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PERCEIVED QUALITY OF NURSING EDUCATION FROM A HEALTH SYSTEMS PERSPECTIVE: A CROSS-SECTIONAL STUDY OF TWO UNIVERSITIES IN ALBANIA

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Ключові слова: *медсестринська освіта, клінічне навчальне середовище, прецепторство, симуляційне навчання, Албанія*

Abstract. Perceived quality of nursing education from a health systems perspective: a cross-sectional study of two universities in Albania. Bimi Indrit, Bimi Daniela, Llavdaniti Mimoza. *Nursing students' perceptions of educational quality – particularly the clinical learning environment (CLE) – are an early indicator of whether programs are producing graduates who feel ready for practice. This study aimed to describe nursing students' perceived educational quality and clinical learning environment (CLE) in two Albanian universities, and to identify factors independently associated with low perceived preparedness for practice. In May 2025, a cross-sectional questionnaire was administered to 367 students at the department of medical technical sciences, University "Aleksandër Moisiu" of Durrës and the University "Eqrem Çabej" of Gjirokastra. Items covered staff availability, teaching quality and clinical skills, preparedness for practice, teaching approaches, and placement conditions. Domain scales were created (Cronbach's α ≥0.70) and low preparedness was defined as a preparedness score below the sample median. In multivariable binary and ordinal logistic regression, limited availability of clinical supervisors/preceptors, poorer overall CLE quality, and lower exposure to simulation-based teaching were independently associated with low preparedness. Descriptively, around half of respondents reported that key CLE domains need improvement, including distance to clinical practice sites (52.0%), transportation (49.6%), availability of equipment and supplies (50.1%), quality of supervision (50.1%), and student assessment (51.0%). Clinical supervisors/preceptors were often available for 31.9% of students. Only 23.4% rated clinical supervisors/preceptors' teaching quality as good. Simulation and role-play were among the least frequently used teaching approaches. Students' responses indicate systematic gaps in clinical supervision capacity, placement logistics, and clinical learning infrastructure. Strengthening structured preceptorship, clinical site agreements, and skills-lab/simulation capacity are practical targets for quality improvement.*

Реферат. Сприйняття якості освіти медсестер з огляду на перспективи розвитку систем охорони здоров'я: перехресне дослідження двох університетів Албанії. Бімі Індріт, Бімі Даніела, Ллавданіті Мімоза. *Сприйняття студентами медсестринства якості освіти – зокрема клінічного навчального середовища (КНС) – є раннім індикатором того, чи готують програми випускників, які відчувають готовність до практичної роботи. Метою цього дослідження було описати сприйману студентами якість освіти та клінічного навчального середовища у двох університетах Албанії, а також визначити чинники, незалежно пов'язані з низькою сприйманою готовністю до практики. У травні 2025 року між 367 студентами факультету медичних технічних наук університету «Александр Мойсіу» в Дурресі та університету «Екрем Чабей», Гірокастра, було проведено перехресне опитування. Пункти анкети охоплювали доступність персоналу, якість викладання та клінічні навички,*

готовність до практики, підходи до навчання та умови проходження практики. Було сформовано шкали доменів (α Кронбаха ≥0,70), а низьку готовність визначали як показник готовності нижче медіани вибірки. У багатофакторній бінарній та порядковій логістичній регресії обмежена доступність клінічних супервізорів/прецепторів, гірша загальна якість КНС та менший рівень залучення до симуляційного навчання були незалежно пов'язані з низькою готовністю. Описово приблизно половина респондентів повідомила, що ключові домени КНС потребують покращення, зокрема відстань до баз практики (52,0%), транспорт (49,6%), наявність обладнання та витратних матеріалів (50,1%), якість супервізії (50,1%) й оцінювання студентів (51,0%). Для 31,9% студентів клінічні супервізори/прецептори були доступні «часто». Лише 23,4% оцінили якість викладання клінічних супервізорів/прецепторів як добру. Симуляції та рольові ігри були серед найрідше застосовуваних підходів до навчання. Відповіді студентів свідчать про системні прогалини в спроможності клінічної супервізії, логістиці практик та інфраструктурі клінічного навчання. Посилення структурованого прецепторства, угод з клінічними базами та можливостей навичкових лабораторій/симуляцій є практичними цілями для підвищення якості.

Nursing education is ultimately judged by its ability to produce graduates who can deliver safe, competent, and patient-centred care within increasingly complex healthcare systems. This expectation extends beyond technical proficiency to include clinical reasoning, communication, ethical practice, teamwork, and adaptability to diverse care settings. Central to this formative process is the clinical learning environment (CLE), where theoretical knowledge acquired in classrooms is translated into practice, professional identity is shaped, and students internalize the norms and responsibilities of the nursing role [1, 2].

A substantial body of international literature demonstrates that students' perceptions of the CLE are strongly associated with educational outcomes, including satisfaction, confidence, motivation, and perceived preparedness for practice. Key dimensions influencing these perceptions include the pedagogical atmosphere of the clinical setting, the quality and consistency of supervision, leadership and organizational culture on the ward, and the effectiveness of collaboration between academic institutions and clinical sites [3]. In particular, the supervisory relationship between students and clinical preceptors has been identified as one of the most influential determinants of learning quality, professional socialization, and students' sense of belonging within the clinical team.

However, across many healthcare systems, the CLE is under increasing strain. Rising service demands, workforce shortages, and heightened administrative burdens have reduced the time and capacity available for clinical teaching and mentorship. As a result, students frequently report insufficient supervision, variability in mentoring quality, misalignment between theoretical instruction and clinical realities, inconsistent assessment practices, and limited access to essential equipment and learning resources during placements [4, 5]. These challenges are not trivial or merely perceptual; they reflect structural and organizational constraints that can undermine competency development, delay skill acquisition, and contribute to lower confidence during transition to professional practice.

Logistical and infrastructural factors further compound these challenges. Distance to clinical sites, lack of organized transportation, overcrowded placements, and uneven distribution of learning opportunities across clinical settings can restrict students' exposure to diverse patient populations and limit hands-on practice. Evidence suggests that when clinical placements are poorly coordinated or inadequately resourced, students are more likely to experience observational rather than participatory learning, reducing the effectiveness of clinical education despite formal curriculum requirements [1, 6].

In response to these constraints, educational research increasingly highlights the complementary role of structured preceptorship models, standardized assessment frameworks, and simulation-based education. While simulation cannot replace real-world clinical exposure, high-quality simulation and skills-lab training have been shown to enhance students' self-confidence, clinical reasoning, and readiness for practice, particularly in settings where clinical opportunities are limited or unevenly distributed [7]. The effectiveness of such approaches, however, depends on their integration within a coherent educational strategy that aligns classroom teaching, simulated learning, and clinical placements.

In Albania, nursing education programs have expanded over the past decade in response to workforce demands and broader health system reforms. Despite this quantitative growth, there is limited published evidence examining students' experiences of the CLE and the organizational factors that shape the quality of clinical education. Clinical placement experiences may vary substantially across sites due to differences in supervision models, institutional capacity, patient mix, and available infrastructure. In this context, systematic assessment of students' perceptions provides a valuable lens through which program-level strengths and weaknesses can be identified, particularly those that are amenable to improvement through curriculum design, formalized clinical partnerships, and targeted investment in supervision and educational resources.

Accordingly, the present study aimed to describe nursing students' perceptions of educational quality in two Albanian universities, with a specific focus on: (I) availability of educational and support staff, (II) perceived teaching quality and clinical skills of instructors, (III) perceived preparedness for practice across common care settings and competencies, (IV) teaching approaches used within the program, and (V) key quality domains of the clinical learning environment during placements. By identifying areas consistently perceived as needing improvement, this study seeks to inform evidence-based strategies for strengthening clinical nursing education within the Albanian context.

MATERIALS AND METHODS OF RESEARCH

A descriptive cross-sectional study was conducted in May 2025 among nursing students enrolled in Bachelor and Master-level programs at two public universities in Albania: the Department of Medical Technical Sciences, Aleksandër Moisiu University of Durrës (DSHTM-UAMD), and the University of Gjirokastra (UGJ). The study was designed to capture students' perceptions of the quality of nursing education and the clinical learning environment (CLE) at a single point in time, reflecting their cumulative academic and clinical training experiences. The study was planned and reported in accordance with the STROBE recommendations for cross-sectional observational research.

Eligible participants included students enrolled in Bachelor of Science (BSc) and Professional Master (MP) nursing programs who had exposure to clinical placements (completed or ongoing). Students from different years of study and academic tracks were included to ensure heterogeneity in exposure to clinical supervision models, teaching approaches, and placement settings. Participation was voluntary, anonymous, and unrestricted by age or gender. A total of 367 students completed the survey and were included in the final analysis.

Data collection procedure

Data were collected using a structured, self-administered questionnaire distributed both in classroom settings and online. Classroom distribution took place following scheduled teaching activities, while online administration was used to reach students who were unavailable due to clinical placements or scheduling constraints. This mixed-mode approach was adopted to maximize participation and minimize selection bias related to attendance, consistent with standard principles of survey methodology. Because the survey was distributed through classroom sessions and online, the number of students who received an invitation could not be precisely determined, and a formal response rate was therefore not calculated. Prior to completion, students received standardized instructions and were informed that their responses would be anonymous and would not affect their academic standing. Completion time was approximately 15-20 minutes.

Instrument development and validation

The questionnaire was specifically adapted for use in the Albanian nursing education context, drawing on established conceptual frameworks of clinical learning environment quality and nursing education evaluation. The adaptation process involved content review by academic nursing staff and clinical instructors to ensure relevance, clarity, and cultural appropriateness. The instrument was pilot-tested with a small group of nursing students, leading to minor linguistic and structural refinements before final deployment. The final questionnaire demonstrated satisfactory content and face validity for assessing students' perceptions of educational quality and clinical training experiences, consistent with recommended procedures for questionnaire development and validation.

Measures

The questionnaire collected information across several domains. Sociodemographic and academic variables included gender, university affiliation, program of study, and year of study. Year of study was defined as the current year within the student's enrolled program and treated as an ordinal (numeric) variable in regression models.

Perceived availability of educational and support staff was assessed through items evaluating the accessibility of classroom instructors, skills-lab instructors, clinical supervisors/preceptors, academic mentors, librarians, and information technology support staff. Responses were recorded using four ordered categories reflecting frequency of availability.

Perceived teaching quality and perceived clinical skills of instructors were assessed separately for classroom instructors, skills-lab instructors, and clinical supervisors/preceptors. Students rated each group using ordinal response options reflecting overall quality and competence.

Perceived preparedness for practice was assessed across sixteen competencies and work contexts, including primary care, hospital and emergency settings, teamwork, rural practice, use of digital technologies, clinical reasoning, management tasks, advocacy, lifelong learning, and research. Responses reflected graded levels of preparedness rather than binary competence.

Teaching approaches used within the program were assessed by asking students to indicate the frequency with which various instructional methods were employed, including lectures, demonstrations, supervised practice, simulations, role-play, small-

group learning, self-directed learning, and community-based projects.

Finally, key quality indicators of the clinical learning environment were assessed, including logistical aspects of placements, supervision and teaching quality during practice, assessment and grading processes, alignment between theory and practice, patient mix, safety, and availability of equipment and supplies.

Methodological approach (sociological and epidemiological methods)

In line with sociological research methodology, this study used an anonymous questionnaire-based cross-sectional survey to quantify students' perceptions and experiences in nursing education and clinical training. From an epidemiological perspective, the study applied descriptive epidemiology to characterize the distribution of key variables (university, program, year of study, and perception domains) and analytic epidemiology to assess associations between hypothesized determinants (e.g., supervision availability, CLE quality, simulation-based teaching) and preparedness outcomes.

Internal consistency reliability

For multi-item domains designed to measure coherent constructs (availability of staff, perceived teaching quality, perceived clinical skills, preparedness for practice, teaching approaches, and clinical learning environment quality indicators), internal consistency reliability was evaluated using Cronbach's alpha coefficient. Cronbach's alpha was calculated for each multi-item scale to assess the degree to which items within a domain measured the same underlying construct. Values of $\alpha \geq 0.70$ were considered acceptable, values ≥ 0.80 good, and values ≥ 0.90 excellent internal consistency [8].

Ethical considerations

This study was conducted in accordance with international ethical requirements for research involving human participants, including the principles of the Declaration of Helsinki, and in compliance with applicable institutional and national regulations. Ethical approval was obtained from "Aleksandër Moisiu", Durrës, Albania (protocol No. 1197, date 28.04.2025 and "Eqrem Çabej" University of Gjirokastër (protocol No. 13 date 29,01.2026). Participation was voluntary. All participants provided written informed consent prior to enrolment. Data were collected anonymously, stored securely, and analysed in aggregated form to ensure confidentiality.

Statistical analysis

Statistical analysis was performed using R (version 4.3.2; free open-source software) (R Foundation for Statistical Computing, Vienna, Austria) [9]. Incomplete questionnaires were excluded before analysis, yielding a final analytic sample of 367 students with complete data for all variables included in the primary models. All analyses followed a prespecified analytical plan consistent with the descriptive and explanatory aims of the study. The statistical modelling approach followed standard guidance for logistic and ordinal logistic regression, and scale reliability followed established psychometric methods (e.g., Hosmer & Lemeshow; Agresti; McCullagh; Cronbach).

Data preparation and coding

Questionnaire responses were screened for completeness and internal consistency prior to analysis. Likert-type items were coded numerically according to their ordinal structure, with higher values indicating more favorable perceptions (e.g., greater preparedness, better learning environment quality, or higher availability of support). Composite scores were created for multi-item domains, including perceived preparedness for practice, availability of educational and support staff, perceived teaching quality, perceived clinical skills, teaching approaches, and clinical learning environment (CLE) quality indicators, by summing item-level scores within each domain.

Reliability analysis

Internal consistency of multi-item scales was assessed using Cronbach's alpha. Alpha values ≥ 0.70 were considered acceptable, ≥ 0.80 good, and ≥ 0.90 excellent. Reliability analysis was conducted prior to scale aggregation to justify the use of composite scores in subsequent analyses [10].

Descriptive analysis

Descriptive statistics were used to summarize participant characteristics and questionnaire responses. Categorical variables are presented as frequencies and percentages [n (%)]. Composite scores are described using measures of central tendency and dispersion, as appropriate. No imputation was performed. All questionnaires included in the analysis had complete data for variables used in the analyses; regression models used n=367.

Regression modelling

To examine factors independently associated with perceived preparedness for practice, multivariable regression analyses were conducted. The primary outcome was low perceived preparedness, defined as a composite preparedness score below the sample median and modeled as a binary variable. A multivariable binary logistic regression model was fitted to estimate adjusted odds ratios (aORs) and 95% confidence intervals (CIs). Independent variables were selected a priori based on educational theory and prior literature and included university affiliation, academic program, year of study, perceived availability of clinical supervisors/preceptors, overall CLE quality, and frequency of simulation-based teaching.

Academic program was operationalized as BSc versus Master-level. Predictor domains (availability of clinical supervisors/preceptors, overall CLE quality, and simulation-based teaching frequency) were derived from composite scores and dichotomized at the sample median (low/poor vs high/good) to align with Tables 7-8 and to facilitate interpretation [11].

To assess robustness and account for the ordinal nature of preparedness perceptions, a secondary ordinal logistic regression model was performed using ordered categories of preparedness (good, somewhat prepared, poor/not at all prepared) as the outcome. Proportional odds assumptions were assessed and deemed acceptable [12].

Model diagnostics and statistical significance

Multicollinearity among independent variables was evaluated using variance inflation factors (VIFs). Model fit was assessed using standard goodness-of-fit measures. All statistical tests were two-sided, and a p-value <0.05 was considered statistically significant.

RESULTS AND DISCUSSION

A total of 367 nursing students participated in the study. The majority were female (92.6%) and enrolled in the Bachelor of Science (BSc) program (88.3%). Most participants were affiliated with Aleksandër Moisiu University of Durrës (76.0%), while 24.0% were enrolled at the University of Gjirokastra. Students were relatively evenly distributed across the first and third years of study (40.3% and 40.1%, respectively). Detailed sample characteristics are presented in Table 1.

Reliability analysis

Internal consistency reliability of all multi-item scales was acceptable to good. The scale assessing availability of educational and support staff demonstrated acceptable internal consistency (Cronbach's α=0.76). The perceived teaching quality scale showed good reliability (α=0.81), while the scale measuring perceived clinical skills of instructors also demonstrated good internal consistency (α=0.80).

Table 1

Participant characteristics (n=367)

Variable	Frequency	%
Gender		
Female	**340**	**92.6**
Male	**27**	**7.4**
University		
DSHTM-UAMD	**279**	**76.0**
UGJ	**88**	**24.0**
Academic Program		
BSc	**324**	**88.3**
MP	**43**	**11.7**
Year of Study		
Year 1	**148**	**40.3**
Year 2	**72**	**19.6**
Year 3	**147**	**40.1**

Notes: DSHTM-UAMD = Department of Medical Technical Sciences, Aleksandër Moisiu University of Durrës; UGJ = University of Gjirokastra; BSc = Bachelor of Science; MP = Professional Master (Master's level professional program).

The preparedness for practice scale, comprising 16 items, showed strong internal consistency (α=0.84), supporting its use as a composite outcome measure. Reliability for the teaching approaches scale was acceptable (α=0.78). The clinical learning environment (CLE) quality indicators scale demonstrated the highest internal consistency (α=0.86), indicating a high degree of coherence among items assessing logistical, supervisory, and infrastructural aspects of clinical placements.

Overall, Cronbach's alpha coefficients ranged from 0.76 to 0.86, supporting the aggregation of items into composite scores for subsequent regression analyses.

Descriptive findings

Perceived availability of educational and support staff is presented in Table 2. Classroom instructors were most frequently reported as often available, whereas clinical supervisors/preceptors and academic mentors showed lower levels of perceived availability.

Perceived teaching quality and clinical skills of instructors are summarized in Tables 3a and 3b. Across both domains, clinical supervisors/preceptors received the lowest proportion of "good" ratings and the highest proportion of responses indicating need for improvement compared with classroom and skills-lab instructors.

Perceived preparedness for practice across clinical contexts and competencies is presented in Table 4. For all items, fewer than 40% of students reported "good" preparedness, with particularly low confidence observed for maternity services, rural practice, managerial tasks, and advocacy roles.

Table 2

Perceived availability of educational and support staff during the program

Staff role	Often available n (%)	Sometimes n (%)	Rarely n (%)	Never n (%)
Classroom teachers/instructors	206 (56.1)	81 (22.1)	52 (14.2)	28 (7.6)
Skills-lab/demonstration instructors	121 (33.0)	107 (29.2)	76 (20.7)	63 (17.2)
Clinical supervisors/preceptors	117 (31.9)	85 (23.2)	98 (26.7)	67 (18.3)
Academic advisors/mentors	126 (34.3)	91 (24.8)	84 (22.9)	66 (18.0)
Librarians	116 (31.6)	86 (23.4)	71 (19.3)	94 (25.6)
IT/technology support staff	107 (29.2)	94 (25.6)	76 (20.7)	90 (24.5)

Table 3a

Perceived teaching quality by instructor group

Instructor group	Good n (%)	Adequate n (%)	Needs improvement n (%)	No opinion n (%)
Classroom teachers/instructors	115 (31.3)	119 (32.4)	88 (24.0)	45 (12.3)
Skills-lab/demonstration instructors	86 (23.4)	108 (29.4)	110 (30.0)	63 (17.2)
Clinical supervisors/preceptors	86 (23.4)	97 (26.4)	119 (32.4)	65 (17.7)

Table 3b

Perceived clinical skills by instructor group

Instructor group	Good n (%)	Adequate n (%)	Needs improvement n (%)	No opinion n (%)
Classroom teachers/instructors	106 (28.9)	108 (29.4)	95 (25.9)	58 (15.8)
Skills-lab/demonstration instructors	84 (22.9)	109 (29.7)	104 (28.3)	70 (19.1)
Clinical supervisors/preceptors	87 (23.7)	104 (28.3)	102 (27.8)	74 (20.2)

Table 4

Perceived preparedness for practice by competency

Competency	Good n (%)	Somewhat prepared n (%)	Poor n (%)	Not at all n (%)
Work in a primary care clinic	127 (34.6)	128 (34.9)	47 (12.8)	65 (17.7)
Work in a municipal or regional hospital	140 (38.1)	123 (33.5)	45 (12.3)	59 (16.1)
Work in a ward or outpatient clinic	130 (35.4)	130 (35.4)	51 (13.9)	56 (15.3)
Work in maternity services	109 (29.7)	129 (35.1)	58 (15.8)	71 (19.3)
Work in emergency units	122 (33.2)	129 (35.1)	50 (13.6)	66 (18.0)
Work in a multidisciplinary healthcare team	138 (37.6)	125 (34.1)	45 (12.3)	59 (16.1)
Work in rural settings	110 (30.0)	122 (33.2)	57 (15.5)	78 (21.3)
Work with communities (community outreach)	113 (30.8)	127 (34.6)	55 (15.0)	72 (19.6)
Provide services responding to local health needs using available resources	118 (32.2)	128 (34.9)	58 (15.8)	63 (17.2)
Use information and communication technologies	117 (31.9)	123 (33.5)	72 (19.6)	55 (15.0)
Apply clinical reasoning and critical thinking	122 (33.2)	141 (38.4)	56 (15.3)	48 (13.1)
Perform managerial and administrative tasks	107 (29.2)	134 (36.5)	70 (19.1)	56 (15.3)
Advocate for improved clinical practice environments	93 (25.3)	139 (37.9)	72 (19.6)	63 (17.2)
Stay updated with new practices and service guidelines	114 (31.1)	137 (37.3)	66 (18.0)	50 (13.6)
Engage in lifelong self-directed learning	132 (36.0)	137 (37.3)	54 (14.7)	44 (12.0)
Conduct research	134 (36.5)	140 (38.1)	54 (14.7)	39 (10.6)

Teaching approaches used in the programs are summarized in Table 5. Demonstrations by instructors and practical exercises were the most frequently used methods, whereas clinical simulations and role-play were among the least frequently reported.

Table 5

Teaching approaches: most and least frequently used

Teaching approach	Often used n (%)	Sometimes used n (%)	Never used n (%)	Don't know n (%)
1. Lectures	132 (36.0)	139 (37.9)	48 (13.1)	48 (13.1)
3. Recorded video lectures	99 (27.0)	145 (39.5)	72 (19.6)	51 (13.9)
7. Self-directed learning	124 (33.8)	153 (41.7)	45 (12.3)	45 (12.3)
8. Small-group learning	100 (27.2)	165 (45.0)	64 (17.4)	38 (10.4)
10. Demonstrations by instructors	148 (40.3)	150 (40.9)	37 (10.1)	32 (8.7)
12. Role-play	75 (20.4)	136 (37.1)	92 (25.1)	64 (17.4)
14. Community service-learning projects	92 (25.1)	153 (41.7)	74 (20.2)	48 (13.1)
16. Clinical simulations	91 (24.8)	159 (43.3)	67 (18.3)	50 (13.6)
19. Supervised practice	125 (34.1)	137 (37.3)	58 (15.8)	47 (12.8)
20. Practical exercises	146 (39.8)	146 (39.8)	36 (9.8)	39 (10.6)

Note. Item numbers correspond to the original questionnaire numbering; only selected teaching approaches (most and least frequently used) are shown.

Ratings of key clinical learning environment domains during placements are shown in Table 6. Around half of students indicated that distance to clinical sites, transportation, supervision quality, assessment practices, and availability of equipment and supplies require improvement.

Table 6

Ratings of clinical placement domains

Domain	No opinion n (%)	Needs improvement n (%)	Good n (%)
Variety of clinical practice sites used (e.g., community clinics, district hospitals, referral hospitals)	54 (14.7)	185 (50.4)	128 (34.9)
Distance to clinical practice sites	50 (13.6)	191 (52.0)	126 (34.3)
Transportation to and from clinical sites	55 (15.0)	182 (49.6)	130 (35.4)
Variety of patients in clinical settings	51 (13.9)	184 (50.1)	132 (36.0)
Safety at clinical sites	54 (14.7)	186 (50.7)	127 (34.6)
Quality of supervision at clinical practice sites	54 (14.7)	184 (50.1)	129 (35.1)
Quality of teaching at clinical practice sites	50 (13.6)	191 (52.0)	126 (34.3)
Quality of student assessment	52 (14.2)	187 (51.0)	128 (34.9)
Alignment between classroom teaching and clinical training	52 (14.2)	185 (50.4)	130 (35.4)
Availability of medical equipment and supplies	51 (13.9)	184 (50.1)	132 (36.0)

Multivariable logistic regression results

Multivariable logistic regression analysis showed that structural and pedagogical characteristics of the clinical learning environment were the primary factors associated with students' perceived preparedness for practice. After adjustment, limited availability of clinical supervisors/preceptors was associated with more than a twofold increase in the odds of low perceived preparedness (aOR=2.17, 95% CI 1.45-3.25, p<0.001). Similarly, students exposed to a poorer overall clinical learning environment had significantly higher odds of low preparedness (aOR=2.84, 95% CI 1.89-4.27, p<0.001), representing the strongest association observed in the model.

Infrequent exposure to simulation-based teaching methods was also independently associated with low perceived preparedness (aOR=1.76, 95% CI 1.12-2.78, p=0.015), indicating a moderate but statistically significant effect. In contrast, university affiliation, academic program, and year of study were not significantly associated with preparedness after adjustment, suggesting that differences in perceived readiness were not driven by institutional or academic level factors but rather by qualitative aspects of clinical education.

Adjusted odds ratios, 95% confidence intervals, and p-values are presented in Table 7. Regression models used n=367.

Table 7

Factors associated with low perceived preparedness for practice

Predictor	Adjusted OR	95% CI	p-value
University (UGJ vs DSHTM-UAMD)	1.28	0.82-2.01	0.28
BSc program (vs Master)	1.41	0.77-2.59	0.26
Year of study	0.93	0.78-1.11	0.42
Low availability of clinical supervisors	2.17	1.45-3.25	<0.001
Poor clinical learning environment	2.84	1.89-4.27	<0.001
Low use of simulation-based teaching	1.76	1.12-2.78	0.015

Notes: Adjusted OR (aOR) = adjusted odds ratio from multivariable binary logistic regression; 95% CI = 95% confidence interval; p-value = probability value (two-sided). ORs are presented as aOR (95% CI).

Ordinal logistic regression (robustness analysis)

Findings from the ordinal logistic regression analysis were consistent with the binary model. Lower availability of clinical supervisors, poorer clinical learning environment quality, and limited use of simulation-based teaching remained significantly associated with progressively worse levels of perceived preparedness. Limited supervision nearly doubled the odds of reporting a lower preparedness category (aOR=1.94, 95% CI 1.34-2.81, p<0.001), while poor clinical learning environment quality was associated with a more than twofold increase in the odds of poorer preparedness (aOR=2.51, 95% CI 1.72-3.66, p<0.001). Reduced exposure to simulation-based teaching also showed a consistent association with lower preparedness levels (aOR=1.63, 95% CI 1.10-2.41, p=0.018).

As in the primary model, university affiliation, academic program, and year of study were not significantly associated with preparedness levels. The concordance between binary and ordinal models supports the robustness of the observed associations and confirms that preparedness deficits are primarily related to clinical supervision and learning environment quality rather than student seniority or institutional context. Full results of the ordinal model are presented in Table 8.

Table 8

Ordinal logistic regression for preparedness levels

Predictor	Adjusted OR	95% CI	p-value
Low availability of clinical supervisors	**1.94**	**1.34-2.81**	**<0.001**
Poor clinical learning environment	**2.51**	**1.72-3.66**	**<0.001**
Low use of simulation-based teaching	**1.63**	**1.10-2.41**	**0.018**
University (UGJ vs DSHTM-UAMD)	**1.21**	**0.83-1.77**	**0.32**
BSc program (vs Master)	**1.19**	**0.71-2.01**	**0.50**
Year of study	**0.96**	**0.84-1.09**	**0.54**

Notes: Adjusted OR (aOR) = adjusted odds ratio from ordinal logistic regression (proportional odds model); 95% CI=95% confidence interval; p-value = probability value (two-sided). ORs are presented as aOR (95% CI) and represent the proportional odds of being in a lower preparedness category.

This study examined nursing students' perceptions of educational quality and preparedness for practice, focusing on the clinical learning environment (CLE), supervision, teaching approaches, and structural conditions of clinical placements. The findings indicate that perceived preparedness is primarily shaped by organizational and pedagogical characteristics of clinical education, rather than by institutional affiliation, academic program, or year of study. This pattern is consistent with international evidence suggesting that preparedness for professional nursing practice is less a function of curricular content alone and more a product of how clinical education is structured, supported, and resourced [1, 13].

Clinical supervision emerged as one of the strongest determinants of perceived preparedness. Students reporting limited access to clinical supervisors or preceptors were significantly more likely to report low preparedness across both binary and ordinal regression models. This finding aligns with a substantial body of research identifying supervision as a cornerstone of effective clinical learning, influencing feedback quality, clinical reasoning development, professional identity formation, and patient safety awareness [14, 15].

From a learning theory perspective, supervision provides the scaffolding necessary for novice learners to transition from observation to independent performance. Inadequate supervision disrupts this process, leading to fewer guided learning opportunities, inconsistent feedback, and uncertainty regarding performance expectations [16]. Studies across Europe and Asia have similarly shown that insufficient supervision is associated with lower satisfaction, reduced confidence, and weaker perceived readiness for practice [2, 17]. Overall CLE quality – encompassing logistics, infrastructure, assessment practices, and theory-practice alignment – was the strongest predictor of preparedness in this study. Students exposed to poorer CLE conditions had substantially higher odds of reporting low preparedness, underscoring the role of system-level educational constraints rather than individual student characteristics.

Logistical barriers such as distance to clinical sites and transportation difficulties can reduce attendance, increase fatigue, and limit time available for reflective learning. Infrastructure limitations, including shortages of equipment and supplies, restrict hands-on practice and may shift learning toward observation-only experiences. These constraints have been widely documented in studies examining the theory–practice gap in nursing education [18, 19].

Assessment practices and alignment between theory and practice also emerged as areas of concern. When clinical assessment criteria are unclear or inconsistently applied across sites, students may perceive evaluations as subjective, undermining trust in the assessment process. Prior research has shown that transparent assessment frameworks and explicit linking of learning outcomes to clinical tasks are critical for reducing anxiety and improving perceived competence [20, 21].

Although demonstrations and supervised practice were frequently used teaching methods, simulation-based and role-play approaches were among the least utilized. Limited exposure to simulation was independently associated with poorer preparedness, supporting existing evidence that simulation-based education enhances clinical reasoning, psychomotor skill acquisition, and confidence, particularly when clinical exposure is inconsistent or constrained [22].

Simulation provides a structured environment where students can practice decision-making, receive immediate feedback, and learn from errors without patient risk. While it does not replace authentic clinical experience, it complements real-world practice by allowing repeated exposure to high-risk or low-frequency scenarios. Its underutilization may therefore contribute to persistent preparedness gaps, especially in resource-constrained educational systems [23].

After adjustment for CLE-related variables, institutional affiliation, academic program, and year of study were not significantly associated with preparedness. This finding suggests that preparedness is not simply a function of time spent in training or institutional context, but rather of the quality and organization of clinical education experiences. Similar findings have been reported in multi-institutional studies, where differences in preparedness were more strongly linked to supervision quality and learning environment than to program structure alone [24, 25, 26].

Implications for nursing education practice

The findings have several implications for nursing education. First, strengthening supervision systems through formalized preceptorship models, clear role definitions, and protected teaching time is likely to yield substantial gains in preparedness. Second, improving CLE conditions requires coordinated academic-clinical partnerships that address logistics, infrastructure, and assessment standardization. Third, systematic integration of simulation-based education may help mitigate variability in clinical learning opportunities and enhance readiness for practice.

Strengths and limitations

This study has several strengths that enhance its scientific relevance. First, it provides one of the most comprehensive empirical assessments of nursing students' perceptions of educational quality and preparedness for practice in the Albanian context, addressing a notable gap in systematic data on the clinical learning environment, supervision, and teaching approaches using a structured and psychometrically sound instrument.

Second, the analytical strategy extends beyond descriptive reporting by integrating composite scale construction, reliability assessment, and multivariable modelling. The use of both binary and ordinal logistic regression enabled identification of robust, independent predictors of low perceived preparedness, strengthening inferential credibility.

Third, the study adopts a multidimensional perspective, capturing supervision, teaching quality, clinical skills, logistics, infrastructure, assessment practices, and pedagogical approaches simultaneously. This allows a more nuanced understanding of how interacting components of the clinical learning environment shape preparedness for practice.

Finally, inclusion of students from different academic levels and two public universities increased heterogeneity of clinical exposure and demonstrated that preparedness is driven primarily by system-level educational conditions rather than institutional affiliation. By aligning these findings with international evidence, the study contributes context-specific insights that reinforce the broader relevance and transferability of mechanisms influencing nursing preparedness across health systems.

Limitations include the cross-sectional design, which precludes causal inference, and reliance on self-reported preparedness rather than objective competency measures. Additionally, the inclusion of two universities limits generalizability to all nursing programs. Future research should incorporate objective assessments such as OSCE performance, supervisor ratings, and longitudinal follow-up to examine how CLE improvements translate into workforce readiness. Because the survey used mixed-mode distribution (classroom and online), the number of students who received an invitation could not be precisely determined, so a formal response rate could not be calculated.

CONCLUSION

1. Preparedness for nursing practice is strongly shaped by the conditions under which clinical

education is delivered – particularly the availability and quality of clinical supervision, the overall clinical learning environment, and students' exposure to simulation-based teaching.

2. Perceived readiness for practice is not primarily determined by institutional affiliation or academic seniority, but by modifiable system-level and pedagogical factors embedded within clinical training.

3. Insufficient supervision capacity, logistical barriers to clinical placements, and limited access to equipment and structured learning opportunities constrain students' ability to translate theoretical knowledge into practical competence.

4. The underutilization of simulation-based and skills-lab teaching represents a missed opportunity to reduce variability in clinical exposure and supervision across sites and to strengthen competence development.

5. Addressing these gaps requires coordinated action between universities and clinical partners, prioritizing structured and supported preceptorship models, clearer alignment of clinical objectives with assessment criteria, improved placement planning and transport logistics, and strategic investment in simulation and skills-lab infrastructure.

6. Strengthening the clinical learning environment through targeted, system-level improvements offers a feasible, high-impact pathway to enhance nursing graduates' readiness for practice and improve patient care quality and safety.

Contributors:

Bimi Indrit – Conceptualization, methodology, project administration, supervision, validation, writing – original draft;

Bimi Daniela – resources, data curation, software, formal analysis, writing – review & editing;

Llavdaniti Mimoza – investigation.

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