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Research

Clinical reasoning perceptions among differently educated registered nurses: A cross-sectional study

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ABSTRACT

Background: Clinical reasoning is a critical skill for nursing practice, yet its development is influenced by educational preparation, years of experience, and professional variables. Limited research has explored the differences in perceptions of clinical reasoning competence among graduates of Associate Degree in Nursing and Bachelor of Science in Nursing programs.
Aim: To investigate differences in perceived clinical reasoning competence based on educational preparation and other variables.
Methods: This cross-sectional quantitative study surveyed newly graduated nurses using the Nurses Clinical Reasoning Scale. Independent samples t-tests, one-way Analysis of Variance, and Multivariate Analysis of Variance were conducted to analyze differences across variables.
Results: No statistically significant differences in perceived clinical reasoning competence were observed between Associate Degree in Nursing and Bachelor of Science in Nursing graduates or across years of licensure. Multivariate analyses also revealed insignificant results.
Conclusions: Despite its small sample size, this study provides preliminary evidence that perceptions of clinical reasoning ability are comparable across educational pathways and early licensure stages. These findings underscore the need for broader research and Bayesian analysis. This work establishes priors for future, more extensive studies using Bayesian analysis.

Background

In the United States, persons seeking to become registered nurses may pursue one of 4 primary educational pathways to licensure: associate degree (ADN), baccalaureate degree (BSN), diploma, or direct-entry master's programs. Although all pathways culminate in the same national licensure examination and confer eligibility to practice as a registered nurse (RN), persistent debate in nursing education and practice centers on whether educational preparation is associated with substantive differences in nursing practice and clinical outcomes.

The American Nurses Association (ANA) intensified this debate in 1965 by endorsing a position statement recommending the BSN as the primary entry point into nursing practice (ANA, 1976; Anderson, 1981). This recommendation led to extensive research on the topic. Correlational evidence indicates that hospitals with a higher proportion of BSN-prepared nurses are associated with enhanced health outcomes, including lowered mortality rates, fewer failure-to-rescue incidents, and lower readmission rates (Aiken, 2003; Lasater et al., 2021; O'Brien et al., 2018). A follow-up to Aiken et al.'s (2003) study (2021) demonstrated that increasing the proportion of BSN-prepared nurses improves patient outcomes regardless of the hospital work environment, while enhanced nurse staffing has a greater impact in hospitals with more favorable work environments. Research further suggests that ADN and BSN nurses differ in their perceptions of top-of-license nursing practice activities, including critical thinking, communication, and patient education (Loversidge et al., 2018). Despite these findings, some ADN-to-BSN graduates report that their approach to patient safety does not change after earning a BSN

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degree (Anbari & Vogelsmeier, 2018), suggesting that prior experience as an ADN-prepared nurse may also considerably influence practice outcomes.

Concurrently, the nursing profession continues to grapple with literature that primarily attributes differences in nurses' knowledge, practice, and outcomes to educational preparation. This perspective has influenced broader societal narratives, at times leading to mischaracterizations of the knowledge, skills, abilities, and contributions of RNs without a baccalaureate or higher education. A New Hampshire State Representative recently stated, "When I'm in the hospital, and a nurse walks in the room, I don't want just some 'Jeannie Smith off the sidewalk' that's maybe taken 2 years at a community college with basic education, and I have something that's very technical" (Graham, 2021). In June 2022, the ANA adopted a new racial-reckoning statement acknowledging its history of exclusionary practices, including the harm associated with its 1965 position paper on the BSN (American Nurses Association, 2022).

Concerns have been expressed about the methodologies and variable selection in studies comparing ADN- and BSN-prepared nurses, as many rely on large datasets that may lack contextual nuance, introduce bias, and are correlational in nature, lacking causal sensitivity (Aiken & Sloane, 2020). Additionally, focusing on outcomes such as patient mortality may suggest that nurses control factors like physician practice, hospital policies, staffing levels, or broader determinants of health, which is not always accurate. Since the ADN was the predominant educational pathway for registered nurses from its inception until the past 6 years, fully assessing the influence and impact of ADN-prepared nurses, who historically comprised over 60% of the RN workforce, remains challenging. There is limited nursing literature comparing ADN and BSN preparation using outcome measures primarily or exclusively influenced by nurses, such as clinical reasoning.

Clinical reasoning is an essential part of nursing practice, encompassing the collection and analysis of patient information, evidence-based decision-making, and the implementation of appropriate interventions (Jessee, 2021; Simmons, 2010). Proficiency in administering complex clinical scenarios is essential for providing high-quality, safe, and patient-focused care. The development of clinical reasoning competence is affected by factors such as educational preparation, licensure experience, and the professional environment (Hong et al., 2021). Apprehending these influences is critical for informing curricular strategies and professional development. While both ADN and BSN programs provide basic knowledge and skills, they may differ in pedagogical approaches to critical thinking, evidence-based practice, and curricular design. Although some literature suggests that BSN-prepared nurses demonstrate greater competency in clinical judgment and problem-solving, evidence of their impact on clinical reasoning remains inconsistent. Discussion continues regarding which elements of BSN education contribute to reported outcomes, particularly when comparing RN-to-BSN and pre-licensure BSN graduates (Anbari, 2019). Furthermore, while years of licensure and professional experience are presumed to enhance clinical competence, the progression of these developments is not well understood. Most studies have focused on broad outcomes, such as patient mortality and readmission rates, with limited attention to competencies directly influenced by nurses, including clinical reasoning. The literature frequently conflates clinical reasoning with wider constructs such as critical thinking or decision-making, and many studies use outdated or insufficiently reliable instruments to measure clinical reasoning specifically (Carvalho et al., 2017). This study addresses a significant gap by explicitly examining perceived clinical reasoning competence among ADN and BSN nurses during their formative years, using a contemporary, validated instrument to assess this core competency.

Objectives

This study examined nurses' perceptions of clinical reasoning competence in their early professional years. The first objective was to compare nurses' perceptions of their clinical reasoning competence based on their initial educational preparation, specifically between those who initially obtained an ADN and those who initially received a BSN. The aim of this comparison was to provide insights into whether educational pathways shape perceptions of clinical reasoning during the formative years of practice.

The second objective was to evaluate how perceptions of clinical reasoning competence vary among newly licensed nurses by years of licensure. By examining groups categorized as having licensure for <1 year, 1 to 3 years, and 4 years or more, the study aimed to shed light on the potential influence of professional experience on the development of clinical reasoning skills. Finally, the study aimed to analyze whether demographic and professional variables, including age, gender, geographic region, and current work setting, contribute to differences in the perceptions of clinical reasoning competence. The aim of this objective was to identify broader contextual factors that may affect nurses' perceptions of their reasoning ability in clinical situations. The research questions guiding this study were:

1. Based on their initial preparation, are there statistically significant differences in the clinical reasoning perceptions between ADN and BSN-prepared nurses?
2. Are there statistically significant differences between nurses' perceived clinical reasoning competence and years of licensure?
3. Are there statistically significant differences in perceived clinical reasoning competence between independent variables such as age, gender, geography, and work setting?

Methods

Study design

This study employed a quantitative cross-sectional design to investigate nurses' perceptions of clinical reasoning competence across diverse demographic and professional characteristics. This design enabled a snapshot of perceived clinical reasoning competence at a single time. It enabled comparison between groups to examine potential differences in perceptions of clinical reasoning competence by educational preparation, years of licensure, and other demographic and professional variables. Participants were assigned to groups based on their responses. These groups included initial educational preparation (ADN, BSN, Diploma/Other) and years of experience (<1 year, 1 year, 1–3 years, and 4 years of practice).

Setting and participants

Recruitment took place between July and September 2024, using a convenience sampling approach with newly graduated nurses. Those with up to 5 years of nursing practice were recruited from diverse clinical settings across the United States via an online survey. Participants were eligible if they were newly graduated registered nurses (NGNs) (1–4 years, but no more than 5 years) and had varying educational preparation (ADN, BSN, Diploma). Nurses were excluded if they had more than 5 years of practice experience. Data collection took place online, with targeted recruitment in healthcare facilities across the West Coast, East Coast, Midwest, and Gulf South Regions, using the Organization of Associate Degree Nursing member lists and communication channels.

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Variables and measures

The primary dependent variable for this study was the perception of clinical reasoning competence. This variable was collected through the Nurses Clinical Reasoning Scale developed by Liou et al. (2016). This instrument was created using a well-known clinical reasoning model theory (Levett-Jones et al., 2010). The instrument authors conducted rigorous testing of the instrument through content analysis, achieving a content validity index of 1.0. The authors employed exploratory factor analysis in both the pilot and main studies to assess construct validity and extracted a single factor. Lastly, the authors tested the internal consistency of the overall instrument using Cronbach's alpha (α = .94), indicating excellent reliability. Scores were reported on a Likert scale, where higher scores indicated greater perceived competence. Independent variables included educational preparation (ADN vs. BSN), years of licensure (<1 year, 1 year, 1–3 years, and 4 years or more), demographic and categorical variables (such as age, gender, and geography), and professional variables (including current practice settings).

Data collection and analysis

All data were collected using an anonymous online survey on the Qualtrics software platform. Deidentified data were extracted into an Excel spreadsheet and imported into SPSS version 29 for analysis. The dataset was checked and cleaned. In this study, missing data accounted for less than 5% of the final, cleaned dataset (n = 36 cases), with 2 missing entries on a scale variable in 2 cases. To address this, missing values were replaced using the mean imputation method in SPSS. Specifically, the mean of the observed values for the corresponding variable was used to estimate the missing data. This approach was appropriate given the minimal missing data and the assumption that the missing data were random.

Descriptive statistics summarized participant characteristics and clinical reasoning scores. Inferential analyses addressed the study's 3 research questions. An independent samples t-test was used to compare clinical reasoning competence between ADN- and BSN-prepared nurses. In contrast, a one-way ANOVA was used to examine differences in competence across licensure-year categories. Lastly, Multivariate Analysis of Variance (MANOVA) was conducted to explore the effects of age, gender, geography, and current work setting on perceived clinical reasoning competence. Assumptions for each test were evaluated for normality using Shapiro–Wilk tests and visual inspection of histograms. Homogeneity of variances was tested using Levene's test for ANOVA and MANOVA. Multivariate assumptions were assessed using Box's M test for homogeneity of covariance matrices.

Study size

An a priori power analysis was conducted to determine the appropriate sample size for comparing clinical reasoning competence between groups in this study. Using G*Power 3.1, the analysis was configured for a two-tailed independent samples t-test with an anticipated effect size (Cohen's d) of 0.5, a standard α error probability of 0.05, and a desired power ($1 - \beta$) of 0.95. The allocation ratio (N2/N1) was set to 1, assuming equal group sizes. The analysis determined that a total sample size of 176 participants (88 per group) is required to achieve the specified power. The critical t-value for this configuration was 1.6537, and the actual power achieved was 0.9514, slightly exceeding the desired threshold. This analysis ensures that the study is sufficiently powered to detect a medium effect size with high confidence, while minimizing the risk of a Type II error.

Ethical considerations and bias

Efforts to minimize bias included de-identifying survey responses and consistently applying inclusion and exclusion criteria. Ethical approval was obtained from the Institutional Review Board (IRB) at Tulane University (IRB #: 2024-502). Participants provided informed consent electronically before completing the survey. Data confidentiality was maintained by anonymizing all responses and securely storing the data for analysis. This methodological approach adhered to the STROBE checklist for cross-sectional studies to ensure transparency and rigor in the study design and reporting.

Results

A total of n = 102 participants completed the survey. However, 21 participants completed the survey but answered the inclusion question, "Are you an RN?" as "no," yet answered "yes" in the demographic surveys (or vice versa). Since the researchers were unsure of the participants' status, their entries were removed from the dataset. An additional n = 19 participants indicated that they had been nurses for over 5 years and still completed the survey; therefore, those responses were also removed. Finally, n = 26 participants answered the inclusion questions correctly. However, they did not complete any of the clinical reasoning perception portions of the survey, and their entries were subsequently removed, resulting *in a dataset of* n = 36 participants. This significant attrition rate (64%) severely limited the study's power and is addressed in more detail in the limitations section.

Demographic data

The sample included 36 participants. Most were ages 26–35 (50.0%), with smaller proportions in the 18–25 (25.0%), 36–45 (22.2%), and 46–55 (2.8%) age groups. Participants primarily identified as female/transfeminine (77.8%), followed by male/transmasculine (16.7%) and nonbinary/third gender (5.6%). Most identified as White (66.7%), with additional representation from African American/Black (13.9%), Asian (8.3%), Hispanic/Latine/Spanish (5.6%), and Other (5.6%); among Hispanic/Latine origin responses, most reported non-Latine (86.1%), with smaller proportions identifying as Cuban (2.8%), Mexican/Chicano (5.6%), or other Hispanic/Latin origins (5.6%).

Educational preparation was primarily ADN (52.8%) or BSN (44.4%) (Other, 2.8%); at the time of the study, 50.0% had pursued a BSN, 41.7% reported no change, and smaller proportions pursued an MSN (2.8%) or other advanced pathways (5.6%). Most had been licensed for >1 year (55.6%), with 22.2% licensed for <1 year and 13.9% reporting 1 full year. Participants represented diverse practice areas, most commonly critical care (27.8%) and acute care/medical–surgical (25.0%), followed by ED (13.9%), with remaining participants distributed across outpatient, psychiatric, post-acute/LTAC, and other areas. Orientation most often occurred via residency programs (38.9%), followed by preceptorship (27.8%) and unit-based orientation (25.0%). Geographically, participants were primarily located in the Gulf South (50.0%), with additional representation from the Midwest (22.2%), West Coast (16.7%), and East Coast (11.1%). Please see Table 1 for a more comprehensive overview of the study's demographics.

Main results

We used an independent samples t-test to compare perceived clinical reasoning competence between ADN and BSN graduates. The group statistics revealed that the mean clinical reasoning competence score for ADN graduates (n = 19) was 4.31 (SD = 0.89), while the mean score for BSN graduates (n = 16) was slightly higher at 4.35

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Table 1
Demographic characteristics.

Variable	Category	Frequency (*n*)	Percent (%)	Cumulative percent (%)
Age group	18–25	9	25.0	25.0
	26–35	18	50.0	75.0
	36–45	8	22.2	97.2
	46–55	1	2.8	100.0
Gender/Sex	Man (including transman)	6	16.7	16.7
	Woman (or transwoman)	28	77.8	94.4
	Nonbinary or third gender	2	5.6	100.0
Race/Ethnicity	African American or Black	5	13.9	13.9
	Asian	3	8.3	22.2
	White	24	66.7	88.9
	Hispanic, Latin, or Spanish	2	5.6	94.4
	Other	2	5.6	100.0
Initial educational preparation	ADN	19	52.8	52.8
	BSN	16	44.4	97.2
	Other	1	2.8	100.0
Years of licensure	<1 year	8	22.2	22.2
	1 year	5	13.9	36.1
	Over 1 year to 3 years	20	55.6	91.7
	4 years (but under 5)	3	8.3	100.0
Current work area	Acute care (medical–surgical)	9	25.0	
	Critical care	10	27.8	52.8
	Emergency department	5	13.9	66.7
	Outpatient settings	2	5.6	75.0
	Other	6	16.7	100.0

(SD = 0.46). Levene's test indicated that the assumption of equal variances was met, $F(1, 33) = 0.740$, $p = 0.396$. The t-test for equality of means revealed no statistically significant difference between the 2 groups, $t(33) = -0.167$, $p = 0.868$ (two-tailed), with a mean difference of −0.041 (95% CI: −0.544 to 0.461). The effect size, as measured by Cohen's *d*, was −0.057, indicating a negligible difference between the groups. These findings suggest that clinical reasoning competence does not significantly differ between ADN- and BSN-prepared nurses in this sample. While the BSN group had a slightly higher mean score, the difference was minimal and not statistically meaningful. Table 2 summarizes the test statistics.

A one-way ANOVA was conducted to compare clinical reasoning competence across 4 groups based on years of licensure: <1 year (new graduates), 1 year, over 1 to 3 years, and 4 years or more. The mean clinical reasoning competence scores for each group were <1 year (new graduate, $n = 8$), M = 4.53, SD = 0.46, 1 year ($n = 5$): M = 4.30, SD = 0.58, over 1 year to 3 years ($n = 20$), M = 4.27, SD = 0.86, and 4 years ($n = 3$), M = 4.41, SD = 0.50. Levene's test indicated no significant violation of the homogeneity of variances assumption ($p = 0.957$). There was no statistically significant difference in clinical reasoning competence among the groups, $F(3, 32) = 0.257$, $p = 0.856$. Tukey's HSD post-hoc comparisons revealed no significant pairwise differences among the groups ($p > 0.05$). The eta-squared value ($\eta^2 = 0.024$) indicated a small effect size, suggesting minimal (but not statistically significant) differences between the groups. The results showed that clinical reasoning competence does not vary significantly across the first few years of licensure for this sample. Table 3 displays the results from the ANOVA.

A MANOVA was conducted to assess the effect of multiple nominal independent variables (age, gender, geography, and current work setting) on perceived clinical reasoning competence. When analyzing their combined effect, no significant differences were found across the independent variables (age, gender, geography, or current work setting). Wilks' Lambda for all variables was non-significant ($p > 0.05$), indicating no multivariate effect. Regarding age ($p > 0.05$), gender ($p > 0.05$), geographic regions ($p > 0.05$), and across work settings ($p > 0.05$), the results were not statistically significant. Since the MANOVA results were not significant, post-hoc tests were not conducted. These findings indicate that these demographic and professional factors may not substantially influence clinical reasoning competence within the parameters of this study. Tables 4 and 5 provide the overall results and between-group comparisons of this MANOVA.

Lastly, the researchers analyzed Cronbach's alpha using the participants' responses to assess the reliability of this emerging scale/instrument. The results indicate high reliability in this study, with an α value of .98 for all 22 items. These results further support the use of the tool in future studies related to perceptions of clinical reasoning among nurses or nursing students.

Discussion

This study investigated nurses' perceived clinical reasoning competence in relation to educational preparation, years of licensure, and demographic and professional variables. The findings provide insights into how these factors influence perceptions of clinical reasoning during the formative years of nursing practice. Despite the limitations of the sample size, these findings have implications for nurse educators and practice leadership. This study provides preliminary data from a relevant instrument to contribute to the ongoing debate on nursing education preparation in the United States.

Table 2
T-test results.

Variable	Group	*N*	Mean	SD	*t*	df	*p* (two-tailed)	Mean difference	95% CI (lower, upper)	Cohen's *d*
Perceived clinical reasoning competence	ADN	19	4.31	0.89	−0.167	33	0.868	−0.041	(−0.544, 0.461)	−0.057
	BSN	16	4.35	0.46						

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Table 3
ANOVA results.

Variable	Group	*N*	Mean	SD	*F*	*p*	Eta-squared	95% CI for mean (lower, upper)
Clinical reasoning	<1 year	8	4.53	0.46	0.257	0.856	0.024	(4.12, 4.92)
	1 year	5	4.30	0.58				(3.59, 5.01)
	Over 1 year to 3 years	20	4.27	0.86				(3.87, 4.67)
	4 years	3	4.41	0.50				(3.17, 5.65)
	Total	36	4.34	0.71				(4.10, 4.58)

Clinical reasoning and educational preparation

The comparison of clinical reasoning competence between ADN and BSN graduates revealed no statistically significant difference between the 2 groups. This finding contributes to the ongoing debate about the impact of educational preparation on nursing practice outcomes. While previous studies have highlighted the advantages of BSN education in fostering skills such as critical thinking and evidence-based practice (Aldiabat et al., 2021), these results suggest that the foundational clinical reasoning skills acquired in ADN programs may be sufficient to meet professional demands during the early years of practice. The absence of significant differences may reflect the standardization of licensure requirements and entry-level competencies assessed by the NCLEX-RN, which ensures all registered nurses meet baseline clinical reasoning standards, regardless of educational pathway. Furthermore, it highlights the potential of experiential workplace learning to bridge the gap between ADN and BSN graduates (Caputi & Kavanagh, 2018).

These results also raise questions about the timing and context in which differences in clinical reasoning might emerge. Differences in clinical reasoning between ADN- and BSN-prepared nurses may become more evident in complex or specialized care settings rather than in general practice. BSN curricula often emphasize leadership, public health, and systems thinking, which may not immediately translate into differences in clinical reasoning during the early years of practice (Liou et al., 2020). Beyond this, when looking at employment trends and behaviors in some geographic areas, such as the state of North Carolina, nurses prepared with the associate degree tend to be more evenly spread across the state when compared to their BSN-holding counterparts, who tend to cluster around urban and suburban areas (Richman et al., 2016). Research from the University of North Carolina at Chapel Hill's Sheps Center found that in North Carolina, ADN-prepared nurses are more likely to work in rural, underserved, and economically distressed areas, as well as in the communities where they reside (Fraher, 2015). Future research should investigate whether such differences persist later in nurses' careers or in advanced practice roles, where decision-making and reasoning demands are more intensive.

Clinical reasoning and years of licensure

The analysis of clinical reasoning competence across years of licensure revealed no statistically significant differences among the groups. This finding challenges traditional assumptions that additional years of practice naturally enhance clinical reasoning (Missen et al., 2016). The absence of differences suggests that experience alone may not be a sufficient driver of the development of clinical reasoning, particularly in the early years of nursing practice. Instead, the quality and variety of clinical experiences and structured opportunities for reflective learning may play a more significant role in fostering clinical reasoning competence.

One possible explanation for these findings is that, regardless of their years of licensure, early-career nurses may operate within similar environments characterized by high levels of supervision, guidance, and mentorship. Residency programs, preceptorships, and other structured onboarding processes could standardize the development of clinical reasoning across these groups. Moreover, the 4 years examined in this study may not capture the entire trajectory of clinical reasoning growth, which may take longer to manifest. Longitudinal studies tracking the progression of clinical reasoning over a decade or more could provide deeper insights into how professional experience contributes to this competency.

Demographic and professional factors

The lack of significant differences in clinical reasoning competence based on age, gender, geography, or current work setting further highlights the uniformity of perceived competence in this sample. These findings suggest that demographic and professional variables do not influence nurses' perceptions of their clinical reasoning abilities during their early practice years. This consistency could be attributed to the standardization of nursing education and the emphasis on baseline competencies required for licensure. Furthermore, supportive structures in healthcare settings, such as orientation programs and mentorship, may minimize the impact of individual differences on perceived clinical reasoning.

However, the lack of variability also raises important questions about the potential influence of unmeasured factors. For instance, individual motivation, workplace culture, and access to continuing education opportunities may play critical roles in shaping clinical reasoning competence, but were not captured in this study. Additionally, while current work settings did not yield significant differences, the complexity and acuity of patient care within those settings could be significant moderating variables. Nurses working in high-acuity settings, such as critical care or emergency departments, may develop clinical reasoning skills more rapidly than those in less-demanding roles. Future studies should investigate these contextual factors to deepen understanding of their relationship to the development of clinical reasoning.

Table 4
MANOVA Wilks' Lambda.

Effect	Test	Value	*F*	Hypothesis df	Error df	*p*	Partial η^2
Age	Wilks' Lambda	0.91	1.25	3	30	0.307	0.11
Gender/Sex	Wilks' Lambda	0.95	0.78	2	31	0.466	0.05
Geography	Wilks' Lambda	0.88	1.49	4	29	0.225	0.12
Work settings	Wilks' Lambda	0.89	1.40	4	29	0.241	0.11

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Table 5
MANOVA across group comparisons.

Independent variable	Group	Mean	SD	*F*	df	*p*	Partial η^2
Age	18–25	4.40	0.47	1.15	3	0.338	0.10
	26–35	4.45	0.42				
	36–45	4.30	0.55				
	46–55	4.15	0.60				
Gender	Male	4.30	0.50	0.82	2	0.445	0.05
	Female	4.45	0.45				
	Nonbinary	4.20	0.58				
Geography	West Coast	4.35	0.40	1.40	4	0.248	0.11
	East Coast	4.25	0.50				
	Midwest	4.45	0.46				
	Gulf South	4.50	0.48				
Work setting	Acute Care/Med–Surg	4.40	0.55	1.25	4	0.308	0.09
	Critical care	4.50	0.40				
	ED	4.35	0.50				
	OP	4.20	0.58				
	Other	4.30	0.46				

Implications for nursing education and practice

Although the study has limitations, the results provide a first glimpse of a contemporary instrument for measuring nurses' perceived level of clinical reasoning ability. The findings of this study have several implications for nursing education and practice. First, the lack of significant differences between ADN and BSN graduates in this sample suggests that educational preparation, while important, may not be the sole determinant of clinical reasoning competence. Nursing educators should focus on equipping all students with robust clinical reasoning skills. To achieve this, nurse educators must adopt pedagogical paradigm shifts to provide cognitive active learning strategies and opportunities for reflection. Healthcare organizations should prioritize ongoing professional development and mentorship to enhance these skills in practice. Residency programs, case-based learning opportunities, and simulation exercises may be particularly effective in fostering clinical reasoning during the early years of licensure.

Second, the consistency of perceived clinical reasoning competence across years of licensure and demographic groups reveals the potential for equitable approaches to nursing skill development. Healthcare organizations should continue to invest in programs that provide nurses with diverse clinical experiences, reflective learning opportunities, and access to mentors who support the organizational culture, mission, and goals. These initiatives can ensure that all nurses, regardless of their background or years of licensure, have the resources they need to develop and refine their clinical reasoning skills.

Ultimately, the findings underscore the need to reassess the metrics employed to evaluate nursing competencies. While clinical reasoning is a critical skill, its development may not be fully captured through self-reported perceptions or short-term comparisons. Nursing education and research should explore innovative methods for assessing clinical reasoning, such as standardized simulations, real-time decision-making tasks, and longitudinal assessments that capture growth over time in various educational preparatory programs. Since clinical reasoning is a highly cognitive skill, perceptions of ability can hinder or support ongoing practice confidence. Understanding the long-term impact of various programs in nursing educational programs or continuing learning in the clinical setting is critical to advancing educational equity, readiness, and safe patient care delivery.

Limitations

This study has significant limitations, and its results should be interpreted with caution. These limitations stem from a small sample with low statistical power. The small sample size limited the statistical power to detect potentially meaningful differences, particularly in the multivariate analyses. The researchers recommend using the data from this study to inform priors for more extensive studies employing Bayesian analysis. The high attrition rate in survey responses may have introduced selection bias, limiting the generalizability of the findings. The survey's online, anonymous, and nationwide format contributed to the high attrition rate.

Additionally, the study's cross-sectional design only provides a snapshot in time, making it impossible to establish causality. The researchers could also not account for the confounding variable of educational progression. The study aimed to evaluate nurses' perceived clinical reasoning ability during their formative years, based on their initial educational preparation. The participants reported that 50.0% had pursued a Bachelor of Science in Nursing (BSN), while 41.7% reported no change. The survey was not designed to determine the point at which this progression occurred in the initial 5 years. As a result, the researchers were unable to control for this variable. The study's results remain valid despite limitations, as a substantial portion of the participants initially obtained an ADN (41.7%) and had not yet begun their BSN education. Lastly, as with any self-reported measure, there is a risk of bias.

Conclusions

This study provides a preliminary exploration into the perceived clinical reasoning competence among practicing registered nurses with Associate Degree in Nursing (ADN) and Bachelor of Science in Nursing (BSN) backgrounds. Despite the study's small sample size and associated limitations, these findings offer important insights into the ongoing debate about the impact of educational preparation on nursing practice. Using a contemporary, validated instrument to measure perceptions of clinical reasoning, this research represents a foundational step toward addressing gaps in the literature.

The lack of significant differences in the perceptions of clinical reasoning between ADN- and BSN-prepared nurses during their formative years could suggest that both educational pathways adequately prepare nurses for the essential cognitive demands of early practice. Similarly, the absence of significant differences across years of licensure or demographic and professional variables highlights the influence of standardized licensure processes and organizational supports, such as mentorship and residency programs, on clinical reasoning competence.

However, these results warrant further investigation. Larger, more diverse samples and longitudinal designs are necessary to capture the long-term development of clinical reasoning and explore whether differences emerge in more specialized or advanced practice roles.

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Additionally, future studies should consider integrating objective assessments alongside self-reported measures to provide a more comprehensive understanding of clinical reasoning competence. Objective measures could include observation using a validated rubric, such as the Laseter rubric.

The implications of this research extend to nursing education and practice. By identifying and addressing factors that influence clinical reasoning, educators can design more effective program outcomes that equip graduates for the complexities of modern healthcare. Expanding this line of inquiry could provide robust evidence to inform policies and pedagogical strategies, ultimately enhancing nursing practice, improving patient outcomes, and supporting equitable skill development across all educational pathways.

Declaration of competing interests

The authors declare that they have no known competing personal relationships or financial interests that may have influenced the study reported in this paper.

CRediT authorship contribution statement

Justin Fontenot: Writing – review & editing, Writing – original draft, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Anna Valdez:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Data curation, Conceptualization. **Michael Hebert:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Funding acquisition, Conceptualization. **Patrick McMurray:** Writing – review & editing, Writing – original draft, Methodology.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The authors used GenAI (ChatGPT) to improve the quality of the text. The authors did not use AI for any other reason and take full responsibility for what is included in the paper.

References

Aiken, L. H. (2003). Educational levels of hospital nurses and surgical patient mortality. *JAMA: The Journal of the American Medical Association, 290*(12), 1617–1623. doi:10.1001/jama.290.12.1617.

Aiken, L. H., & Sloane, D. M. (2020). Nurses matter: More evidence. *BMJ Quality & Safety, 29*(1), 1–3. doi:10.1136/bmjqs-2019-009732.

Aldiabat, K., Alsrayheen, E., Aquino-Russell, C., Al-Qadire, M., Al Rawajfah, O., & Al Sabei, S. D. (2021). Differences in critical thinking skills between nursing students on a fast-track versus traditional 4-year programme. *British Journal of Nursing, 30*(7), 434–439. doi:10.12968/bjon.2021.30.7.434.

American Nurses Association. (1976). *One strong voice: The story of the American Nurses Association*. American Nurses Association.

American Nurses Association. (2022). Racial reckoning statement. https://www.nursingworld.org/globalassets/practiceandpolicy/workforce/racial-reckoning-statement.pdf.

Anbari, A. B. (2019). What makes a BSN a BSN? *Western Journal of Nursing Research, 41*(2), 167–170. doi:10.1177/0193945918803683.

Anbari, A. B., & Vogelsmeier, A. (2018). Associate degree in nursing-to-bachelor of science in nursing graduates' education and their perceived ability to keep patients safe. *Journal of Nursing Education, 57*(5), 300–303. doi:10.3928/01484834-20180420-09.

Anderson, N. E. (1981). The historical development of American Nursing education. *Occupational Health Nursing, 29*(10), 14–26. doi:10.1177/216507998102901002.

Caputi, L. J., & Kavanagh, J. M. (2018). Want your graduates to succeed? Teach them to think!. *Nursing Education Perspectives, 39*(1), 2–3. doi:10.1097/01.NEP.0000000000000271.

Carvalho, E. C. D., Oliveira-Kumakura, A. R. D. S., & Morais, S. C. R. V. (2017). Clinical reasoning in nursing: Teaching strategies and assessment tools. *Revista Brasileira de Enfermagem, 70*(3), 662–668. doi:10.1590/0034-7167-2016-0509.

Fraher, E. (2015). The nursing workforce in North Carolina: Challenges and opportunities. Retrieved December 4, 2025, from https://www.shepscenter.unc.edu/workforce_product/the-nursing-workforce-in-north-carolina-challenges-and-opportunities-2/.

Graham, M. (2021). *Rep's "elitist" slam of community college nurses inspires criticism, semi-apology*. InsideSources. Retrieved December 4, 2025from, https://insidesources.com/reps-elitist-slam-of-community-college-nurses-inspires-criticism-semi-apology/.

Hong, S., Lee, J., Jang, Y., & Lee, Y. (2021). A cross-sectional study: What contributes to nursing students' clinical reasoning competence? *International Journal of Environmental Research and Public Health, 18*,(13) 6833. doi:10.3390/ijerph18136833.

Jessee, M. A. (2021). An update on clinical judgment in nursing and implications for education, practice, and regulation. *Journal of Nursing Regulation, 12*(3), 50–60. doi:10.1016/S2155-8256(21)00116-2.

Lasater, K. B., Sloane, D. M., McHugh, M. D., Porat-Dahlerbruch, J., & Aiken, L. H. (2021). Changes in proportion of bachelor's nurses associated with improvements in patient outcomes. *Research in Nursing & Health, 44*(5), 787–795. doi:10.1002/nur.22163.

Levett-Jones, T., Hoffman, K., Dempsey, J., Jeong, S. Y. S., Noble, D., Norton, C. A., Roche, J., & Hickey, N. (2010). The 'five rights' of clinical reasoning: An educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. *Nurse Education Today, 30*(6), 515–520. doi:10.1016/j.nedt.2009.10.020.

Liou, S., Liu, H., Tsai, H., Tsai, Y., Lin, Y., Chang, C., & Cheng, C. (2016). The development and psychometric testing of a theory-based instrument to evaluate nurses' perception of clinical reasoning competence. *Journal of Advanced Nursing, 72*(3), 707–717. doi:10.1111/jan.12831.

Liou, S., Liu, H., Tsai, S., Chu, T., & Cheng, C. (2020). Performance competence of pregraduate nursing students and hospital nurses: A comparison study. *Journal of Clinical Nursing, 29*(13–14), 2652–2662. doi:10.1111/jocn.15287.

Loversidge, J., Yen, P.-Y., Chipps, E., Gallagher-Ford, L., Genter, L., & Buck, J. (2018). Top-of-license nursing practice, part 2: Differentiating BSN and ADN perceptions of top-of-license activities. *JONA: The Journal of Nursing Administration, 48*(6), 329–334. doi:10.1097/NNA.0000000000000623.

Missen, K., McKenna, L., & Beauchamp, A. (2016). Registered nurses' perceptions of new nursing graduates' clinical competence: A systematic integrative review. *Nursing & Health Sciences, 18*(2), 143–153. doi:10.1111/nhs.12249.

O'Brien, D., Knowlton, M., & Whichello, R. (2018). Attention health care leaders: Literature review deems baccalaureate nurses improve patient outcomes. *Nursing Education Perspectives, 39*(4), E2–E6. doi:10.1097/01.NEP.0000000000000303.

Richman, E., Fraher, E., & Gaul, K. (2016). *How might the move toward a baccalaureate-prepared nursing workforce affect the supply of nurses in rural and underserved communities?* [Multimedia presentation]. Academy Health's Annual Research Meeting. https://www.shepscenter.unc.edu/workforce_product/might-move-toward-baccalaureate-prepared-nursing-workforce-affect-supply-nurses-rural-underserved-communities/.

Simmons, B. (2010). Clinical reasoning: Concept analysis. *Journal of Advanced Nursing, 66*(5), 1151–1158. doi:10.1111/j.1365-2648.2010.05262.x.

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