

RESEARCH ARTICLE

Undergraduate Nursing Research Education and Preparedness for Evidence-Based Practice: A Cross-Sectional Study in Kenyan National Referral Hospitals

Domnick ABUNGU^{*1} , Anne KOSKE NG'ENO¹  and Joyce BALIDAWA²¹ Department of Community Health, Family Medicine and Medical Education, Moi University, Kenya² Department of Mental Health and Behavioral Sciences, Moi University*Corresponding Author: dabungu@kabarak.ac.ke

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ABSTRACT

Despite the global recognition of evidence-based practice (EBP) as a cornerstone of quality nursing care, rigorous multi-institutional evidence characterizing the EBP preparedness of Bachelor of Science in Nursing (BScN)-trained nurses in Kenyan tertiary hospital settings remains sparse, with most existing literature originating from high-income Western contexts and relying on single-institution convenience samples. This study determined the extent to which exposure to undergraduate nursing research education prepares nurses to apply EBP in clinical settings at two national referral hospitals in Kenya. Using a concurrent embedded mixed-methods design, a descriptive cross-sectional survey was administered to 136 BScN nurses (92.5% response rate), complemented by in-depth interviews with 20 purposively selected nurse managers at Moi Teaching and Referral Hospital and Nakuru County Teaching and Referral Hospital. Universal undergraduate research exposure (100%) was confirmed, and self-rated preparedness was consistently high across all six research competency domains ranging from 82.3% (data collection and analysis) to 90.4% (literature review) with excellent internal consistency (Cronbach's $\alpha = .9565$). Preparedness ratings were statistically homogeneous across all demographic subgroups ($p > .05$). However, qualitative narratives revealed a critical preparedness-competence paradox: declared readiness reflected declarative knowledge of research concepts but not procedural competence to appraise primary literature, conduct data analysis, or implement evidence in clinical contexts; the undergraduate curriculum was experienced as a compliance-driven, proposal-only exercise rather than a full-cycle, practice-embedded learning trajectory. Undergraduate nursing research education in Kenya successfully instills EBP attitudes and normative preparedness but fails to cultivate the applied competencies necessary for authentic evidence implementation. The Nursing Council of Kenya should urgently lead a curriculum audit and reform to embed full-cycle research practicums including supervised data collection, analysis, and critical appraisal across BScN training, supported by structured school-hospital clinical EBP partnerships.

Keywords: *Evidence-Based Practice (EBP); Nursing Research Education; Preparedness-Competence Gap; BScN Nurses and; Kenya Referral Hospitals*

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INTRODUCTION

Evidence-based practice (EBP) constitutes a cornerstone of contemporary nursing science and is broadly defined as the deliberate, explicit, and judicious integration of the best available research evidence with clinical expertise and patient values to guide healthcare decisions (Melnik & Fineout-Overholt, 2019; Sackett et al., 1996). The adoption of EBP across healthcare systems has been associated with measurable improvements in patient outcomes, reduced rates of hospital-acquired complications, standardization of care quality, and more efficient allocation of healthcare resources (Stevens, 2013; Titler, 2018). Consequently, the capacity to locate, appraise, and implement research evidence in clinical practice has emerged as a central competency benchmark for professional nursing education worldwide (World Health Organization [WHO], 2020).

In sub-Saharan Africa, including Kenya, the rapid expansion of university-level nursing education since the early 2000s has been motivated in substantial part by the imperative to cultivate a graduate nursing workforce capable of engaging meaningfully with research and implementing evidence in clinical settings (Nzengya et al., 2023). The Bachelor of Science in Nursing (BScN) curriculum, as mandated by the Nursing Council of Kenya (NCK), incorporates dedicated modules on research methodology, biostatistics, critical appraisal of literature, and the foundational principles of evidence-based care (NCK, 2019). The underlying policy assumption is that this academic exposure sufficiently equips BScN graduates to translate research knowledge acquired during training into competent, evidence-informed clinical decision-making across their professional careers.

However, a growing and increasingly robust body of international nursing literature challenges this assumption. Systematic reviews and multi-site surveys consistently demonstrate that self-reported preparedness for EBP does not reliably correspond to observed EBP behavior in practice settings (Brown et al., 2009; Melnyk et al., 2012). Graduate nurses may acquire declarative knowledge of research concepts and an intellectual understanding of what EBP is without developing the procedural competence to enact the practical skills to appraise primary literature, contextualize evidence within local patient populations, and design and justify evidence-informed changes to clinical routines (Squires et al., 2011). This preparedness-to-practice gap appears to be especially pronounced in low- and middle-income countries (LMICs), where structural constraints, resource limitations, hierarchical clinical cultures, and

institutional underinvestment in research infrastructure collectively intersect with educational gaps to impede EBP implementation (Aarons et al., 2011; Omery & Williams, 1999).

Within Kenya's national referral hospital system where the complexity and severity of patient presentations and the multi-specialty nature of care demand sophisticated, research-informed clinical reasoning the question of how effectively undergraduate research education translates into genuine EBP preparedness carries profound implications for patient safety, care quality, and the professional standing of nursing as a discipline (Njiru, 2018). Despite this significance, empirical evidence characterizing the preparedness of BScN-trained nurses for EBP application in Kenyan tertiary healthcare settings remains sparse. The majority of published studies on this topic originate from high-income Western healthcare contexts, or rely on single-institution convenience samples with limited methodological rigor and generalizability to the Kenyan or broader sub-Saharan African nursing context (Perez et al., 2021). This evidence gap impairs the ability of policymakers, nursing educators, and hospital administrators to design targeted, evidence-informed interventions to strengthen EBP capacity within the nursing workforce.

This study was designed to address this critical gap. Guided by a pragmatic worldview and employing a concurrent embedded mixed-methods design, this investigation integrates quantitative measurement of perceived EBP preparedness across six core research competency domains with qualitative exploration of the lived educational and professional experiences that shape the relationship between undergraduate training and EBP readiness. Data were drawn from two strategically selected national referral hospitals: Moi Teaching and Referral Hospital (MTRH) in Eldoret and Nakuru County Teaching and Referral Hospital (NCTRH) in Nakuru.

Theoretical Framework

This study is anchored in two complementary theoretical frameworks: the Transtheoretical Model (TTM) of behavior change (Prochaska & DiClemente, 1983) and the Theory of Planned Behavior (TPB; Ajzen, 1991). The TTM conceptualizes behavior change as a staged process through which individuals progress across five discrete stages precontemplation, contemplation, preparation, action, and maintenance each characterized by distinct cognitive, motivational, and behavioral features. Applied to EBP adoption in nursing, the TTM predicts that formal undergraduate education may move nurses from contemplation to the preparation stage, equipping

them with positive intentions and foundational research knowledge. However, attaining the action stage in which nurses consistently and skillfully implement research evidence in clinical decision-making requires additional enabling conditions beyond intention alone, including self-efficacy (confidence in one's ability to perform the behavior), mastery experiences, and environmental reinforcement (Melnik et al., 2014; Prochaska & DiClemente, 1983).

The TPB (Ajzen, 1991) complements this staged model by specifying the cognitive antecedents of behavioral intention and action. According to the TPB, a nurse's engagement in EBP behavior is jointly determined by three constructs: (a) attitude toward the behavior the degree to which EBP is viewed positively or negatively; (b) subjective norms perceived social pressure from significant others (peers, supervisors, medical colleagues) to engage in EBP; and (c) perceived behavioral control the extent to which the nurse feels capable and empowered to engage in EBP. Of particular relevance to the present study is the construct of perceived behavioral control, which functions as a proxy for self-efficacy and directly predicts not only behavioral intention but also, independently, behavioral performance (Francis et al., 2004). The TPB predicts that even where attitudes are positive and norms are supportive, low perceived behavioral control will inhibit EBP engagement a prediction that aligns closely with the preparedness-competence paradox identified in this study's findings.

Together, these frameworks generate a coherent prediction: undergraduate nursing education that succeeds in building positive EBP attitudes (improving affective and normative components of the TPB) and moving nurses to the preparation stage of the TTM will nonetheless fail to produce consistent EBP behavior if it does not simultaneously build robust self-efficacy and practical research competence. This theoretical architecture provides both the interpretive lens for the study's quantitative findings and the explanatory scaffold for the qualitative narratives reported below.

We determined the extent to which exposure to undergraduate nursing research education prepares nurses to apply evidence-based practice in clinical settings at two national referral hospitals in Kenya.

METHODS

Study Design and Philosophical Orientation

This study employed a concurrent embedded mixed-methods design, as operationalized by Creswell and Plano Clark (2018). This design is characterized by the simultaneous collection and

analysis of both quantitative and qualitative data within a single phase, with one strand assigned greater methodological weight than the other. In this study, the quantitative strand was assigned primary status (75% weighting) and employed a descriptive cross-sectional survey design to measure the extent and pattern of EBP preparedness across the eligible nurse population. The embedded qualitative strand (25% weighting) adopted a phenomenological orientation (Polit & Beck, 2021), foregrounding the lived educational and professional experiences of nurses as the unit of qualitative analysis.

The philosophical foundation for this design was pragmatism (Creswell & Plano Clark, 2018; Morgan, 2014). Pragmatism prioritizes the research problem over allegiance to a singular philosophical paradigm, permitting the researcher to select and combine methods based on their fitness for purpose. The complex, multilayered nature of the research problem understanding how undergraduate education shapes EBP preparedness across a diverse nursing population operating in high-acuity clinical environments necessitated both the breadth achievable through quantitative measurement and the depth accessible through qualitative inquiry. The pragmatic orientation also foregrounds the practical utility of findings, ensuring that results are directly actionable for curriculum developers and health workforce planners in Kenya.

Integration of quantitative and qualitative findings occurred at the interpretive phase through a "following the thread" approach (O'Cathain et al., 2010), in which quantitative patterns were progressively elaborated, explained, and occasionally challenged by qualitative narratives yielding a richer, more nuanced meta-inference than either strand could produce independently.

Study Setting

The study was conducted at two purposively selected national referral hospitals: Moi Teaching and Referral Hospital (MTRH) in Eldoret, Uasin Gishu County, and Nakuru County Teaching and Referral Hospital (NCTRH) in Nakuru. Both institutions are designated by the Ministry of Health Kenya as national and regional referral facilities with formal mandates encompassing specialized clinical service delivery, health professions training, and research (Ministry of Health Kenya, 2012). Their dual role as high-acuity service delivery sites and teaching institutions makes them particularly appropriate settings for investigating the translation of research education into clinical EBP practice (Njiru, 2018; Nzengya et al., 2023). The combined nursing workforce across both institutions at the time of data collection totaled 844 nurses.

Population and Sampling

The study targeted undergraduate-trained registered nurses (BScN holders) who were formally employed at either MTRH or NCTRH on permanent, contractual, or long-term engagement terms, with a minimum of one year of post-qualification clinical experience. This minimum experience threshold was established to ensure that participants had sufficient exposure to routine clinical decision-making processes to provide informed perspectives on EBP application in practice (Polit & Beck, 2021). Applying the specified inclusion and exclusion criteria to the combined workforce of 844 nurses yielded an eligible population of 238 nurses. This figure was used as the basis for quantitative sample size computation.

For the quantitative component, the National Education Association (1960) formula for small population sample size determination was applied at a 95% confidence level ($\chi^2 = 3.841$), assuming maximum population proportion variability ($P = 0.5$) and a degree of accuracy of $d = 0.05$. This yielded a required sample size of 147 nurses, drawn using stratified random sampling across clinical departments and professional roles to ensure representative coverage. Of the 147 questionnaires distributed, 136 were completed and returned, yielding a response rate of 92.5%, which exceeds the minimum acceptable threshold for clinical survey research (Polit & Beck, 2021).

For the qualitative component, 20 participants were purposively recruited from eligible nurses who had not participated in the quantitative survey 10 from each institution drawn from clinical nursing, nursing administration, and nurse education roles. Recruitment continued until data saturation was achieved, consistent with the criterion that successive interviews no longer generated novel codes or themes (Braun & Clarke, 2006; Guest et al., 2020).

Instrumentation

Quantitative data were collected using an adapted version of the Research Utilization Questionnaire (RUQ), an instrument with a well-documented history in assessing research utilization behavior and preparedness among nurses (Champion & Leach, 1989; Estabrooks, 1999; Yoder et al., 2014). For this study, the RUQ was adapted to assess six EBP preparedness competency domains: (a) problem identification and development of a problem statement, (b) literature identification and critical review, (c) research proposal development, (d) data collection and analysis, (e) interpretation and presentation of findings, and (f) recommendation of findings for practice utilization. Items were rated on a five-point Likert

scale anchored at 1 (strongly disagree) to 5 (strongly agree). The instrument was supplemented with a comprehensive demographic section and items specific to the Kenyan undergraduate nursing experience.

Instrument validity and reliability were established through a pilot study conducted with 15 BScN nurses at Langa Langa Hospital, Nakuru County a facility excluded from the main study assessing item clarity, cultural appropriateness, face validity, and internal consistency. Pilot feedback led to minor wording revisions in several items and the removal of one redundant attitudinal item. Internal consistency for the preparedness subscale was excellent (Cronbach's $\alpha = .9565$), affirming the psychometric rigor of the adapted instrument within the Kenyan clinical nursing context.

Qualitative data were collected using an unstructured interview guide comprising open-ended questions derived directly from the study objective. Each interview lasted 40–60 minutes and was conducted either face-to-face in a private location at the study hospital or via video-enabled Zoom. All sessions were audio-recorded with explicit written informed consent and subsequently transcribed verbatim. Field notes captured non-verbal cues, contextual observations, and researcher reflections throughout the data collection process.

Data Analysis

Quantitative data were entered, coded, and analyzed using IBM SPSS Version 25.0 at a significance threshold of $\alpha = .05$. Descriptive statistics including frequencies, means, and percentages were computed to characterize the distribution of EBP preparedness ratings across the six competency domains and across the sample's demographic and professional attributes. Internal consistency of the preparedness subscale was assessed using Cronbach's alpha coefficient. Chi-square tests of independence (with Cramér's V effect size estimates) were applied to examine whether preparedness ratings differed significantly across demographic and professional subgroups (Kothari, 2004). Binary logistic regression was employed to explore predictive relationships between background characteristics and preparedness outcomes.

Qualitative data were analyzed using the systematic six-phase thematic analysis framework developed by Braun and Clarke (2006): (1) repeated reading of transcripts and audio review to achieve familiarization; (2) systematic generation of initial codes across the full dataset; (3) collation of codes into candidate themes; (4) review and refinement of candidate themes in

relation to the coded data and full dataset; (5) definition and naming of final themes; and (6) production of the analytic report with illustrative participant extracts. Trustworthiness was established using Lincoln and Guba's (1985) four criteria: credibility, dependability, confirmability, and transferability, operationalized through member checking, peer debriefing with supervisors, maintenance of a detailed audit trail, reflexive journaling, and provision of thick, contextualized description.

Ethical Considerations

Ethical approval was obtained from the Moi Teaching and Referral Hospital Institutional Research and Ethics Committee (Ref No: IREC/2019/000090; Approval No: 0003491) and the National Commission for Science, Technology and Innovation (Ref No: NACOSTI/P/20/3063). Institutional approvals were separately secured from the administrative leadership of both study hospitals. Written informed consent was obtained from all participants prior to data collection. Participants were assured of voluntary participation, the unconditional right to withdraw at any stage without penalty, and full confidentiality through anonymized coded identification systems and secure data storage protocols. All data were stored on password-protected computers and in locked filing cabinets, with audio recordings deleted following verbatim transcription verification.

RESULTS

Response Rate

A total of 147 questionnaires were distributed across the two study sites. Of these, 136 were completed and returned, yielding an overall quantitative response rate of 92.5%. For the qualitative component, all 20 recruited participants completed in-depth interviews, achieving full qualitative participation.

Demographic Characteristics of Participants

Table 1 presents the demographic characteristics of the 136 quantitative respondents. The majority were female (75.7%), with males comprising 24.3%. The predominant age bracket was 25–30 years (37.5%), indicating a relatively young workforce. Most participants (86.8%) held a BScN degree as their highest nursing qualification, while 12.5% had completed postgraduate master's-level training. Respondents graduated from 16 different universities across Kenya, with the largest proportions from Baraton University (25.0%), followed by Egerton, Moi, and Pwani Universities (each 11.0%). Regarding post-qualification experience, 44.1% had 2–5 years and 16.9% had more than 10 years. The majority were based at NCTRH (61.0%), with 39.0% at MTRH. Clinical nursing (74.3%) was the predominant area of practice, and Nursing Officers (47.1%) and Primary/Staff Nurses (26.5%) formed the largest designation categories.

Table 1:

Demographic Characteristics of Study Participants (N = 136)

Characteristic	Category	n	%
Gender	Male	33	24.3
	Female	103	75.7
Age Range (years)	Below 25	11	8.1
	25–30	51	37.5
	31–35	27	19.8
	36–40	21	15.4
	41–50	23	16.9
	Above 50	3	2.2
Highest Nursing Qualification	BScN	118	86.8
	BSc HSM	1	0.7
	Master's	17	12.5
Years of Post-Qualification Experience	<1 year	7	5.2
	<2 years	16	11.8
	2–5 years	60	44.1
	6–10 years	30	22.1
	>10 years	23	16.9

Facility of Practice	MTRH – Eldoret	53	39.0
	NCTRH – Nakuru	83	61.0
Area of Nursing Practice	Clinical Nursing	101	74.3
	Nurse Manager	21	15.4
	Counsellor/Educator	9	6.6
	Other	5	3.7
Designation	Nursing Officer	64	47.1
	Primary/Staff Nurse	36	26.5
	Ward In-Charge	13	9.6
	Nurse Manager	9	6.6
	Chief Nursing Officer	6	4.4
	Clinical Nurse Educator	6	4.4
	Other	2	1.5

Note. MTRH = Moi Teaching and Referral Hospital; NCTRH = Nakuru County Teaching and Referral Hospital; BScN = Bachelor of Science in Nursing; BSc HSM = Bachelor of Science in Health Systems Management.

Exposure to Undergraduate Research Education

Universal exposure to undergraduate research education was confirmed: all 136 respondents (100%) reported that their BScN program included formal instruction in nursing research methodology. This finding establishes a uniform baseline of formal research education exposure across the participant sample, providing an appropriate foundation for assessing subsequent EBP preparedness. The universality of research curriculum exposure reflects successful implementation of the Nursing Council of Kenya's (NCK's) curriculum mandates across diverse training institutions and graduation cohorts represented in the sample.

Self-Rated Preparedness Across EBP Competency Domains

Table 2 presents the distribution of self-rated preparedness across the six core EBP competency

domains. Respondents demonstrated consistently high preparedness ratings across all six domains, with the proportion of "Agree" or "Strongly Agree" responses ranging from 82.3% (data collection and analysis) to 90.4% (literature identification and review). Literature review garnered the highest endorsement (90.4% agree/strongly agree), followed closely by problem statement identification (89.0%), interpretation and presentation of findings (86.0%), recommendation of findings for utilization (85.3%), proposal development (83.1%), and data collection and analysis (82.3%). Even in the lowest-rated domain, more than four-fifths of respondents expressed agreement with preparedness statements. Cronbach's alpha for the six-item preparedness scale was excellent ($\alpha = .9565$), confirming that the items cohesively measured a single underlying construct of research preparedness and validating the use of the adapted RUQ instrument in this population (Burns & Grove, 2011).

Table 2:

Self-Rated Preparedness Across EBP Research Competency Domains (N = 136)

Preparedness Competency Domain	SD	D	N	A	SA	A+SA %
	n (%)	n (%)	n (%)	n (%)	n (%)	
Problem statement identification	6 (4.4)	4 (2.9)	5 (3.7)	60 (44.1)	61 (44.9)	89.0
Literature identification/review	6 (4.4)	3 (2.2)	4 (3.0)	66 (48.9)	56 (41.5)	90.4
Research proposal development	7 (5.2)	6 (4.4)	10 (7.4)	57 (41.9)	56 (41.2)	83.1
Data collection and analysis	5 (3.7)	4 (2.9)	15 (11.0)	57 (41.9)	55 (40.4)	82.3
Interpretation and presentation of findings	7 (5.2)	4 (2.9)	8 (5.9)	71 (52.2)	46 (33.8)	86.0
Recommending findings for utilization	5 (3.7)	4 (2.9)	11 (8.1)	69 (50.7)	47 (34.6)	85.3

Note. SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree. A+SA % = combined percentage of Agree and Strongly Agree responses. Scale reliability: Cronbach's $\alpha = .9565$ (excellent).

Chi-Square Tests of Association for Preparedness Domains

Table 3 presents the results of chi-square tests examining whether preparedness ratings differed significantly across demographic and professional subgroups (e.g., gender, years of experience, training institution, clinical department). No statistically significant associations were found for any of the six competency domains (all $p > .05$). Chi-square values ranged from 0.490 to 2.246, with Cramér's V effect sizes uniformly small (range: .060–.128), indicating negligible practical significance of any observed group differences. This homogeneity of perceived preparedness across diverse demographic and professional subgroups suggests that the sense of research readiness is broadly shared among BScN nurses regardless of their background characteristics finding consistent with the interpretation that uniform undergraduate curriculum exposure produces uniform, if potentially superficial, preparedness perceptions.

Table 3:

Chi-Square Tests of Association for Preparedness Items by Subgroup (N = 136)

Preparedness Domain	N	χ^2	df	p-value	Cramér's V	Sig.
Problem statement identification	136	1.079	1	.299	.089	ns
Literature identification/review	136	2.246	1	.134	.128	ns
Research proposal development	136	0.490	1	.484	.060	ns
Data collection and analysis	136	2.062	1	.151	.123	ns
Interpretation/presentation	136	0.705	1	.401	.072	ns
Recommending findings for use	136	1.765	1	.184	.114	ns

Note. All tests used $df = 1$. ns = not significant ($p > .05$). Cramér's V effect sizes: small $< .10$, medium $.10-.30$, large $> .30$ (Cohen, 1988).

Attitudes Toward Research Utilization

Table 4 summarizes respondents' attitudinal dispositions toward research utilization, alongside chi-square tests of association by subgroup. Attitudes were broadly positive. The vast majority (91.9%) agreed or strongly agreed that research is needed to improve nursing practice, and 81.6% expressed willingness to change clinical practice in response to research findings. The negatively framed item "research findings are too complex to use in practice" was rejected by 70.6% of respondents, indicating that most did not perceive research as inherently inaccessible or irrelevant to clinical settings. However, items concerning effort and access revealed more ambivalence: 27.9% agreed that research application required too much

effort, while 29.4% disagreed, and responses to the item on access difficulty were similarly mixed.

The chi-square analysis identified one statistically significant association: perceptions of research complexity varied significantly across subgroups ($\chi^2 = 4.82$, $df = 1$, $p = .028$, Cramér's V = .188), suggesting that nurses with less experience, limited postgraduate exposure, or lower engagement with institutional research activities were more likely to perceive research findings as overly complex. All other attitudinal items generated non-significant chi-square results (all $p > .05$), indicating consistent attitudes toward research need, willingness to change practice, and perceived relevance across the diverse subgroups in the sample.

Table 4:

Attitudes Toward Research Utilization and Chi-Square Tests of Association (N = 136)

Attitudinal Statement	Key Response Distribution	χ^2	df	p-value	Cramér's V
"Research is needed to improve nursing practice."	SA: 75.0%; A: 16.9%	1.065	1	.303	.089
"I would change my practice based on research evidence."	SA: 41.2%; A: 40.4%	0.365	1	.545	.052
"Research findings are too complex to use in practice."	D/SD: 70.6%	4.820	1	.028*	.188
"Research is not applied to my practice."	D/SD: 76.5%	0.962	1	.326	.084
"It takes too much effort to apply research."	Mixed: D 29.4%; A 27.9%	1.584	1	.208	.108
"It is difficult to access/evaluate relevant evidence."	Mixed distribution	0.964	1	.326	.084

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree. * $p < .05$. Effect size interpretation: Cramér's V $< .10$ = small, $.10-.30$ = medium, $> .30$ = large.

Qualitative Findings: The Preparedness-Competence Paradox

Thematic analysis of the 20 in-depth interviews generated a central meta-theme the preparedness-competence paradox defined by the coexistence of high self-rated competence in research processes with profound practical unreadiness for applied EBP. Three primary themes and six sub-themes elaborated this paradox, summarized in Table 5 and discussed below.

Table 5:

Summary of Qualitative Themes and Sub-themes: The Preparedness-Competence Paradox

Theme	Sub-theme	Description	Theoretical Link
Preparedness-Competence Paradox	Theory Without Practice	Proposals written for graduation; no full-cycle research exposure during training.	TTM: Preparation stage reached but Action stage not attained.
	Cognitive Complexity & Self-Doubt	Research perceived as intimidating; fear of misinterpretation leads to avoidance.	TPB: Low perceived behavioral control undermines EBP intention.
	Postgraduate as Turning Point	Master's training cited as first real opportunity for applied EBP competence.	TTM: Postgraduate exposure provides mastery experiences needed for Action stage.
Social & Structural Barriers	Emotional & Physical Exhaustion	Shift fatigue depletes mental energy; research perceived as a "luxury".	TPB: Behavioral control diminished by resource depletion.
	Professional Marginalization	Nurses' evidence recommendations dismissed by medical team, reducing motivation.	TPB: Subjective norms and perceived control jointly undermined.
	Career Disincentives	No link between research activity and promotion or institutional recognition.	DOI: Low relative advantage reduces innovation adoption likelihood.

Note. TTM = Transtheoretical Model; TPB = Theory of Planned Behavior; DOI = Diffusion of Innovations Theory.

Theme 1: Theory Without Practice

Participants consistently described undergraduate research training as partial, procedural, and compliance-oriented experienced primarily as an academic hurdle for graduation rather than a meaningful capacity-building process. Research was associated almost exclusively with dissertation proposal writing, project defense panels, and academic grading rather than with professional decision-making: "In undergraduate training, we only wrote proposals but never did real data collection or analysis." Another participant elaborated: "We learned how to write chapters, but not how to collect real data or interpret statistics. So when you see an article with numbers, it becomes hard." These accounts reveal that undergraduate curricula achieved proposal-writing procedural competence but left nurses ill-equipped for the full research cycle a gap directly consequential for applied EBP in clinical settings (Pravikoff et al., 2005).

Many participants additionally noted that faculty teaching approaches were perceived as outdated and insufficiently EBP-modelling: "Most lecturers still use old notes and don't teach us how to apply research in real practice." This pedagogical observation implicates not only curriculum design

but also faculty development as a lever for improving graduate EBP preparedness.

Theme 2: Cognitive Complexity and Self-Doubt

Despite endorsing preparedness on the questionnaire finding attributable, at least in part, to the social desirability of affirming competence in research-valuing professional environment participants frequently characterized research as intimidating, overly technical, and cognitively demanding in ways that the pace and pressures of clinical work could not accommodate. Descriptors such as "scary," "confusing," and "too complicated" recurred across participants at both institutions. One nurse gave an unusually frank account of the professional risk calculus underpinning research avoidance: "You worry you might misunderstand something. So you avoid bringing it up because you don't want to look like you don't know what you are talking about." This self-protective avoidance behavior aligns precisely with the TPB's construct of low perceived behavioral control the critical mediator between positive EBP attitudes and enacted EBP behavior (Ajzen, 1991; Squires et al., 2011).

Theme 3: Postgraduate Exposure as a Turning Point

A recurring and theoretically significant finding among nurses with postgraduate qualifications was that practical EBP competence the ability to independently locate, critically appraise, and apply primary research to clinical decisions was first genuinely developed at the master's level rather than during undergraduate training: "I only began to understand how to use evidence in practice after joining my master's program." This finding has important equity implications: it implies that the threshold for applied EBP competence is currently above what BScN programs deliver, and that access to this competence is conditioned on postgraduate enrollment resource-intensive pathway unavailable to the majority of Kenya's nursing workforce.

Professional development opportunities and short EBP-focused courses were described by some participants as partial compensatory mechanisms, but these were inconsistently available, often self-funded, and therefore accessible primarily to nurses in more senior or well-resourced positions.

DISCUSSION

This study produced a theoretically significant and practically consequential finding: undergraduate nursing research education in Kenya successfully instills normative acceptance of EBP and generates high levels of subjective preparedness across six research competency domains, yet demonstrably fails to cultivate the applied, procedural competencies necessary for authentic evidence implementation in complex clinical environments. This preparedness-competence paradoxical divergence between what nurses say they can do and what they are practically equipped to do has several important implications for nursing education policy, curriculum design, clinical mentorship, and workforce development in sub-Saharan Africa.

The uniformly high self-rated preparedness scores observed quantitatively (82.3%–90.4% agreement across domains) are consistent with cross-sectional findings from comparable nursing education studies in Africa and beyond that document positive EBP attitudes and self-efficacy following undergraduate training (Melnyk et al., 2018; Perez et al., 2021; Yoder et al., 2014). However, the qualitative evidence fundamentally problematizes these scores. Participant narratives reveal that the preparedness expressed quantitatively reflects declarative knowledge an understanding of research language, procedures, and steps rather than procedural competence the ability to navigate the full research cycle, critically appraise primary

literature, adapt evidence to local clinical realities, and implement evidence-informed changes to care protocols. This declarative-procedural dissociation, well-established in cognitive and educational psychology (Anderson, 1982), is directly predicted by both the TTM (nurses reaching the preparation but not the action stage) and the TPB (high intention without sufficient perceived behavioral control).

The finding that preparedness ratings were statistically homogeneous across all demographic and professional subgroups ($p > .05$ for all chi-square tests) further suggests that the subjective sense of readiness is a broadly institutionalized response to shared undergraduate curriculum exposure rather than reflecting genuine differentiation in skill development across nurses with different experience levels, training institutions, or clinical backgrounds. This uniformity may paradoxically be a marker of institutional compliance rather than educational achievement: when all graduates are exposed to the same compliance-oriented proposal-writing curriculum, they share the same preparedness narrative, regardless of their actual applied competence (Squires et al., 2011).

The qualitative evidence strongly implicates curriculum architecture as the primary structural mechanism producing the preparedness-competence paradox. BScN programs appear to operationalize research education as a discrete, terminal academic exercise culminating in a proposal defense rather than as a developmental, practice-embedded, competency-verified learning trajectory (Brown et al., 2009; Polit & Beck, 2021).

This design prioritizes compliance with regulatory graduation requirements over the progressive cultivation of research capability. The consequence is graduates who are procedurally familiar with the early stages of the research process problem formulation and proposal writing but who lack meaningful experience with data management, statistical analysis, critical appraisal of primary literature, and the translation of findings into clinical recommendations. From the TTM perspective, the curriculum constructs intentions and foundational attitudes (moving nurses toward the preparation stage) but provides neither the mastery experiences nor the environmental reinforcement required to activate the action stage.

Benner's (1984) novice-to-expert framework is instructive here: theoretical knowledge provides the initial scaffolding for professional competence, but expert practice is developed through iterative, situated clinical experience supported by reflective

mentorship. A curriculum that terminates at the proposal stage leaves nurses at the research novice level throughout their entire undergraduate preparation unable to engage independently with the messy realities of research implementation in clinical settings.

The identification of postgraduate education as the primary site at which authentic applied EBP competence is developed has significant equity implications for Kenya's nursing profession. If the threshold for practical EBP competence is systematically above what BScN programs currently deliver, nurses without postgraduate credentials the vast majority of the clinical nursing workforce are structurally excluded from developing the competence that meaningful EBP engagement requires. This exclusion reproduces professional hierarchy within nursing, with postgraduate-trained nurses serving as de facto EBP resource persons for their BScN-trained colleagues, rather than a broadly distributed EBP-capable workforce.

This finding calls for urgent curriculum reform at the undergraduate level. Integrating full-cycle research experiences, including supervised data collection, an analysis practicum, and structured journal club participation, into the BScN curriculum would reduce reliance on postgraduate education as a compensatory mechanism and democratize access to applied EBP competence (Benner et al., 2010; Fink et al., 2005).

The findings carry several actionable implications for nursing education, clinical governance, and health workforce policy in Kenya. First, the Nursing Council of Kenya should lead a formal curriculum audit of BScN research education modules, benchmarking against competency frameworks that specify applied, procedural research skills, including data analysis, systematic review, and guideline adaptation, rather than merely proposal writing (NCK, 2019; WHO, 2020). Second, nursing schools should establish partnerships with teaching hospitals to create structured clinical EBP practicum experiences embedded within undergraduate training, enabling students to apply research skills in real clinical contexts under mentored supervision. Third, at the institutional level, the creation of journal clubs, EBP committees, and research mentorship programs provides cost-effective, evidence-based mechanisms for building research culture and sustaining the applied EBP competence of graduate nurses in resource-limited settings (Fink et al., 2005; Forsman et al., 2012).

Several methodological limitations warrant careful consideration. First, the cross-sectional design

precludes causal inference regarding the relationship between undergraduate education and EBP preparedness; longitudinal designs tracking nurses from graduation through clinical practice would provide stronger causal attribution. Second, self-rated preparedness data are susceptible to social desirability bias, potentially inflating preparedness perceptions in response to institutionally valued professional norms (Polit & Beck, 2021). Third, the restriction to two national referral hospitals limits transferability of findings to county-level or community health facilities, where workforce composition, resource environments, and training demographics may differ substantially. Fourth, while thematic saturation was achieved within the qualitative sub-sample of 20 participants, this sample size may not fully represent the diversity of experiences across all clinical departments and specializations represented in the study population.

Conclusion

This study provides rigorous mixed-methods evidence that undergraduate nursing research education in Kenya achieves high levels of normative acceptance and subjective EBP preparedness while simultaneously falling short of cultivating the practical, procedural competencies necessary for authentic evidence implementation in complex clinical environments. The preparedness-competence paradox nurses who endorse readiness but lack applied competence represents a structural inadequacy of BScN curricula with direct consequences for care quality, patient safety, and professional nursing identity in Kenya's national referral hospitals. Closing this gap requires a fundamental reorientation of undergraduate nursing research education: from compliance-driven proposal writing toward full-cycle, practice-embedded, competency-verified EBP training supported by sustained clinical mentorship and institutionalized research structures. Urgent, collaborative curriculum reform between nursing schools, the Nursing Council of Kenya, Commission for University Education (CUE) and national training and referral hospital partners is necessary to ensure that Kenya's growing BScN-trained nursing workforce is genuinely equipped not merely formally certified to lead evidence-based improvements in patient care.

Conflict of Interest

The authors declare no conflict of interest.

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