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Competencies of Nurse Educators in Measurement and Evaluation, the Problems They Encounter, and Solution Proposals: A Mixed-Methods Study

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Background

Nursing education plays a pivotal role in preparing graduates who are capable of delivering safe, evidence-based, person-centred, and high-quality care in increasingly complex health care systems. Achieving this goal depends not only on well-designed curricula but also on the expertise of nurse educators, who facilitate learning, assess student achievement, foster professional development, and ensure high-quality educational outcomes. Although the roles, responsibilities, and competency expectations of nurse educators vary across countries and higher education systems, nurse educators are consistently recognized as key contributors to educational quality and the preparation of future nursing professionals (Salminen et al., 2023; Satoh et al., 2020). Educators are therefore expected to integrate clinical expertise with pedagogical competence, employ evidence-informed teaching strategies, and implement valid and reliable assessment practices to support student learning (Nunn-Ellison et al., 2023; Vauhkonen et al., 2024). Accordingly, international competency frameworks identify assessment and evaluation as an important area of competence for academic faculty because these competencies contribute to student learning, competency achievement, and program quality (National League for Nursing [NLN], n.d.; Salminen et al., 2023).

Assessment and evaluation constitute essential components of nursing education because they provide evidence regarding students' achievement of intended learning outcomes while simultaneously informing educational decision-making and continuous quality improvement (Nunn-Ellison et al., 2023; Oermann, 2022). Contemporary assessment extends beyond assigning grades and is recognized as an integral element of the teaching-learning process that promotes learning, guides instructional decisions, supports curriculum evaluation, and ensures graduates' readiness for professional practice (Killam et al., 2024; Nunn-Ellison et al., 2023; Oermann, 2022). Measurement is the systematic process of collecting evidence regarding learners' knowledge, skills, attitudes, and performance, whereas evaluation involves interpreting this evidence to determine the extent to which learners have achieved the intended learning outcomes and professional competencies (Elkonca & Şata, 2021; Oermann & Gaberson, 2019). Consequently, effective assessment requires educators to demonstrate assessment literacy by selecting appropriate assessment methods, developing valid assessment instruments, accurately interpreting assessment evidence, and providing meaningful feedback that enhances learning and competency development (Nunn-Ellison et al., 2023; NLN, n.d.; Vauhkonen et al., 2024).

Over the past decade, assessment and evaluation in nursing education have undergone substantial transformation in response to competency-based education (CBE), digitalization, and increasing accountability in higher education. Consequently, educators are expected to implement authentic and evidence-based assessment approaches that can adequately evaluate cognitive, psychomotor, and affective competencies across classroom, simulation, and clinical learning environments (Nunn-Ellison et al., 2023; Killam et al., 2024; Vauhkonen et al., 2024). Nevertheless, recent research indicates that educators continue to experience challenges in selecting appropriate assessment strategies, developing valid assessment tools, evaluating higher-order thinking and affective learning outcomes, and providing effective feedback. These challenges may be further intensified by increased workload, limited institutional support, insufficient faculty development opportunities, and rapidly evolving educational expectations (Aase et al., 2022; Çayır & Altuntuğ, 2025; Keating et al., 2021).

Recent literature also emphasizes the need to move beyond traditional, predominantly examination-based assessment towards more authentic, formative, and competency-oriented approaches that support students' clinical reasoning, professional judgement, and overall competency development (Nunn-Ellison et al., 2023; Killam et al., 2024; Vauhkonen et al., 2024). Although existing

research has enhanced understanding of individual aspects of assessment practices, much of the available evidence has focused on isolated issues such as specific assessment methods, educators' practices, student experiences, or individual educational interventions. Consequently, current evidence remains fragmented and insufficient to provide a comprehensive understanding of educators' assessment competence from multiple stakeholder perspectives.

Furthermore, few studies have integrated quantitative and qualitative evidence to comprehensively examine nurse educators' competencies in measurement and evaluation, the challenges encountered during assessment practices, and potential solutions from the perspectives of nurse educators, nursing students, and experts. Addressing this gap is essential for strengthening assessment literacy, informing faculty development programs, supporting evidence-based educational policies, and improving competency-based nursing education.

Accordingly, this convergent parallel mixed-methods study aimed to comprehensively examine nurse educators' perceived competencies in measurement and evaluation, identify the challenges encountered during assessment practices, and explore solution proposals from the perspectives of nurse educators, nursing students, and experts. By integrating quantitative and qualitative findings, this study seeks to provide a comprehensive understanding of assessment competence that may inform faculty development initiatives, evidence-based educational decision-making, and future assessment practices in nursing education.

The research questions were the following: 1) How do nurse educators, nursing students, and experts perceive nurse educators' competencies in measurement and evaluation and the challenges and potential solutions related to assessment practices? 2) What is the perceived level of competence in measurement and evaluation among educators? 3) Do educators' perceived competencies in measurement and evaluation differ according to their demographic and professional characteristics?

Methods

Theoretical Framework

This study was guided by the pragmatic paradigm, which served as the overarching philosophical foundation for the research design. Pragmatism provides a strong philosophical foundation for mixed-methods research because it prioritizes the research problem, emphasizes the practical consequences of inquiry, and supports the integration of quantitative and qualitative approaches to generate comprehensive, contextually meaningful, and practice-oriented knowledge (Creswell & Plano Clark, 2023; Sciberras & Dingli, 2023). Rather than privileging a single methodological tradition, pragmatism advocates selecting methods that best address the research questions and facilitate a more complete understanding of complex phenomena (Creswell & Plano Clark, 2023). Within this paradigm, integrating numerical trends with participants' experiences was considered essential for comprehensively examining nurse educators' competencies in measurement and evaluation.

The study was further conceptually grounded in the CBE framework, which emphasizes the achievement, assessment, and continuous development of clearly defined competencies required for professional practice (American Association of Colleges of Nursing, n.d.). In competency-based nursing education, assessment is regarded not merely as a mechanism for grading students but as an integral component of the educational process that provides evidence of competency attainment, informs instructional decision-making, and supports continuous quality improvement (NLN, 2024; Nunn-Ellison et al., 2023). Accordingly, nurse educators are expected to demonstrate assessment literacy by designing

learning activities aligned with intended learning outcomes, selecting valid and reliable assessment methods, interpreting assessment evidence appropriately, and providing constructive feedback that promotes students' competency development (NLN, 2024; Nunn-Ellison et al., 2023). From this perspective, competence in measurement and evaluation represents a fundamental dimension of nurse educators' professional competence because it ensures alignment among learning outcomes, instructional strategies, and assessment practices while contributing to the preparation of competent nursing graduates capable of meeting contemporary health care needs.

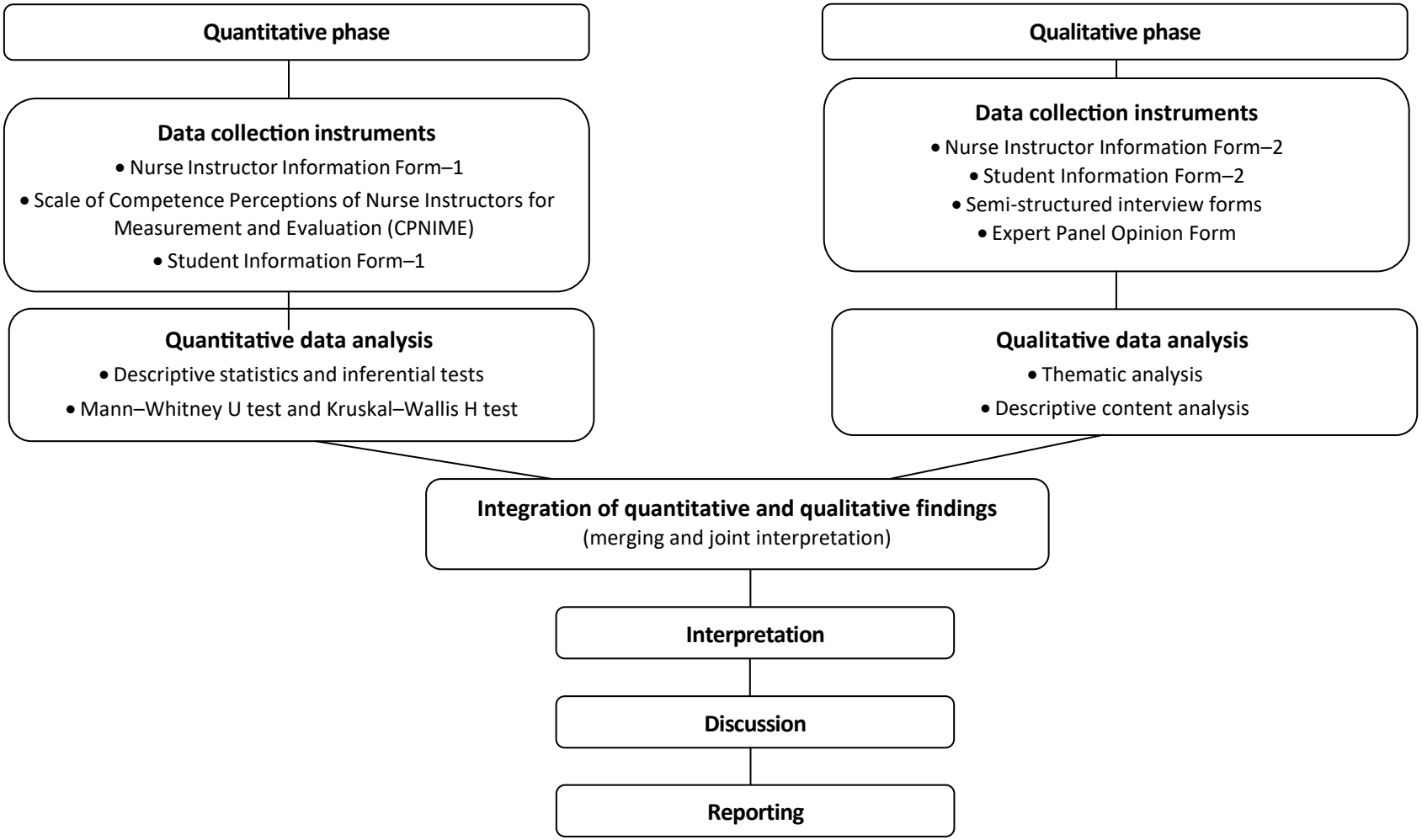
Design

This study employed a convergent parallel mixed-methods design, one of the core mixed-methods approaches described by Creswell and Plano Clark (2023). A convergent parallel design was considered the most appropriate methodological approach because the study sought both to quantify educators' perceived competencies in measurement and evaluation and to obtain an in-depth understanding of the challenges they encounter and the solution proposals developed by multiple stakeholders. Concurrently collecting quantitative and qualitative data enabled complementary perspectives on the same research problem and provided a more comprehensive understanding than either method could achieve independently.

In the quantitative strand, we collected survey data to determine nurse educators' perceived competency levels in measurement and evaluation and to examine whether these competencies differed according to demographic and professional characteristics. Simultaneously, the qualitative strand explored the experiences and perspectives of educators, nursing students, and experts regarding competencies in measurement and evaluation, challenges encountered during assessment practices, and recommendations for improvement. Both strands were implemented independently, assigned equal priority, and analyzed separately throughout the study (see Figure 1).

Figure 1

Research Flow



Integration occurred during the interpretation phase using a side-by-side comparison approach. We compared quantitative findings with qualitative themes to identify areas of convergence, complementarity, and divergence. Qualitative findings explained, contextualized, and enriched quantitative results; quantitative findings provided an overall picture of nurse educators' perceived competencies. Furthermore, the expert panel findings contributed to validating and expanding the interpretations generated from the perspectives of educators and students, thereby strengthening methodological triangulation and enhancing the credibility of the integrated findings.

The study was designed, conducted, and reported in accordance with the good reporting of a mixed methods study (GRAMMS) recommendations to ensure transparent and rigorous reporting of the mixed-methods procedures (O'Cathain et al., 2008).

Population and Sample

Nurse Educators

This population consisted of 652 nurse educators employed at 16 nursing faculties in Türkiye. Population estimates were obtained from the Council of Higher Education Information Management System (YÖKSİS) (n.d.) and YÖK Atlas (n.d.), which served as the official sources for identifying the target population and institutional distribution. We used criterion sampling, a purposive sampling strategy, to recruit educators who met predefined inclusion criteria relevant to the research purpose. This approach enables researchers to select information-rich participants with direct experience of the phenomenon under investigation and is particularly appropriate when participants are expected to possess specific knowledge or expertise related to the research questions (Patton, 2015). Accordingly, criterion sampling was considered appropriate because the study aimed to examine the competencies of those who were actively involved in educational measurement and evaluation practices.

Inclusion criteria required that nurse educators:

- hold independent responsibility for teaching theoretical and/or clinical nursing courses;
- actively participate in measurement and evaluation processes, including assessment planning, examination preparation, grading, and interpretation of student performance; and
- have direct responsibility for assessment and evaluation decisions within the courses they teach.
- Exclusion criteria covered individuals who:
- did not have independent responsibility for teaching or assessment activities (e.g., those assisting with courses under faculty supervision without primary responsibility for assessment decisions); or
- were not actively involved in measurement and evaluation practices during the data collection period.

Nursing Students

The student population consisted of approximately 3,700 fourth-year nursing students enrolled in undergraduate nursing programs at 15 nursing faculties included in the study. Population estimates were also obtained from YÖKSİS and YÖK Atlas, which served as the official sources for identifying the target student population. The minimum required sample size was calculated using a 95% confidence level, a 5% margin of error, and a 99% confidence interval ($\alpha = 0.01$) (Büyüköztürk et al., 2018). Based on these parameters, the required sample size was determined to be 357 students.

A total of 363 nursing students participated in the quantitative phase of the study, exceeding the minimum required sample size.

Selection of Nurse Educators and Students for Individual Interviews

Participants who indicated in the information forms that they would like to participate in an individual interview were listed separately (nurse educators [*n* = 37]; students [*n* = 17]). We used maximum variation sampling, a qualitative sampling method, to ensure diversity of participants in terms of institution, age, gender, education level, academic title, and other relevant factors (Büyüköztürk et al., 2018). Although qualitative studies often report suggested sample size ranges, the final sample size was determined according to the principle of data saturation rather than predetermined numerical thresholds (Ahmed, 2025). The initial recruitment target was 15 nurse educators and 15 nursing students. Data collection continued until no new themes or meaningful insights emerged and sufficient depth and richness of the data had been achieved. Recruitment was discontinued when successive interviews yielded repetitive information.

Selection of Experts for the Expert Panel

The expert panel consisted of five experts selected through purposive sampling based on their recognized experience and academic competence in measurement and evaluation within the fields of nursing, education, and medicine. Inclusion criteria for experts included having academic expertise in measurement and evaluation, experience in curriculum development or assessment practices, and active involvement in higher education. Experts who did not have direct experience in educational assessment processes were not included. None of the experts were members of the research team; they were invited through professional and academic networks to provide independent feedback on the study materials.

Data Collection Instruments

Nurse Instructor Information Form–1

This form, developed by the research team based on the literature (Erdamar & Tengilimoğlu, 2021; Oguguo et al., 2021; Satoh et al., 2020; Şahin & Soylu, 2019), consisted of 18 items, including demographic and professional characteristics.

Scale of Competence Perceptions of Nurse Instructors for Measurement and Evaluation (CPNIME)

Developed by Yalnız et al. (2024), this scale consists of 30 items across three dimensions: planning and preparation (14 items), implementation (13 items), and evaluation (3 items). It uses a five-point Likert-type scoring system ranging from 1 = *never* to 5 = *always*. All items are positively worded, and no reverse-scored items are included. The total score ranges from 30 to 150, with higher scores indicating higher perceived competence. For interpretation purposes, the mean score ranges were categorized as follows: 1.00–1.80 = *very low competence*, 1.81–2.60 = *low competence*, 2.61–3.40 = *moderate competence*, 3.41–4.20 = *high competence*, and 4.21–5.00 = *very high competence*. McDonald's omega reliability coefficients were reported as 0.938 for the total scale, 0.932 for the planning and preparation dimension, 0.868 for the implementation dimension, and 0.935 for the evaluation dimension (Yalnız et al., 2024).

Student Information Form–1

This form, developed by the research team based on the literature (Oguguo et al., 2021; Şahin & Soylu, 2019), contained 14 items (e.g., demographic characteristics). The instruments used to collect qualitative data were structured according to the following interview form development steps:

1) creation of the interview form; 2) consultation with experts and documentation of their qualifications; 3) pilot testing; and 4) revision and finalization for implementation.

Semi-structured Interview Forms

Form for Nurse Instructors. This form, developed by the research team based on the literature (Elahi et al., 2016; Şahin & Soylu, 2019), contained 12 open-ended questions.

Form for Nursing Students. This form, developed by the research team based on the literature (Elahi et al., 2016; Şahin & Soylu, 2019), contained 11 open-ended questions.

Nurse Instructor Information Form–2 and Student Information Form–2

These forms were used to record the demographic characteristics of participants in the qualitative interview.

Expert Panel Opinion Form

This form consisted of four open-ended questions designed to gather expert views on the perceived competencies of nurse educators, the problems they encountered, and proposed solutions regarding measurement and evaluation.

Data Collection

The study was conducted between April 2024 and December 2024 in Türkiye. In the quantitative phase of the study, the research team digitized Nurse Instructor Information Form–1 and Student Information Form–1 using an online survey development platform and generated a web-based survey link. To prevent missing data, all survey items were designated as mandatory fields, and duplicate entries were blocked to ensure data integrity. Participation was entirely voluntary, and no financial or non-financial incentives were provided.

The qualitative phase of the study was conducted in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines (Tong et al., 2007). The interview process adhered to the following steps: 1) organizing the interview (scheduling, location, and time); 2) preparing the environment and recording set-up; and 3) conducting the interview. The research team held individual in-depth interviews via an online platform. Interview dates and times were arranged through direct communication with the participants. The participants were informed about the purpose of the study and the recording procedures, and verbal and written consent was obtained. To ensure accurate and complete data capture, audio and video recordings were made using an online recording system following consent. Each interview lasted approximately 25 to 60 minutes.

The expert panel was defined as a structured meeting in which experts expressed differing opinions on a specific topic and discussed unresolved issues (Tan, 2015). The research team held the panel meeting with five experts who agreed to participate, on December 30, 2024, via an online platform. At the beginning of the panel meeting, the participants were informed about the purpose of the study and the recording procedures, and verbal and written consent was obtained. Video recording was then initiated. During the meeting, the findings of the study were first presented to the experts. Following the presentation, expert opinions were collected based on the questions in the Expert Panel Opinion Form. The panel discussion lasted approximately 120 minutes.

The GRAMMS checklist was used for reporting the mixed-methods study findings (O'Cathain et al., 2008).

Data Analysis

Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS) Statistics 23. We used descriptive statistics, including frequency, percentage, mean, standard deviation, and minimum–maximum values to summarize the demographic and professional characteristics of the participants. Scores obtained from the CPNIME scale were examined using minimum and maximum values, and total and subscale scores were compared across groups defined by demographic and professional variables. Before conducting group comparisons, we examined the distributions of total and subscale scores for normality. Because the score distributions did not meet the assumption of normality, non-parametric statistical tests were used. We applied the Mann–Whitney U test to comparisons involving two independent groups and the Kruskal–Wallis H test to comparisons involving more than two independent groups.

Qualitative data were analyzed using thematic and descriptive content analysis following the systematic procedures recommended by Creswell (2007) and Yıldırım and Şimşek (2016). All interviews were audio-recorded with participants' consent and transcribed verbatim immediately after data collection. The research team read the transcripts repeatedly to facilitate immersion in the data and ensure familiarity with participants' accounts before coding. Open coding was conducted line by line to identify meaningful units related to participants' perceptions, experiences, encountered problems, and proposed solutions regarding measurement and evaluation in nursing education. We generated initial codes directly from the data without using predetermined categories. To strengthen analytical rigour, two researchers independently coded a subset of the transcripts. The initial coding frameworks were compared, and discrepancies were discussed until consensus was reached. This iterative process contributed to the refinement of the codes and the development of a preliminary coding framework. We subsequently grouped conceptually similar codes into categories, subthemes, and broader themes through constant comparison. Relationships among codes, categories, and themes were examined repeatedly to ensure internal coherence within themes and clear distinctions between them. Theme development was finalized through consensus meetings involving the primary researcher, the study advisor, and a qualitative research expert. Any disagreements were resolved through discussion until consensus was achieved. Representative direct quotations were included to demonstrate the relationship between the interpretations and the original data. Quotations were identified using the following participant codes: nursing students (S1, S2, …), nurse educators (NE1, NE2, …), and experts (E1, E2, …).

Integration of Quantitative and Qualitative Findings

Following the independent analysis of the quantitative and qualitative data sets, we integrated the findings during the interpretation stage using a side-by-side comparison approach. Quantitative results were compared with the qualitative themes to identify areas of convergence, complementarity, and divergence. Qualitative findings were used to explain and contextualize the quantitative results, particularly those related to perceived competence levels, assessment practices, professional development needs, and challenges encountered in measurement and evaluation. The expert panel findings were also used to enrich and validate the interpretations generated from the perspectives of nurse educators and nursing students.

Ethical Considerations

Ethical approval was obtained from the Ethics Committee for Social Sciences and Humanities of a public university in Türkiye (Approval No.: 2023/119; Date: 07.03.2023). Institutional permissions were obtained from the nursing faculties participating in the study. For the quantitative component, written informed consent was obtained electronically through a consent statement presented on the first page of the online questionnaire. For the qualitative component, participants were informed about the study purpose, interview procedures, voluntary participation, confidentiality, and recording

process before data collection. Both written and verbal informed consent were obtained from all participants before the individual interviews and expert panel session.

Trustworthiness and Rigour

The qualitative component was conducted and reported in accordance with the COREQ guidelines to enhance transparency and methodological rigour (Tong et al., 2007). In addition, the principles of credibility, transferability, dependability, and confirmability proposed by Lincoln and Guba (1985) and further discussed by Stenfors et al. (2020) were applied throughout the qualitative research process.

Credibility was strengthened through data-source triangulation by incorporating the perspectives of educators, students, and expert panel members. The semi-structured interview guides were developed through an extensive literature review, evaluated by experts, and pilot-tested before data collection. Repeated engagement with the transcripts, independent coding of a subset of the data, and consensus discussions among the researchers further supported the credibility of the analysis.

Transferability was supported through purposive sampling strategies and detailed descriptions of the participants, institutional settings, and nursing education context. These contextual descriptions enable readers to assess the potential applicability of the findings to comparable educational settings.

Dependability was enhanced by maintaining a structured audit trail documenting the major stages of the research process. The audit trail included interview recordings and transcripts, preliminary and revised coding frameworks, theme development documents, analytic notes, and records of consensus meetings and methodological decisions.

Confirmability was supported through reflexive documentation of the researchers' roles and analytical decisions. Regular discussions among the research team and the inclusion of representative participant quotations helped ensure that the findings remained grounded in participants' accounts rather than reflecting unsupported researcher interpretations.

Results

The quantitative component of the study involved 267 nurse educators and 363 nursing students. The qualitative component comprised individual in-depth interviews with 17 nurse educators and 14 nursing students, as well as an expert panel of five experts. This convergent parallel mixed-methods design enabled the integration of large-scale quantitative findings with in-depth qualitative perspectives.

The following sections discuss the views of nurse educators s and of students on educators' perceived competence, problems they encountered, and proposed solutions regarding measurement and evaluation.

Nurse Educators' Views

Socio-demographic Characteristics of Nurse Educators

The mean age of the nurse educators was 44.69 ± 7.33 years, and the majority were female (92.9%), married (80.5%), and employed at state universities (95.5%). Most participants held doctoral degrees (82.4%), and 31.5% held the academic title of Assistant Professor.

While 86.5% of the participants reported having received training in measurement and evaluation, only 25.5% considered themselves competent, and 13.9% considered themselves not competent. This finding indicates a discrepancy between formal training and perceived competence.

The participants reported that they predominantly used multiple-choice questions in theoretical courses (77.2%). In laboratory practices, they used performance evaluation forms, case discussions, standardized patients, interviews, group work, and peer evaluation (37.1%). In clinical and field practices, performance evaluation forms (55.8%), bedside evaluation and reflection journals (53.6%), and nursing process or care plans (43.8%) were commonly used.

Regarding continuing education needs, participants reported a need for development in assessing affective learning outcomes (61.8%), determining item difficulty levels (61.8%), using alternative assessment tools such as portfolios and peer evaluation (58.8%), interpreting test and item statistics (52.1%), providing feedback (38.2%), preparing specification tables (28.1%), and assessing psychomotor learning outcomes (27.7%).

The main challenges reported in measurement and evaluation included evaluating all students with identical questions (67.8%), constructing equivalent exams across groups (45.7%), and lack of item-analysis skills (45.3%). To address these issues, participants emphasized the need to improve the discriminative quality of questions (67.8%), diversify assessment methods and tools (65.9%), integrate traditional and formative assessment approaches (55.4%), and establish standardized assessment protocols (53.6%) (see Table 1).

Table 1

Nurse Educators' Views on Their Perceived Competence, Encountered Problems, and Proposed Solutions Regarding Measurement and Evaluation (n = *267)*

	n	**%**
Problems		
Evaluating everyone with the same questions	181	67.8
Preparing exams of equal difficulty for different groups	122	45.7
Lack of knowledge and skills regarding item analysis	121	45.3
Inability to ensure objectivity in grading	93	34.8
Problems related to the exam environment	36	13.5
Issues concerning the university grading system	22	8.2
Solutions		
Preparing discriminative questions	181	67.8
Using different valid and reliable methods and tools to assess the learning activities and achievement of students	176	65.9
Using both traditional and supportive methods to implement process evaluation	148	55.4
Establishing protocols and systems related to measurement and evaluation	143	53.6
Basing the process on measurement and evaluation principles	129	48.3
Taking measures to increase the validity, reliability, and usability of the exam	116	43.5
Organizing a training program for instructors	100	37.5
Using different types of questions appropriate to the course objectives	71	26.6
Ensuring the standardization of evaluation forms	68	25.5
Distributing all topics evenly and covering all content	46	17.2
Preparing a common question pool	38	14.2
Making improvements to the exam environment	26	9.7

Note. Participants could select multiple options.

According to the CPNIME scale results, the mean planning and preparation score was 51.70 ± 8.50, the mean implementation score was 52.16 ± 5.46, the mean evaluation score was 12.09 ± 1.86, and the total score was 115.96 ± 13.90. These results indicate a generally high level of perceived competence in measurement and evaluation across all dimensions of the scale (see Table 2).

Table 2

Nurse Educators' Perceived Competence According to the CPNIME (n = *267)*

Scale	*n*	Min	Max	$\bar{X}$ ± SD
Planning and preparation	267	28.00	70.00	51.70 ± 8.50
Implementation	267	38.00	65.00	52.16 ± 5.46
Evaluation	267	6.00	15.00	12.09 ± 1.86
Total	267	82.00	150.00	115.96 ± 13.90

Note. CPNIME = Scale of Competence Perceptions of Nurse Instructors for Measurement and Evaluation.

Inferential statistics revealed significant differences in total CPNIME scores according to age ($p < 0.001$), education level ($p < 0.001$), academic title ($p < 0.001$), training status ($p < 0.001$), and self-perceived competence ($p < 0.001$). Higher scores were observed among participants who were older, those with doctoral degrees, those holding higher academic titles, and those who had received education in measurement and evaluation. No significant difference was found according to gender ($p > 0.05$).

Views From Nurse Educator Interviews on Their Perceived Competence

The nurse educators who participated in individual interviews had a mean age of 45.48 ± 9.13 years. The majority were female (88.2%), and most held doctoral degrees (82.4%). The mean duration of employment as nurse educators was 19.00 ± 9.12 years, and 35.3% held the academic title of Assistant Professor. Overall, the sample represented experienced and academically qualified educators with substantial involvement in nursing education and assessment processes.

Themes

The qualitative data obtained from nurse educators regarding their perceived competence in measurement and evaluation, as well as the challenges and proposed solutions, were organized into five interrelated themes (see Table 3). These themes collectively demonstrate that assessment practices in nursing education are shaped by the interactions of pedagogical beliefs, individual competencies, and institutional structures.

Table 3

Themes and Codes Identified Based on Nurse Educators' Perceived Competence in Measurement and Evaluation

Theme	Codes
Theme 1: Place and Importance of Measurement and Evaluation in Nursing Education	• Quality and accreditation in nursing education • Process-oriented and holistic monitoring of student development • Measurement and evaluation as a program component • Systematic evaluation • Effective management of the educational program • Provision of guidance and counselling support
Theme 2: Competence in Measurement and Evaluation Related to Targeted Learning Outcomes	• Competencies related to the cognitive domain • Competencies related to the affective domain • Competencies related to the psychomotor domain
Theme 3: Factors Affecting Measurement and Evaluation	• Educator-related factors • Limited resources • Sense of responsibility and collaboration
Theme 4: Systemic and Pedagogical Barriers in Assessment Implementation	▪ Educator-related factors ▪ Student-related factors • Institution-related factors
Theme 5: Strategies for Enhancing Assessment Competence and System Quality	• Systematic monitoring and improvement • Participation in training programs (train-the-trainer, in-service training, etc.) • Educators' measurement and evaluation approach

Theme 1: Place and Importance of Measurement and Evaluation in Nursing Education. This theme reflects participants' understanding of measurement and evaluation as an essential element of educational quality assurance and curriculum governance. Rather than perceiving assessment as a technical or isolated activity, participants viewed it as a structural mechanism linked to accreditation, curriculum evaluation, and continuous improvement. This finding indicates a broader conceptualization of assessment as a tool for ensuring educational accountability and enhancing program quality (see Table 6).

Theme 2: Competence in Measurement and Evaluation Related to Targeted Learning Outcomes. This theme highlights a partial alignment of CBE principles and actual assessment practices. Although participants acknowledged the importance of evaluating cognitive, affective, and psychomotor domains, their practices were focused predominantly on cognitive and psychomotor dimensions. The limited emphasis on affective assessment suggests incomplete implementation of holistic competency-based evaluation in nursing education (see Table 6).

Theme 3: Factors Affecting Measurement and Evaluation. This theme indicates that measurement and evaluation practices are influenced by a combination of individual and contextual factors. Individual determinants include educators' attitudes, responsibility, and professional motivation; contextual determinants include student numbers, workload, resource limitations, and learning environment conditions. These findings suggest that assessment competence is not solely an individual attribute but is shaped by systemic and organizational contexts (see Table 6).

Theme 4: Systemic and Pedagogical Barriers in Assessment Implementation. This theme captures the structural and pedagogical challenges affecting assessment practices. Participants reported reliance on traditional assessment methods, limited assessment literacy, and insufficient institutional support. Large class sizes and time constraints further limit the ability to implement comprehensive and valid assessment strategies. These challenges indicate that current assessment practices are constrained by both educational and systemic limitations (see Table 6).

Theme 5: Strategies for Enhancing Assessment Competence and System Quality. This theme reflects participants' emphasis on professional development and institutional reform. Proposed strategies included strengthening assessment literacy, diversifying evaluation methods, and increasing institutional support mechanisms. The findings suggest that improving assessment quality requires coordinated interventions at both individual and organizational levels (see Table 6).

Nursing Students' Views

Socio-demographic Characteristics of Students

The mean age of the students was 22.17 ± 1.22 years, and 96.4% were studying at state universities. A total of 74.4% of participants were female, 97.8% were single, and 78% were graduates of Anatolian[1] high schools. Participants stated the level at which they found nurse educators s competent in measurement and evaluation as 6.78 ± 1.82 on a scale of 1 to 10.

Participants reported that nurse educators predominantly used multiple-choice questions (94.5%), written exams (79.1%), assignments (49.6%), and oral exams (18.2%) in theoretical courses; checklists (57.9%), oral exams (44.6%), simulation (35.5%), written exams (29.8%), assignments (24.1%), objective structured clinical examinations (OSCEs) (16.5%), self-assessment (10.2%), and clinical oriented reasoning examinations **(**COREs) (7.4%) in laboratory practices; and nursing process/care plans (87.9%), performance evaluation forms (61.2%), observation (43.3%), presentations (31.1%), and assignments (27.3%) in clinical/field practices as measurement and evaluation methods or tools.

Participants noted that nurse educators needed training in measurement and evaluation in the following areas: providing feedback after exams (65.3%), preparing questions that can distinguish between those who know and those who do not (45.5%), evaluating questions objectively (scoring) (44.4%), asking clear and understandable questions (43.5%), writing clear and understandable exam instructions (36.9%), and preparing and using different measurement and evaluation tools such as projects, assignments, or self-assessment (36.6%).

Participants experienced the following problems in measurement and evaluation: exam questions being predominantly knowledge-based and reliant on memorization (61.7%), inability to ensure objectivity in scoring and evaluation (47.9%), and insufficiency of exam durations (44.6%).

Regarding solutions to these problems, participants proposed using different valid and reliable methods and tools to assess the learning activities and achievement of students in addition to exams, projects, practices, extracurricular evaluations, and similar methods (60.9%) (see Table 4).

[1] Anatolian high schools are secondary education institutions—or a category of schools—in Türkiye that prepare students for higher education programs following middle school.

Table 4

Nursing Students' Views on the Perceived Competence of Nurse Educators, the Problems They Encountered, and Proposed Solutions Regarding Measurement and Evaluation (n = *363)*

	n	%
Problems		
Exam questions being predominantly knowledge-based and reliant on memorization	224	61.7
Inability to ensure objectivity in scoring and evaluation	174	47.9
Insufficiency of exam durations	162	44.6
Exams consisting solely of multiple-choice questions, etc.	141	38.8
Using exams as a means of threatening students with poor grades	112	30.9
Failing to ask questions of equal weight from all topics covered in class during exams	92	25.3
Problems with the university grading system	92	25.3
Problems with the exam environment	72	19.8
Asking questions unrelated to topics covered in class during exams	72	19.8
Solutions		
Using different valid and reliable methods and tools to assess the learning activities and achievement of students	241	60.9
Preparing exam questions in a balanced manner that covers all course topics	144	39.7
Preparing an answer key	141	38.8
Organizing the exam environment	126	34.7
Conducting assessments throughout the semester using tools such as presentations, self-assessments, and portfolios instead of relying solely on midterm and final exams	115	31.7
Organizing training programs on measurement and evaluation for instructors	110	30.3
Taking measures to increase the validity, reliability, and usability of the exam	109	30.0
Ensuring the standardization of evaluation forms	106	29.2
Preparing a common question pool	98	27.0
Preparing discriminative (differentiating) questions	86	23.7
Using different types of questions appropriate to the course objectives	83	22.9
Establishing protocols and systems related to measurement and evaluation	81	22.3
Basing the process on measurement and evaluation principles	73	20.1

Note. Participants could select multiple options.

Views From Student Interviews on Nurse Educators' Perceived Competence

The mean age of the students who participated in individual interviews was 21.50 ± 0.76 years, and 64.3% were female.

Themes

We grouped the data obtained from nursing students into three themes (see Table 5). These themes demonstrate that students' perceptions of assessment are strongly shaped by their lived educational experiences.

Table 5

Themes and Codes Identified Based on Nursing Students' Perceptions of Assessment

Theme	Codes
Theme 1: Assessment as a Predominantly Outcome-Oriented Process	• Negative experiences • Measurement tools used • Measurement and evaluation process • Evaluation of the theoretical dimension • Evaluation of the practical dimension • Factors complicating the process
Theme 2: Perceived Inconsistencies in Assessment Practices	• Perceptions of educator competence • Effect of educator competence on student motivation • Objectivity and feedback in evaluation
Theme 3: Need for Competency-Based and Transparent Assessment Systems	• Student approach • Learner-centred assessment tools • Educator approach and competence • Institutional and systemic support

Theme 1: Assessment as a Predominantly Outcome-Oriented Process. This theme reflects students' experiences of assessment as focused largely on memorization and knowledge reproduction. The dominance of multiple-choice examinations and the limited use of process-oriented assessment tools indicate that evaluation is primarily outcome-based rather than competency-oriented. This finding suggests limited alignment of current assessment practices and contemporary educational expectations.

Theme 2: Perceived Inconsistencies in Assessment Practices. This theme highlights variability in nurse educators' assessment practices across theoretical, laboratory, and clinical settings. Students reported concerns regarding fairness, transparency, and feedback quality. These perceptions indicate that inconsistencies in assessment implementation directly influence students' evaluation of educator competence.

Theme 3: Need for Competency-Based and Transparent Assessment Systems. This theme reflects students' expectations for more diversified, transparent, and learner-centred assessment approaches. Students emphasized the need for multiple assessment tools beyond traditional examinations and greater alignment of learning outcomes and evaluation practices. This finding indicates a strong demand for reform towards competency-based assessment systems.

Views of the Expert Panel

The expert panel was 60% female participants, with a mean age of 56.02 ± 0.76 years. All experts held senior academic positions, including the title of Professor. Their expertise spanned public health nursing, nursing education, measurement and evaluation in education, and medical education. This composition reflected a highly experienced and multidisciplinary group with direct involvement in curriculum development and assessment policy.

We organized the expert panel findings into two overarching themes (see Table 6), reflecting both the current state and future directions of measurement and evaluation in nursing education.

Themes

Theme 1: Structural and Pedagogical Conditions Shaping Current Assessment Practices. This theme reflects expert evaluations of existing assessment systems as uneven and inconsistently implemented. Key issues include variability in educator competence, lack of standardization, and institutional differences in assessment practices. These findings indicate that assessment quality is strongly influenced by structural and contextual factors across institutions.

Theme 2: Strategic Reform and System Integration for Sustainable Improvement. This theme emphasizes the need for systemic transformation through institutional collaboration, technological integration, and in capacity building. Experts highlighted that sustainable improvement in assessment practices requires coordinated policy, leadership, and professional development initiatives. This finding suggests that assessment reform must be addressed at both organizational and policy levels.

Table 6

Quotes About Measurement and Evaluation From Nurse Educators (n = *17), Students* (n = *14), and Experts* (n = *5)*

Participant group	Theme	Quotes
Nurse educators	**Place and Importance of Measurement and Evaluation in Nursing Education**	"Our profession is multidimensional. We have outcomes in the cognitive, affective, and psychomotor domains. Each of these needs to be properly planned and evaluated using the right method and technique and, of course, by correctly interpreting the results during the assessment phase. That's why I see measurement and evaluation as an inseparable part of nursing education." (NE16) "We applied what we learned from our seniors for years…. We thought that was measurement and evaluation, but we learned its true meaning through accreditation. It turns out that we also needed someone to evaluate us." (NE14) "How can I measure something I haven't taught? … We only stay at the theoretical level. We just keep explaining and explaining. Therefore, we only measure what we've explained through exams. Unfortunately, we can't use different measurement and evaluation methods." (NE6)
	Competence in Measurement and Evaluation Related to Targeted Learning Outcomes	"Since there are so many students, we use multiple-choice questions to assess the theoretical dimension. We have some difficulties using open-ended questions because they take too much of our time, so we don't prepare many questions that target synthesis and evaluation levels." (NE2) "We hardly ever assess the affective domain. Even though we know that it is an area more important than the cognitive domain outcomes, unfortunately, due to the difficulty of assessing it, I don't think we are actually evaluating the affective domain." (NE11) "We still have a long way to go in the psychomotor domain as well…. I have doubts about the extent to which we actually conduct observations. I believe our objective assessments are quite problematic." (NE9)
	Factors Affecting Measurement and Evaluation	"You're going to give a lab exam, but you don't have the materials, so you're just pretending to do it…." (NE9) "How can we teach students the values and ethical codes of the profession? How can we measure and evaluate whether they've learned what we've taught them? I've had concerns about this." (NE7)

	Systemic and Pedagogical Barriers in Assessment Implementation	"What we learned from past experiences or from our instructors…. First of all, we are not aware of how important measurement and evaluation really are. Secondly, as academics, we do not have the necessary competence." (NE11) "Students come to us with a habit of taking multiple-choice exams since high school. However, for those who will graduate as nurses, the ability to interpret, express themselves, and think analytically is extremely important. We are unable to assess whether students possess these skills, or the questions we ask tend to measure their rote knowledge rather than these abilities." (NE16)
	Strategies for Enhancing Assessment Competence and System Quality	"Measurement and evaluation is a complex process. It needs to be continuous. There should be monitoring, and even those who conduct the measurement and evaluation should themselves be monitored." (NE14) "First of all, the [academic] must be aware of their own responsibilities and apply all these aspects carefully and attentively in their work. Therefore, academic formation (pedagogical) training is essential." (NE11)
Nursing Students	**Assessment as a Predominantly Outcome-Oriented Process**	"[Assessment] shouldn't be based solely on the nursing care plan or theoretical exams. Because sometimes we can't express what we do in our nursing care plans." (S12) "'Why did I get that grade, where did I fall short, what should I do, what shouldn't I do?' We don't know. That's why feedback is so important, in my opinion." (S7) "We only had one OSCE in the lab. Other than that, we give nursing care plans, but in some classes, we are asked to submit two nursing care plans every day. We can't even spend enough time with the patient because we're filling out these plans…. There's no feedback on these nursing care plans either." (S4) "The student is more concerned with what they'll see on the exam, how they'll succeed on the exam, and how they'll get a passing grade, rather than learning more." (S6)
	Perceived Inconsistencies in Assessment Practices	"I think that in theoretical exams, sometimes the question styles or answers are very similar…. I think the answer choices should be more distinguishable." (S7) "Some of our teachers can personalize the situation, saying things like, 'I'm going to fail you in this class' or 'you always do this,' and even if the person gets good grades, they can try to drag them down." (S2) "Since we are not observed for long periods of time, I think some parts of the forms are not filled out completely." (S10) "I don't think the evaluation is very objective. I also didn't receive any feedback on my mistakes." (S13)

	Need for Competency-Based and Transparent Assessment Systems	"The nurse mentor program is truly a positive and beneficial practice. However, I believe that nurses who take on this role should also play an active part in our evaluation process." (S2) "A more effective learning process is achieved with faculty members who have clinical experience. This situation also affects our evaluation score and our evaluation criteria." (S14) "Everything in measurement and evaluation must be clearly defined … because it is necessary to know what criteria are used for evaluation, not only for me, but for everyone who evaluates us and everyone we evaluate." (S2)
Experts	**Structural and Pedagogical Conditions Shaping Current Assessment Practices**	"One of the priority areas that needs improvement in all education programs, even in accredited institutions, is one of the weakest points. The question is, 'What did we produce?'" (E1) "Assessment and evaluation in higher education is a global problem worldwide. There is general information in the literature, and we have many resources, but process-oriented evaluation is a general problem." (E4) "If a student is truly failing, we don't allow them to stay. I'm particularly surprised when I see this in the final year. There are faculty members who have a 'just let them pass' attitude." (E1) "As faculty members, we try to carry out [the role of measurement and evaluation] among all our other roles, but the reality is that we cannot devote much time to it." (E2) "We need to take program competencies out of the realm of [customary, standard] expressions and make them usable in the education program." (E5)
	Strategic Reform and System Integration for Sustainable Improvement	"We need to be willing to change, we need to be motivated, but it's not just us—the administration and the system also need to support us…. In addition, teaching staff should receive serious training in assessment and evaluation, but the important thing is to ensure that this is put into practice." (E1) "We cannot separate assessment and evaluation from the future of education; we need to build strength. We need to change the perspective on assessment and evaluation from the perspective of both students and teaching staff, as well as the system." (E2) "For each course, it is necessary to present concrete products through portfolios, evaluate them, and integrate them into post-graduation (adding cognitive, affective, skill-based, hobbies, etc.)." (E4)

Discussion

This mixed-methods study provides a comprehensive understanding of educators' competencies in measurement and evaluation by integrating the perspectives of educators, students, and experts. Although the quantitative findings indicated that educators generally perceived themselves as highly competent in measurement and evaluation, the qualitative findings revealed important discrepancies between perceived competence and the implementation of contemporary assessment practices. These discrepancies were consistently reflected in students' experiences and reinforced by expert evaluations, suggesting that the challenges associated with assessment are not merely attributable to individual educators but are embedded within broader pedagogical, institutional, and systemic contexts. The convergence of evidence across the three participant groups strengthens the credibility of these findings and highlights the complexity of implementing competency-based assessment within nursing education. Similar observations have been reported in recent studies, emphasizing that assessment competence encompasses not only individual knowledge and skills but also institutional support, educational culture, and opportunities for continuous professional development (Killam et al., 2024; Nunn-Ellison et al., 2023; Vauhkonen et al., 2024).

One crucial finding of this study is that assessment practices in nursing education remain predominantly traditional despite the increasing adoption of CBE approaches. The quantitative findings demonstrated that multiple-choice examinations continue to be the most frequently used assessment method, while the qualitative findings showed that educators associated assessment primarily with measuring cognitive achievement. Students similarly described assessment as examination-driven and focused largely on knowledge reproduction rather than competency development. Expert panel discussions further reinforced these findings by identifying limited standardization and insufficient implementation of authentic assessment approaches across institutions. Taken together, these findings suggest that, although CBE has been widely adopted conceptually, its assessment principles have not yet been fully translated into educational practice. Previous studies similarly indicate that nursing education continues to rely heavily on traditional written examinations despite growing international recommendations advocating for authentic, performance-based, and programmatic assessment strategies (Killam & Camargo-Plazas, 2022; Killam et al., 2024; Nunn-Ellison et al., 2023). Authentic assessment methods, including OSCEs, workplace-based assessments, reflective portfolios, peer assessment, and structured formative feedback, have been shown to enhance students' clinical reasoning, professional judgement, and competency development; however, their implementation remains inconsistent across nursing programs (Dao Dieu Nguyen et al., 2025; Vauhkonen et al., 2024).

Another important finding of this study is that formal education in measurement and evaluation did not necessarily translate into confidence or competence in implementing effective assessment practices. Although most educators reported having received education in measurement and evaluation, they simultaneously identified substantial educational needs, particularly in assessing the affective domain, conducting item analyses, interpreting assessment results, and using alternative assessment methods. The qualitative findings further demonstrated that participants recognized these limitations and frequently experienced difficulties in transferring theoretical knowledge into authentic assessment practices. Students reinforced this interpretation by expressing concerns regarding limited feedback, inconsistent grading practices, and the continued reliance on knowledge-based examinations. Experts emphasized the need to strengthen assessment literacy through systematic professional development. Together, these findings suggest that assessment competence extends beyond acquiring theoretical knowledge and requires continuous opportunities for practical application, reflective practice, and institutional support. Assessment literacy is increasingly conceptualized as a multidimensional

competency encompassing knowledge, practical skills, professional judgement, and the ability to make informed assessment decisions that enhance student learning (Nunn-Ellison et al., 2023; Vauhkonen et al., 2024). Contemporary nursing education also recognizes that one-time educational activities are insufficient to sustain high-quality assessment practices. Instead, continuous faculty development programs, mentoring systems, peer learning opportunities, and institutional feedback mechanisms are needed to support assessment competence and competency-based assessment practices (Killam et al., 2024; Oermann, 2022; Salminen et al., 2023). Therefore, strengthening assessment literacy should be considered a strategic priority for schools of nursing seeking to improve educational quality and graduate competence.

This study also identified assessment challenges as predominantly systemic rather than individual in nature. Although participants acknowledged personal limitations in specific areas of assessment, the integrated findings demonstrated that these challenges were strongly influenced by organizational and contextual conditions. Quantitative findings identified difficulties in preparing equivalent examinations, conducting item analyses, and developing discriminative assessment items. These findings were reinforced by qualitative interviews, in which participants described heavy workloads, large student cohorts, limited time, and insufficient institutional support as major barriers to implementing high-quality assessment practices. Students further emphasized concerns regarding fairness, transparency, and the consistency of grading procedures, and experts highlighted considerable variability in assessment implementation and the absence of standardized institutional policies. The convergence of these perspectives suggests that assessment quality cannot be improved solely through individual faculty development but requires coordinated institutional and organizational support. These findings are consistent with contemporary nursing education literature demonstrating that assessment practices are shaped by complex interactions among individual competence, educational resources, institutional culture, leadership, and organizational policies (Aase et al., 2022; Nunn-Ellison et al., 2023; Wodaynew et al., 2023). Studies have reported that increasing student numbers, expanding academic responsibilities, and limited institutional investment reduce educators' opportunities to design authentic, competency-based assessment strategies (Killam et al., 2024; Özden et al., 2022). Consequently, improving assessment quality requires a systems-based approach that combines faculty development with institutional standardization, protected time for assessment activities, access to educational technologies, and organizational policies that support evidence-informed assessment practices. Such an approach is more likely to produce sustainable improvements than interventions targeting individuals alone.

The quantitative findings demonstrated that perceived competence in measurement and evaluation differed significantly according to age, academic qualification, academic title, and previous training in measurement and evaluation. Participants who were older, held higher academic qualifications and academic titles, and had received formal education reported significantly higher levels of perceived competence. Rather than suggesting that competence increases solely as a function of age or seniority, these findings indicate that assessment competence is likely to develop through cumulative professional experience, sustained engagement with teaching responsibilities, and continuous academic and professional development. The qualitative findings provide important context for interpreting these quantitative differences. Educators frequently described assessment competence as a competency that evolves through repeated practice, reflection, and experience rather than through theoretical preparation alone. Participants emphasized that designing valid assessment tools, interpreting assessment results, and making educational judgements became easier as they accumulated teaching experience and encountered a wider range of educational situations. Similarly, expert panel members stressed that assessment competence should be viewed as a developmental process requiring continuous updating in

response to changing educational approaches and assessment expectations. These findings are consistent with previous research demonstrating that assessment competence develops progressively through teaching experience, faculty development activities, scholarly engagement, and reflective educational practice (Herrman, 2020; Salminen et al., 2023; Vauhkonen et al., 2024). Nevertheless, our findings also suggest that professional experience alone may not be sufficient to ensure high-quality assessment practices. Continuous institutional support, structured faculty development programs, and opportunities for peer learning remain essential to enable educators at all career stages to maintain and further develop their assessment competence in rapidly evolving educational environments (Killam et al., 2024; Nunn-Ellison et al., 2023).

Nursing students' perspectives provided an important complementary dimension to the interpretation of the findings by illustrating how assessment practices are experienced by learners. Although participants generally perceived themselves as competent in measurement and evaluation, students described assessment as examination-driven, outcome-oriented, and focused on knowledge reproduction. Furthermore, they expressed concerns regarding inconsistency in grading practices, limited feedback, and insufficient transparency in assessment processes. These findings complement the educators' and experts' perspectives by suggesting that assessment competence should not be evaluated solely from the educators' perspectives but should also be evaluated through its impact on students' learning experiences. The convergence of perspectives indicates that effective assessment extends beyond measuring academic achievement and should actively promote learning, professional growth, and learner engagement. Contemporary educational theory increasingly emphasizes assessment for learning rather than assessment of learning, highlighting the importance of timely feedback, transparency, and active student participation in the assessment process (Nunn-Ellison et al., 2023; Oermann, 2022). The limited use of formative assessment strategies and students' concerns regarding feedback in our study therefore suggest that opportunities to support learning through assessment remain underutilized. These findings are consistent with previous studies reporting that nursing students value assessment systems that are transparent, equitable, competency-based, and accompanied by constructive feedback (Dao Dieu Nguyen et al., 2025; González-Gil et al., 2020). Consequently, strengthening assessment literacy among educators should include not only the development of valid assessment tools but also the enhancement of feedback practices, learner involvement, and communication strategies that foster trust, fairness, and meaningful learning experiences.

The expert panel findings extended and strengthened the interpretation of the quantitative and qualitative results by providing a broader systems perspective on assessment practices in nursing education. While educators primarily described challenges encountered in their daily assessment practices and students emphasized their experiences of fairness, feedback, and transparency, experts situated these issues within the wider context of educational governance, institutional capacity, and policy implementation. Their perspectives highlighted that inconsistencies in assessment practices are not isolated events but reflect variability in institutional standards, educator preparation, and organizational support across nursing programs. The convergence of evidence from all three participant groups suggests that improving assessment quality requires coordinated action at multiple levels. At the individual level, educators require continuous opportunities to strengthen their assessment literacy and implement authentic, competency-based assessment approaches. At the institutional level, schools of nursing should establish standardized assessment policies, promote collaboration, provide protected time for assessment-related activities, and facilitate access to educational technologies and faculty development programs. At the policy level, national nursing education standards should explicitly incorporate contemporary assessment competencies and provide guidance for the implementation of evidence-informed, competency-based assessment systems. These recommendations are consistent with

international frameworks advocating for systematic investment in nursing faculty development, educational quality assurance, and competency-based curriculum implementation (NLN, 2024; World Health Organization, 2021). Taken together, the findings suggest that sustainable improvement in assessment practices cannot be achieved through isolated educational initiatives targeting individuals alone. Rather, strengthening assessment quality requires an integrated strategy that aligns competence, institutional infrastructure, organizational leadership, and national educational policies. Such a systems-oriented approach is likely to contribute not only to more valid and equitable assessment practices but also to the preparation of nursing graduates who are better equipped to meet the complex demands of contemporary health care systems.

Strengths of the Study

This study has several important strengths. First, the convergent parallel mixed-methods design enabled the integration of quantitative breadth with qualitative depth, providing a comprehensive understanding of educators' competencies in measurement and evaluation. Second, the inclusion of three stakeholder groups—educators, students, and experts—allowed methodological triangulation and enriched the interpretation of the findings from multiple perspectives. Third, data were collected from participants across different regions of Türkiye, increasing the diversity of educational contexts represented in the study. Finally, the use of a validated measurement instrument with qualitative interviews and expert panel discussions strengthened the methodological rigour, credibility, and practical relevance of the findings.

Limitations of the Study

Several limitations should be considered when interpreting the findings. First, although participants were recruited from universities across Türkiye, voluntary participation may have introduced self-selection bias, particularly among individuals with greater interest in measurement and evaluation. Second, the qualitative findings were based on self-reported experiences and perceptions, which may have been influenced by recall bias or social desirability bias. Third, because qualitative interviews and the expert panel meeting were conducted online, opportunities to observe non-verbal communication may have been more limited compared to in-person settings. Fourth, although quantitative and qualitative findings were integrated during interpretation in accordance with the convergent parallel mixed-methods design, integration occurred primarily at the interpretation stage rather than throughout all phases of the research process. Finally, the findings reflect the context of nursing education in Türkiye; therefore, caution should be exercised when transferring the results to countries with different educational systems, curricular structures, and assessment policies.

Conclusion and Recommendations

This mixed-methods study provides a comprehensive understanding of educators' competencies in measurement and evaluation by integrating the perspectives of nurse educators, nursing students, and experts. Although educators generally perceived themselves as competent in measurement and evaluation, the integrated findings revealed important discrepancies between perceived competence and the implementation of contemporary assessment practices. Across all participant groups, common concerns emerged regarding the predominance of traditional assessment approaches, limited use of authentic and competency-based assessment strategies, and persistent challenges related to objectivity, standardization, and meaningful feedback.

The convergence of quantitative and qualitative findings demonstrates that assessment competence should be regarded not solely as an individual attribute but rather as a multidimensional competency shaped by professional development, institutional support, organizational culture, and educational policy. The consistency of findings across nurse educators, nursing students, and experts strengthens the credibility of this interpretation and highlights that improving assessment quality requires coordinated action at multiple levels of nursing education.

Overall, the findings underscore that strengthening assessment literacy is essential for ensuring valid, reliable, equitable, and competency-based assessment practices in nursing education. Sustainable improvement requires continuous faculty development, institutional commitment, standardized assessment frameworks, and educational policies that support evidence-informed assessment. Investment in these areas has the potential to enhance educational quality, strengthen students' competency development, and ultimately contribute to the preparation of nursing graduates capable of meeting the complex demands of contemporary health care systems.

Based on the findings of this study, we offer the following recommendations:

- Continuous faculty development programs should be established to strengthen assessment literacy, with particular emphasis on authentic assessment, formative assessment, feedback practices, item analysis, and competency-based evaluation.
- Schools of nursing should develop institutional assessment policies and standardized assessment frameworks that promote consistency, fairness, transparency, and alignment among learning outcomes, teaching strategies, and assessment methods.
- Educational leaders and policy makers should support institutional capacity building by providing protected time for assessment-related activities, access to educational technologies, and opportunities for interdisciplinary collaboration and peer learning.
- Future research should examine assessment competence using longitudinal and multicentre designs, incorporating both self-reported and objective indicators of assessment performance to provide a more comprehensive understanding of educators' competencies.
- International comparative studies can be conducted to explore similarities and differences in assessment practices across nursing education systems and to identify context-specific strategies for strengthening assessment quality and CBE.

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