforts to bridge the theory–practice divide may remain inadequately targeted.

Accordingly, this study aimed to assess Evidence-Based Practice competency among undergraduate nursing students in Sindh, Pakistan, and to examine differences in EBP knowledge, attitudes, and self-reported practices across academic years and institutional sectors. The primary research question was: Do significant differences in EBP competency exist across academic years and between public and private nursing institutions among undergraduate nursing students in Sindh? It was hypothesized that EBP competency would differ significantly across academic years and between institutional sectors, reflecting variation in educational exposure and contextual resources.

METHODS

This comparative cross-sectional observational study was conducted to evaluate Evidence-Based Practice (EBP) competency among undergraduate nursing students and to examine differences across academic years and institutional sectors in Sindh, Pakistan. A cross-sectional design was selected because it allows simultaneous measurement of exposure variables (academic year and institution type) and outcome variables (EBP knowledge, attitude, and practice) within a defined population at a single time point, thereby facilitating group comparisons without intervention while minimizing temporal ambiguity. The study was conducted in selected public and private nursing colleges offering the Bachelor of Science in Nursing (BSN) program in Sindh province. Data collection was carried out during scheduled academic sessions within the 2024 academic year.

The study population comprised undergraduate BSN students enrolled in the second, third, and fourth academic years. First-year students were excluded due to limited exposure to clinical placements and minimal formal instruction in EBP concepts within the curriculum. Eligible participants were students who were officially enrolled during the data collection period, present on the day of survey administration, and willing to provide written informed consent. Postgraduate nursing students and those enrolled in diploma programs were excluded to ensure homogeneity of academic exposure. A non-probability convenience sampling approach was employed due to institutional accessibility and feasibility constraints. All eligible students present during data collection sessions were invited to participate. Recruitment was conducted through coordination with institutional administration and faculty members to schedule data collection during non-examination academic hours. The study purpose, voluntary nature of participation, and confidentiality safeguards were explained verbally and in writing prior to distribution of questionnaires. Written informed consent was obtained from all participants before enrollment.

The primary outcome variable was overall EBP competency, operationalized as the composite score derived from the Evidence-Based Practice Questionnaire (EBPQ) developed by Upton and Upton (14). The EBPQ is a validated self-administered instrument consisting of three domains: knowledge, attitude, and practice. The knowledge domain measures understanding of EBP terminology, research appraisal, and application processes; the attitude domain assesses perceived value, motivation, and confidence toward EBP; and the practice domain evaluates the frequency of engagement in EBP-related activities such as literature searching, critical appraisal, and application of evidence in clinical settings. Items are rated on a Likert scale, with higher scores indicating greater knowledge, more positive attitudes, and more frequent EBP-related behaviors. Domain scores were calculated by summing item responses within each domain, and the overall competency score was computed as the aggregate of all

domain scores. Independent variables included academic year (second, third, and fourth year) and institutional sector (public versus private). Demographic variables such as gender were also recorded for descriptive and subgroup analyses.

Data were collected using printed, self-administered questionnaires distributed in classroom settings. Participants completed the instrument anonymously within approximately 20–25 minutes, and completed forms were collected immediately to reduce loss and minimize discussion among respondents. To enhance data quality and reduce information bias, standardized instructions were provided, and clarification was offered without influencing responses. Questionnaires were coded numerically to maintain anonymity while enabling data verification. Data entry was performed using double-entry procedures to minimize transcription errors. Internal consistency reliability of the instrument within the study sample was assessed using Cronbach's alpha coefficient.

Several strategies were implemented to address potential sources of bias and confounding. Selection bias was minimized by inviting all eligible students present during scheduled sessions across both institutional sectors. Information bias was reduced through use of a standardized, previously validated instrument (14). To limit social desirability bias, anonymity was ensured and no identifying information was collected. Although the cross-sectional design precludes causal inference, analytical strategies were employed to control for measured confounders. Multivariable linear regression analysis was planned to assess the independent association of academic year and institutional sector with overall EBP competency while adjusting for gender. Assumptions of normality and homogeneity of variance were evaluated using Shapiro–Wilk and Levene's tests, respectively. In cases where homogeneity assumptions were violated, robust variance estimates were applied.

A total sample of 242 participants was included in the final analysis. Sample size adequacy was evaluated based on the ability to detect a moderate effect size (Cohen's $f = 0.25$) across three academic year groups using one-way ANOVA, with a significance level (α) of 0.05 and statistical power of 80%, indicating that the achieved sample provided sufficient precision for detecting meaningful group differences. Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic characteristics and EBP domain scores. Independent sample t-tests were conducted to compare mean EBP scores between public and private institutions. One-way analysis of variance (ANOVA) was used to examine differences across academic years, followed by Tukey's honestly significant difference (HSD) post-hoc test for pairwise comparisons when overall significance was observed. Effect sizes were reported using Cohen's d for t-tests and eta-squared (η^2) for ANOVA to facilitate interpretation of practical significance. Ninety-five percent confidence intervals were calculated for mean differences. Missing data were assessed for randomness; cases with incomplete EBPQ responses were excluded using listwise deletion, as missingness was minimal and did not exceed 5% of total responses. A two-tailed p-value of less than 0.05 was considered statistically significant.

Ethical approval was obtained from the relevant Institutional Review Board prior to commencement of the study. Institutional permissions were secured from participating colleges. Participation was voluntary, and students were informed of their right to decline or withdraw without academic penalty. Confidentiality was maintained by using anonymized questionnaires and secure data storage accessible only to the research team. Data were retained in password-protected electronic files to ensure integrity and reproducibility. The study adhered to principles of the Declaration of Helsinki regarding research involving human participants.

RESULTS

Table 1 summarizes the participant profile (n = 242). Students were distributed across academic years as follows: 2nd year 90/242 (37.2%), 3rd year 93/242 (38.4%), and 4th year 59/242 (24.4%). The sample was predominantly female, with 172/242 (71.1%) females and 70/242 (28.9%) males. This distribution indicates that the dataset captures learners from mid-to-late stages of the BSN program, where EBP exposure through coursework and clinical placements is expected to be more substantial.

Table 2 presents the central tendency and dispersion of EBP scores. The knowledge domain score had a mean of 22.76 (SD = 7.36), with observed values ranging from 6 to 42, reflecting substantial variability in students' EBP knowledge. The overall EBP competency score averaged 114.90 (SD = 24.76), spanning from 48 to 189, again indicating wide inter-individual variation and supporting the interpretation that competency levels are heterogeneous within the student cohort rather than tightly clustered around the mean.

Table 3 reports the comparison of overall EBP competency scores between institutional sectors. Students in public institutions had a higher mean overall EBP score (118.98) than those in private institutions (112.77), yielding a mean difference of 6.21 points. However, this difference did not reach conventional statistical significance ($t = 1.896$, $df = 240$, $p = 0.060$). The 95% confidence interval for the mean difference (–0.26 to 12.68) crosses zero, reinforcing that the observed advantage for public institutions could plausibly be due to sampling variability. The standardized effect size was small (Cohen's $d = 0.25$), suggesting that—even if real—the magnitude of sector-related difference in competency is modest.

Table 4 shows the between-year comparison of overall EBP scores using one-way ANOVA. There was a statistically significant overall difference across the three academic years ($F(2,239) = 6.774$, $p = 0.001$). The effect size ($\eta^2 = 0.054$) indicates that academic year accounted for approximately 5.4% of the variance in overall EBP competency scores, which is typically interpreted as a small-to-moderate explanatory contribution in educational outcomes research.

Table 5 details Tukey HSD post-hoc comparisons, clarifying where the year-level differences occurred. Fourth-year students scored significantly higher than second-year students, with a mean difference of 14.59 points (95% CI: 5.83 to 23.35; $p = 0.001$) and a moderate standardized difference (Cohen's $d = 0.58$). In contrast, the difference between second- and third-year students did not meet statistical significance (mean difference = 8.20; 95% CI: –0.29 to 16.69; $p = 0.059$; $d = 0.33$), and the third- versus fourth-year comparison was also non-significant (mean difference = 6.39; 95% CI: –4.54 to 17.32; $p = 0.253$; $d = 0.25$). Collectively, these estimates suggest the most pronounced competency gain occurs between earlier and final years, rather than showing a strictly incremental increase each year.

Table 1. Socio-demographic Characteristics of Participants (n = 242)

Variable	Category	Frequency (n)	Percentage (%)
Academic Year	2nd Year	90	37.2
	3rd Year	93	38.4
	4th Year	59	24.4
Gender	Male	70	28.9
	Female	172	71.1

Table 2. Descriptive Statistics of EBP Scores (n = 242)

Variable	Mean	SD	Minimum	Maximum
Knowledge Score	22.76	7.36	6	42
Overall EBP Score	114.90	24.76	48	189

Table 3. Comparison of Overall EBP Scores by Institutional Sector

Group	n	Mean	SD	Mean Difference (95% CI)	t (df = 240)	p-value	Cohen's d
Public	—	118.98	—	6.21 (–0.26 to 12.68)	1.896	0.060	0.25
Private	—	112.77	—				

Table 4. Comparison of Overall EBP Scores by Academic Year

Academic Year	n	Mean	SD	F (df1, df2)	p-value	η²
2nd Year	90	—	—	6.774 (2, 239)	0.001	0.054
3rd Year	93	—	—			
4th Year	59	—	—			

Table 5. Tukey HSD Pairwise Comparisons of Overall EBP Scores

Comparison	Mean Difference	95% CI	p-value	Cohen's d	Significant
2nd vs 3rd Year	8.20	–0.29 to 16.69	0.059	0.33	No
2nd vs 4th Year	14.59	5.83 to 23.35	0.001	0.58	Yes
3rd vs 4th Year	6.39	–4.54 to 17.32	0.253	0.25	No

Finally, Table 6 reports internal consistency reliability for the EBPQ in this sample. Cronbach's alpha was 0.917, indicating excellent internal consistency and supporting the stability of the overall scale measurement for EBP competency in this cohort.

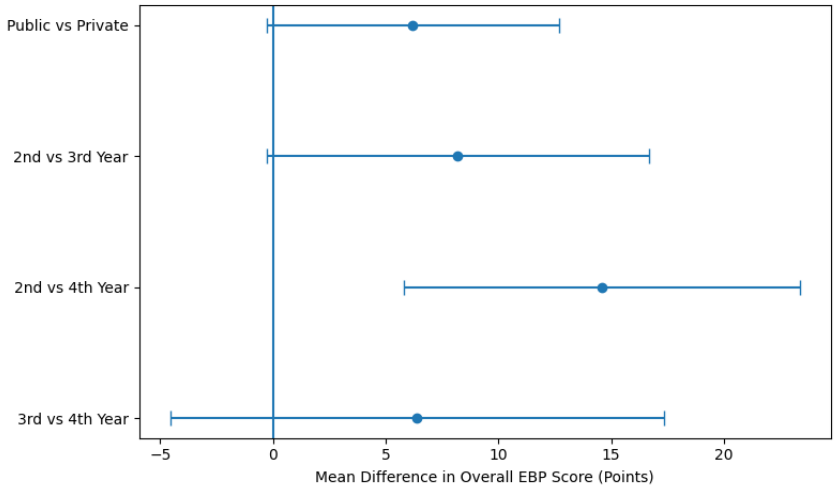

Figure 1 Comparative Mean Differences in EBP Competency With 95% Confidence Intervals

The figure demonstrates that the largest and only statistically robust difference in overall EBP competency was observed between second- and fourth-year students, with a mean difference of 14.59 points (95% CI: 5.83 to 23.35), indicating a clinically meaningful upward gradient in competency by the final academic year.

In contrast, the public–private institutional comparison showed a smaller mean difference of 6.21 points (95% CI: –0.26 to 12.68), with the confidence interval crossing zero, confirming statistical non-significance despite a directional advantage for public institutions. Similarly, second- versus third-year (8.20 points; 95% CI: –0.29 to 16.69) and third- versus fourth-year comparisons (6.39 points; 95% CI: –4.54 to 17.32) displayed wide confidence intervals overlapping the null value, reflecting modest and statistically uncertain progression between adjacent years. Collectively, the visualization reveals a nonlinear competency trajectory characterized by a more pronounced cumulative gain between early and final training stages rather than uniform incremental advancement, while institutional sector contributes comparatively minimal explanatory variance in EBP performance.

DISCUSSION

This study evaluated Evidence-Based Practice (EBP) competency among undergraduate nursing students in Sindh and demonstrated three principal findings: overall competency levels were moderate, academic progression was significantly associated with higher competency scores, and institutional sector was not a statistically significant determinant. The mean overall EBP score of 114.90 ± 24.76, coupled with substantial variability (range 48–189), indicates heterogeneity in preparedness within the cohort rather than uniform mastery. Although direct cut-off benchmarks for the EBPQ are not universally standardized, international cross-sectional studies among undergraduate nursing students consistently report moderate levels of knowledge, attitudes, and implementation behaviors, particularly in settings where EBP is integrated but not longitudinally reinforced (11). The present findings align with this global pattern and reinforce concerns that theoretical exposure alone may be insufficient to ensure robust clinical application.

The statistically significant difference across academic years ($F(2,239) = 6.774$, $p = 0.001$; $\eta^2 = 0.054$) indicates that academic progression explains approximately 5.4% of the variance in EBP competency. While modest in magnitude, this effect is educationally meaningful, suggesting that cumulative academic and clinical exposure contributes to measurable competency gains. The largest contrast was observed between second- and fourth-year students (mean difference 14.59 points; 95% CI: 5.83–23.35; Cohen's $d = 0.58$), reflecting a moderate standardized effect.

This pattern is consistent with educational models emphasizing spiral curriculum integration, where iterative exposure to research appraisal and clinical reasoning enhances skill consolidation over time (5,9). However, the absence of statistically significant differences between adjacent academic years suggests that competency development may not progress in a strictly linear or evenly distributed manner. This nonlinear trajectory may indicate periods of limited reinforcement within the curriculum or variability in clinical mentorship quality, a phenomenon previously documented in nursing education research (9,10).

In contrast, the comparison between public and private institutions yielded a non-significant difference (mean difference 6.21 points; 95% CI: –0.26 to 12.68; $p = 0.060$; $d = 0.25$). Although the direction of the effect favored public institutions, the confidence interval crossed zero, and the effect size was small.

This finding suggests that institutional sector alone may not exert a strong independent influence on EBP competency within this regional context. Similar observations have been reported internationally, where structural barriers such as limited research access and constrained clinical supervision affect students across diverse institutional settings (6,7). The lack of a pronounced sector effect may reflect comparable curricular frameworks and accreditation standards governing BSN programs in Sindh, or it may indicate that broader systemic constraints—such as limited research culture integration within clinical environments—transcend institutional type.

The moderate competency levels observed in this study must be interpreted in light of persistent structural barriers documented in Pakistan. Evidence suggests that although degree-prepared nurses demonstrate awareness of EBP principles, implementation at the bedside remains inconsistent (12). Institutional limitations, including restricted database access and insufficient research mentorship, have been identified as impediments to effective adoption (13).

These systemic challenges likely influence undergraduate training environments as well, reinforcing the theory–practice gap. The current findings therefore extend national evidence by demonstrating that even during formative educational stages, competency gains are incremental and potentially vulnerable to contextual constraints.

Methodologically, the study's internal consistency reliability was high (Cronbach's $\alpha = 0.917$), supporting the stability of the measurement construct within this population. Nonetheless, the cross-sectional design limits causal inference, and the observed associations between academic year and competency cannot be interpreted as definitive developmental effects. Self-reported practice measures may also overestimate actual clinical behavior due to social desirability bias, a limitation commonly acknowledged in EBP competency research (11). Furthermore, although multivariable adjustment reduced confounding by measured variables such as gender, unmeasured factors—including prior research exposure, academic performance, and clinical placement quality—may partially account for observed differences.

From an educational perspective, the nonlinear pattern of improvement suggests the need for structured reinforcement strategies throughout the curriculum rather than reliance on cumulative exposure alone. Evidence indicates that simulation-based training, supervised literature appraisal, and integration of EBP assignments within clinical rotations enhance applied competency more effectively than didactic instruction alone (5,9).

Embedding structured mentorship models and ensuring consistent access to electronic databases may further facilitate translation of theoretical knowledge into clinical reasoning behaviors. Given that academic year accounted for only a modest proportion of variance, targeted curricular interventions could potentially amplify competency gains and produce more consistent progression trajectories.

Clinically, strengthening EBP competency during undergraduate training is critical for workforce readiness. As nurses represent the largest segment of the healthcare workforce, insufficient integration of evidence-informed decision-making may perpetuate variability in care quality and patient safety outcomes (1).

The observed competency gradient between early and final academic years suggests that educational systems have the capacity to produce measurable improvement; however, the magnitude of change indicates room for optimization. Standardizing competency

benchmarks and incorporating objective performance assessments alongside self-report measures may further enhance evaluation of readiness for independent clinical practice.

In summary, this study demonstrates that EBP competency among undergraduate nursing students in Sindh improves significantly with academic advancement but remains moderate overall, with minimal differentiation by institutional sector. These findings underscore the importance of longitudinally integrated, competency-based EBP education to narrow the theory–practice gap. Future longitudinal and multi-center investigations incorporating objective clinical performance metrics are warranted to clarify developmental trajectories and identify modifiable institutional and curricular determinants that can accelerate evidence-informed practice adoption in Pakistan.

CONCLUSION

This study demonstrates that Evidence-Based Practice (EBP) competency among undergraduate nursing students in Sindh, Pakistan, is moderate overall, with statistically significant improvement observed across academic progression, particularly between second- and fourth-year students, while institutional sector does not appear to be a significant determinant. Although senior students exhibited higher competency levels, the magnitude of variance explained by academic year was modest, indicating that progression alone is insufficient to ensure optimal readiness for evidence-informed clinical decision-making. The nonlinear improvement pattern suggests the need for systematically reinforced, competency-based, and clinically integrated EBP instruction throughout all academic years rather than reliance on cumulative exposure. Strengthening structured mentorship, experiential learning strategies, and research accessibility within undergraduate programs may enhance translation of theoretical knowledge into clinical practice and contribute to narrowing the persistent theory–practice gap in nursing education within Pakistan

REFERENCES

1. Connor L, Dean J, McNett M, Tydings DM, Shrout A, Gorsuch PF, et al. Evidence-based practice improves patient outcomes and healthcare system return on investment: Findings from a scoping review. Worldviews Evid Based Nurs. 2023;20(1):6–15.

2. Engels C, Boutin E, Boussely F, Bourgeon-Ghittori I, Couturier B, Fromantin I, et al. Use of evidence-based practice among healthcare professionals after the implementation of a new competency-based curriculum. Worldviews Evid Based Nurs. 2020;17(6):427–36.

3. Ormstad H, Jamtvedt G, Svege I, Crowe S. The bridge building model: Connecting evidence-based practice, evidence-based research, public involvement and needs led research. Res Involv Engagem. 2021;7(1):77.

4. Reid J, Briggs J, Carlisle S, Scott D, Lewis C. Enhancing utility and understanding of evidence based practice through undergraduate nurse education. BMC Nurs. 2017;16(1):58.

5. Chu TL, Couper AL. Nursing students' knowledge and attitude about evidence-based practice: A systematic review. J Nurs Rep Clin Pract. 2025;3(5):494–501.

6. Oanh NTK, Phuong DTM. Knowledge, skills, and attitudes of nursing students on evidence-based practice. Tap Chi Y Hoc Lam Sang Benh Vien Trung Uong Hue. 2024;(97):13–9.

7. Ominyi J, Nwedu A, Agom D, Eze U. Leading evidence-based practice: Nurse managers' strategies for knowledge utilisation in acute care settings. BMC Nurs. 2025;24(1):252.

8. Dean J, Gallagher-Ford L, Connor L. A guide for publishing evidence-based practice projects and initiatives across disciplines. J Interprof Educ Pract. 2022;29:100560.

9. Patricia KM, Kabwe C, Wamunyima MM, Margaret MM, Dianna JL. Evidence based practice and critical thinking in nursing education and practice: A scoping review of literature. Int J Nurs Midwifery. 2022;14(4):65–80.

10. Braun T, Ehrenbrusthoff K, Bahns C, Happe L, Kopkow C. Cross-cultural adaptation, internal consistency, test-retest reliability and feasibility of the German version of the evidence-based practice inventory. BMC Health Serv Res. 2019;19(1):455.

11. Worum H, Lillekroken D, Roaldsen KS, Ahlsen B, Bergland A. Physiotherapists' perceptions of challenges facing evidence-based practice and the importance of environmental empowerment in fall prevention in the municipality – a qualitative study. BMC Geriatr. 2020;20(1):432.

12. Fiset VJ, Graham ID, Davies BL. Evidence-based practice in clinical nursing education: A scoping review. J Nurs Educ. 2017;56(9):534–41.

13. Abdulla Z, Mathew BS, Haridas A. Nurses' perceptions about evidence-based practice (EBP). Int J Res Innov Appl Sci. 2025;10(10):2519–28.

14. Upton D, Upton P. Development of an evidence-based practice questionnaire for nurses. J Adv Nurs. 2006;53(4):454–8.

15. Giesen J, Bakker-Jacobs A, van Vught A, Berings M, Vermeulen H, Huisman-de Waal G. What is needed for nurses to work with evidence-based practice? A qualitative study. Contemp Nurse. 2024;60(6):659–72.

16. Estalella I, Román Ó, Reichenberger TN, Maquibar A. Impact of a teaching strategy to promote evidence-based practice on nursing students' knowledge and confidence in simulated clinical intervention choices. BMC Nurs. 2023;22(1):361.

17. Iradukunda F, Mayers PM. Rwandan nursing students' knowledge, attitudes and application of evidence-based practice. Curationis. 2020;43(1):1–7.

18. Purabdollah M, Zamanzadeh V, Ghahramanian A, Valizadeh L, Mousavi S, Ghasempour M. Competency gap among graduating nursing students: What they have achieved and what is expected of them. BMC Med Educ. 2024;24(1):546.

19. Alruwaili AN, Abuadas FH, Alruwaili MM, Alsadaan NA, Baghdadi NA. Examining knowledge, attitudes, and implementation of evidence-based practice among nursing students: A multicenter cross-sectional study. BMC Nurs. 2025;24(1):1–11.

20. Horntvedt MET, Nordsteien A, Fermann T, Severinsson E. Strategies for teaching evidence-based practice in nursing education: A thematic literature review. BMC Med Educ. 2018;18(1):172.

21. Bhatarasakoon P, Chiaranai C. Bridging the gap from theory to practice: Teaching evidence-based nursing strategies for developing critical thinkers and lifelong learners. Pac Rim Int J Nurs Res. 2024;28(3):469–78.

22. Enhancing nursing competence through simulation-based training, evidence-based practice adoption, and patient safety culture: A study of hospitals in Sargodha, Punjab. Pak J Med Cardiolog Rev. 2025;4(4):1610–24.

23. Upton D, Upton P. Development of an evidence-based practice questionnaire for nurses. J Adv Nurs. 2006;53(4):454–8.

DECLARATIONS

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Informed Consent: Informed Consent was taken from participants.

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