Development and psychometric evaluation of a quality assessment questionnaire for clinical nursing education

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Abstract

This study developed and evaluated a quality assessment questionnaire for clinical nursing education using an exploratory-sequential mixed-method approach. A systematic literature review and expert consultations informed the initial item generation, followed by psychometric validation involving nursing students and experts in Palembang, Indonesia. The questionnaire was assessed for Content Validity Index (CVI ≥0.83, scale-level CVI = 0.97), construct validity (five factors explained 85.1% variance, factor loadings 0.56–0.91), and reliability (Cronbach's Alpha = 0.94). The final version consisted of 24 items across five dimensions: quality, constraints, benefits, practicality, and transparency. Unlike existing tools, this questionnaire integrated a comprehensive evaluation framework tailored for nursing education, ensuring a more structured and contextually relevant assessment. Despite its robustness, the study was limited by its focus on a single geographic and cultural setting. Future research should explore cross-cultural validation and technological integration to enhance its applicability.

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Introduction

Clinical practice is a fundamental component of nursing education, enabling students to translate theoretical knowledge into real-world healthcare settings. Beyond developing technical skills, clinical practice fosters critical competencies such as communication, professional ethics, and problem-solving, all of which are vital for competent nursing professionals.[1–3] Additionally, interprofessional collaboration is strengthened during clinical training, as nursing students engage with multidisciplinary teams, improving the overall quality of patient care.[4–6] A supportive learning environment and mentorship play crucial roles in enhancing students' satisfaction and competency development, emphasizing the need for well-structured clinical practice evaluation tools.[7–9]

The evaluation of clinical practice is essential to ensure students acquire meaningful learning experiences that contribute to their professional growth.[10,11] Various assessment methods, including direct observation, mentor feedback, and self-assessment, are used to evaluate students' competencies.[12] Competency-based assessments are particularly significant as they encompass technical skills, communication, and affective attributes such as empathy and ethical behavior.[13] Furthermore, technological advancements, including digital simulations and electronic portfolios, have been introduced to improve the accuracy and efficiency of clinical evaluations.[14,15] While existing tools aim to provide comprehensive assessments, there remains a need for standardized and reliable evaluation methods across different nursing programs.

Despite the availability of various clinical evaluation instruments, inconsistencies in assessment criteria and evaluator subjectivity persist, compromising the reliability of student evaluations.[16] The variability in evaluators' perceptions often results in inconsistent grading, underscoring the necessity for standardized, evidence-based evaluation tools.[17] Additionally, while technological advancements have improved objectivity, issues related to accessibility and implementation in diverse educational settings remain unaddressed.[18] Recent research suggests that intensive training for evaluators can significantly reduce bias and enhance assessment consistency.

Another critical gap in current evaluation frameworks is the underrepresentation of affective and behavioral competencies. Many existing instruments predominantly focus on cognitive and technical aspects, neglecting crucial interpersonal skills such as empathy, communication, and professional behavior.[19] Studies indicate that systematic evaluation of affective competencies can

lead to improved nurse-patient interactions and better patient outcomes.[20] Additionally, the development of holistic assessment tools that incorporate emotional and social competencies is imperative to ensure nursing students are adequately prepared for dynamic clinical environments.[21]

Furthermore, existing evaluation instruments are typically developed by faculty members and experts, often overlooking the perspectives of students the primary users of these tools. Research indicates that involving students in the design and refinement of assessment instruments enhances their relevance and applicability in real-world settings.[14,22,23] Collaborative development between faculty and students has been shown to increase the accuracy of evaluations while fostering student engagement and ownership in the assessment process.[24] Clarke *et al.* (2023)[25] emphasize that student-faculty collaboration ensures a comprehensive evaluation framework that adequately reflects students' clinical learning experiences.

Given these limitations, this study aims to develop a valid, reliable, and comprehensive questionnaire for evaluating clinical practice quality from the perspective of nursing students. Unlike existing evaluation instruments that primarily assess learning activities and student competencies, this study seeks to create an innovative assessment tool that evaluates the quality of the evaluation process itself.[26,27] This approach aligns with constructivist learning theories, which advocate for assessments that consider learning outcomes, the learning process, and contextual factors.[28] By incorporating diverse stakeholder perspectives, including students and clinical practitioners, the resulting evaluation tool is expected to be more adaptable across various cultural and educational contexts.[29] Furthermore, ensuring the reliability of the instrument will allow for consistent and meaningful evaluations across different clinical settings[30]. Ultimately, this study contributes to the advancement of nursing education by providing a more effective tool for assessing the quality of clinical practice evaluations, thereby supporting improved educational outcomes and better-prepared nursing professionals.

Materials and Methods

Study design

This study designed and developed a questionnaire to assess nursing students' clinical practice quality using an exploratory-sequential mixed method approach. In the context of this study, the exploratory-sequential method begins with a qualitative exploration phase through a systematic literature review to identify key themes related to the quality of clinical practice evaluation, which are subsequently used to develop the questionnaire items. Meanwhile, the quantitative phase is conducted to test whether the developed instrument is valid, reliable, and truly reflects nursing students' experiences and perceptions regarding the quality of clinical practice evaluation.[31,32]

Population, sample, and sampling

The study population comprised nursing students enrolled in a professional nursing education programme in Palembang, South Sumatra, Indonesia. A purposive sampling approach was employed for the qualitative phase, selecting relevant literature based on predefined inclusion and exclusion criteria. Inclusion criteria encompassed books published between 2013 and 2023 and journal articles from 2018 to 2023. Data were extracted by reviewing sources based on author, title, year, type (book or journal), keywords, and topic relevance, focusing on content related to clinical practice evaluation quality. Selected sources met the following: alignment with keywords, relevance to evaluation components, conformity with scope, appropriate publication years, and open-access indexing (for journals) or valid ISBNs (for books). Books served as primary references, while journals provided supporting insights[33]. For the quantitative phase, a sample of 168 nursing students was selected using stratified random sampling to ensure representativeness across different academic levels.

Variables

The variable analysed in this study is the quality of clinical practice evaluation among nursing students.

Instrument development

The questionnaire was developed based on findings from the systematic literature review. Each component was translated into five questions, resulting in an initial draft of 45 items. Each evaluation component was then divided into positive (3 questions) and negative (2 questions). A five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree) was employed. Content validity was assessed using the Content Validity Index (CVI), while construct validity was examined through exploratory factor analysis (EFA).

Data collection process

The study was conducted between January 2023 and June 2024. The qualitative data collection phase involved a systematic literature review to explore and identify key themes and components influencing the quality of clinical practice evaluation, which served as the basis for developing a valid and empirically grounded questionnaire instrument. The literature search was performed using accessible electronic databases and search engines such as Google Books, Google Scholar, ProQuest, PubMed, and ScienceDirect, alongside printed sources. A strategic search approach was applied using Boolean operators (AND/OR/NOT), ensuring precise retrieval of relevant studies. For instance, keywords such as "component" AND "quality of evaluation" AND "clinical practice" AND "among nursing students" were used. The selection criteria included books published within the past decade (2013–2023) and journal articles from the last five years (2018–2023). Data extraction was systematically conducted by reviewing sources based on the author's name, title, publication year, type of source (book or journal), keywords, and thematic relevance, specifically focusing on content related to quality components of clinical practice evaluation. Studies were included in the analysis based on the following criteria: i) journal titles and/or abstracts aligning with the chosen keywords, ii) direct relevance to quality components in clinical practice evaluation, iii) correspondence with the scope of clinical practice evaluation, iv) books published from 2013 to 2023 and journals from 2018 to 2023, and v) books with ISBNs and journals indexed in open-access databases. While books provided primary references for the review, journal articles contributed supplementary insights into the essential components influencing the quality of clinical practice evaluation. In the quantitative phase, nursing students completed the developed questionnaire, and data were collected electronically.

Data analysis

The qualitative phase

The journal analysis was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. The data extraction process com-

prised two key stages: i) reviewing the database by identifying details such as the author, title, publication date, year, journal type, keywords, topic, and primary reference sources; and ii) ensuring that the content or subject matter corresponded with the specified keywords.[33]

The flow chart illustrates the literature selection process using the PRISMA diagram (Figure 1). A total of 12 sources met the inclusion criteria by addressing quality evaluation components, while all others were excluded.

The quantitative phase

Content validity

In the subsequent phase, the researcher assessed content validity by engaging six experts in nursing and education to review the initial questionnaire draft. Using a Content Validity Index (CVI) form, the experts evaluated each item in terms of relevance, clarity, and completeness. The form consisted of four components: instructions, content, language, and questionnaire items (a total of 45), each rated on a 4-point Likert scale from 1 (not relevant) to 4 (highly relevant). Feedback from the experts informed revisions to the questionnaire, and the Content Validity Index (CVI) was used to analyse item validity based on expert judgment.[18,34] Content validity was analysed using the Content Validity Index (CVI), involving expert assessment of the relevance of each item in the questionnaire. The analysis was conducted using computer software by converting expert responses into an ordinal scale (0 and 1), followed by the calculation of the Item-Level Content Validity Index (i-CVI) and the Scale-Level Content Validity Index (s-CVI) to assess the questionnaire's relevance. The determination of the questionnaire's acceptability relevance followed validation standards involving 6–8 experts, with an Item-Level Content Validity Index (i-CVI) threshold of ≥0.83. For s-CVI/Ave values of ≥0.90 the category is Excellent, ≤0.80 – <0.90 is Good, and <0.80 is considered to have inadequate content validity and may require substantial revision.[18,34]

Construct validity

Construct validity was analysed using exploratory factor analysis. The sample comprised 168 nursing students from a professional nursing education programme in Palembang, South Sumatra Province, Indonesia. Factor analysis began with the Kaiser-Meyer-Olkin (KMO) test to assess sampling adequacy, where values above 0.90 are considered excellent, while values below 0.50 indicate that the data are unsuitable for factor analysis.[35,36] To ensure adequate item correlation, Bartlett's test of sphericity ($p<0.05$) and Anti-image analysis were also conducted. The Anti-image matrix helped determine the suitability of each variable in the factor model using the Measure of Sampling Adequacy (MSA).[37] Items with an MSA value above 0.50 were deemed acceptable, while those with MSA ≤0.50 were removed due to their minimal contribution.[37,38] Subsequently, Promax rotation was applied during the exploratory factor analysis to examine inter-factor correlations.[37] Factor loadings >0.50 were interpreted as strong contributors to the factor structure, whereas loadings <0.50 were considered weak and potentially irrelevant.[39–41]

Reliability

A reliability test was conducted to measure the internal consistency of each scale in the questionnaire. The analysis compared Cronbach's Alpha coefficient value to a constant value. Cronbach's α >0.90 was categorised as Excellent, <0.80 – ≤0.90 as Good, <0.70 – ≤0.80 as Adequate, <0.60 – ≤0.70 as Mediocre, <0.50 –

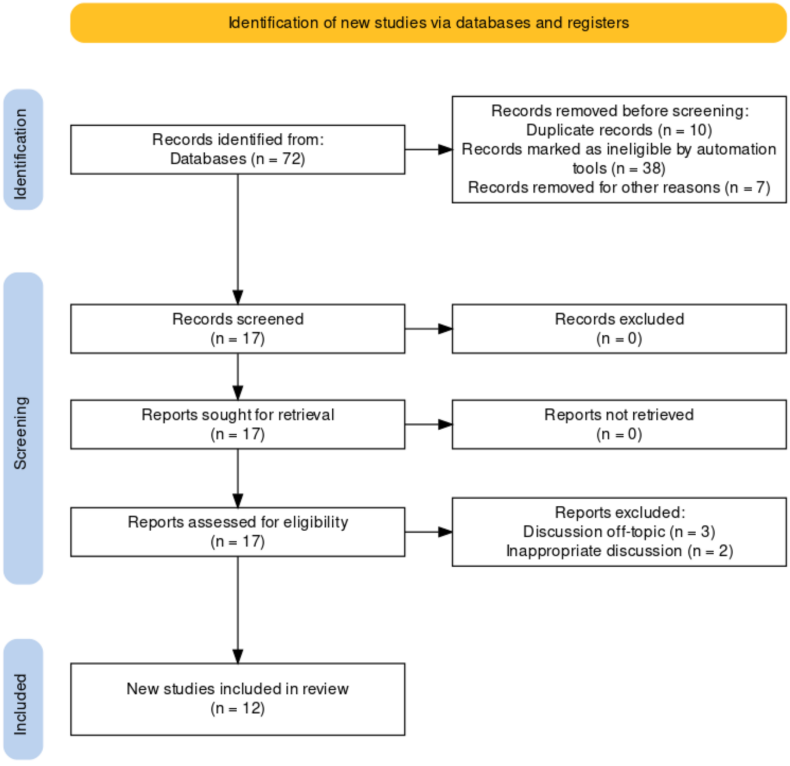

Figure 1. Flow chart of the literature review selection stage.

≤0.60 as Poor, and <0.50 as Very Poor. This reliability test was crucial to ensure that the questionnaire consistently measured what it was intended to measure, thereby making the data produced trustworthy[35,36].

Ethical considerations

Ethical approval was obtained from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Sriwijaya University, Palembang, an institution accredited by the government in the South Sumatra Province, Indonesia (Approval No. 042-2023). Participation was voluntary, and informed consent was obtained from all respondents prior to data collection. Confidentiality and anonymity of participants were maintained throughout the study.

Results

In the qualitative phase, nine essential elements that can be used as a foundation for gauging the calibre of clinical practice evaluation among nursing students were identified by the literature review analysis. Validity, reliability, practicability, objectivity, feasibility, understandability, continuity, propriety, and efficiency are some of these elements. These were found to be essential factors to take into account in order to effectively and consistently measure student skills and significantly improve their clinical competencies throughout the design and implementation of clinical practice evaluations. After that, each element was converted into five questions, yielding a preliminary questionnaire draft with 45 questions. Each assessment item was separated into two categories: positive (3 questions) and hostile (2 questions). A Likert scale with the following scores was used for each questionnaire item: 1 denotes strong disagreement, two disagreement, three neutrality, four agreement, and five strong agreements. In the quantitative phase, demographic data were gathered to outline the characteristics of the nursing students participating in the study. These data serve to contextualise the findings and ensure the representativeness and appropriateness of the sample for the research objectives. Table 1 shows that the respondents in this study were nursing students enrolled in the professional nurse programme, with ages ranging from 21 to 32 years. The mean age was 23.99 years, with a standard deviation of 1.860, indicating that the respondents' ages were relatively uniform and did not vary significantly from the average. The majority of respondents are female (72.6%), with clinical practice experience of ≥6 months (62.5%). Additionally, the academic year of the

Table 1. Demographic characteristics of the respondents.

Variable	Min-Max = 21-32 (year) Mean = 23.99 Std. Deviation = 1.860	
Age Variable	n	%
Gender		
Male	46	27.4
Female	122	72.6
Clinical Practic Experience		
<6 Month	63	37.5
≥6 Month	105	62.5
Academic Year		
2023/2024	79	47.0
2022/2023	89	53.0

Table 2. Component structure and factor loading of each item using a promax rotation.

Components' name	Items		Factor loading
Component 1: Quality	Q1.	The instructions in the clinical practice evaluation instrument are easy to understand	0.91
	Q2.	The clinical practice evaluation instrument comprehensively covers all clinical activities and focuses on assessing clinical competence	0.83
	Q3.	Each activity/competency/skill has its own evaluation instrument	0.82
	Q4.	The clinical practice evaluation instrument produces consistent scores when used repeatedly	0.82
	Q5.	The clinical practice evaluation instrument aligns with the competencies/skills that have been learned	0.69
	Q6.	The clinical practice evaluation process is conducted ethically and respects my rights and dignity	0.63
	Q7.	The assessment in clinical practice evaluation is based on clear criteria	0.58
Component 2: Constraints	Q8.	The clinical practice evaluation instrument is difficult to access and use	0.91
	Q9.	The clinical practice evaluation instrument is not well stored and/or cannot be accessed again	0.87
	Q10.	Clinical practice evaluation is not conducted with consistent procedures	0.85
	Q11.	During evaluation, the Clinical Instructor (CI)/Academic Supervisor does not immediately fill in/write the scores	0.80
	Q12.	The assessment by the CI/Academic Supervisor is influenced by personal closeness to me	0.67
	Q13.	The assessment by the CI/Academic Supervisor does not cover all the required competencies	0.64
	Q14.	The language used in the clinical practice evaluation instrument is too technical and difficult to understand	0.64
	Q15.	The aspects included in the clinical practice evaluation instrument are too difficult to achieve	0.62
Component 3: Benefits	Q16.	The clinical practice evaluation instrument greatly helps me achieve the best results	0.89
	Q17.	The evaluation aspects are easy to implement without complicated procedures or excessive preparation	0.69
Component 4: Practicality	Q18.	The language and structure of the clinical practice evaluation instrument are well-organised and use standard terminology	0.68
	Q19.	The clinical practice evaluation process is simple and not confusing	0.66
	Q20.	The clinical evaluation instrument and aspects are available in the form of a handbook/e-book/technology and can be studied in advance	0.65
	Q21.	The evaluation aspects are well-presented and clearly readable	0.56
Component 5:Transparency	Q22.	The evaluation process and criteria are clear and accessible to all involved parties	0.76
	Q23.	The assessment results can be viewed in real time	0.66
	Q24.	The clinical practice evaluation instrument and aspects reflect my duties and responsibilities	0.65

respondents is fairly evenly distributed between the 2022/2023 (53%) and the 2023/2024 (47%).

The content validity analysis of the 45 questions showed that the i-CVI for seven items was 0.83, while the other 38 items had a value of 1.00. The i-CVI for the questionnaire instructions and language was 1.00 each, and for content, it was 0.83. The s-CVI for the questionnaire instructions, content, and language was 0.94, while for all items combined, it was 0.97, indicating that all items were within the excellent range. These results concluded that all items were valid, requiring no deletions, and overall, all questions were excellent and could proceed to the next phase.

The content validity analysis began with sampling adequacy testing, indicated by a KMO value of 0.708, which confirmed the data's suitability for factor analysis. Bartlett's test of sphericity showed a significant result (p=0.000), supporting the appropriateness of the data. The Anti-image Correlation Matrix revealed nine items with MSA values <0.5, which were excluded from further analysis, leaving 36 items. Subsequently, 12 items with factor loadings <0.5 were also removed. The final analysis showed an improved KMO value of 0.812, and Bartlett's test yielded a chi-square value of 5,655.415 (df = 276; p = 0.000), indicating that the data were highly suitable for factor analysis.

Based on the scree plot results, five dominant factors exist (Figure 2). These five factors collectively account for 85.1% of the variance. The factor loadings for each item are significant and range from 0.56 to 0.91 (Table 2).

In Table 2, each component is named according to the theme of the questions. The first component is named "Quality", with seven question items encompassing validity, reliability, objectivity, understandability, and propriety (items 1-7). The second component is named "Constraints" and includes eight questions: validity, reliability, practicability, objectivity, and understandability (items 8-15). The third component, named "Benefits", has two question items that involve elements of feasibility (items 16-17). The fourth component is named "Practicality", with three question items covering practicability and understandability (items 18-21). The fifth component is named "Transparency", with three question items that include elements of propriety and efficiency (items 22-24). These five components or factors are verified with acceptable correlation values (Table 3).

Table 3 presents the factor correlation matrix, illustrating the relationships among the five components identified in the evaluation of clinical practice. The strongest positive correlation is observed between the factors of "Practicality" and "Transparency" (0.494), indicating that as the evaluation process becomes more practical, transparency in clinical assessment also tends to improve. Similarly, the "Quality" factor exhibits a moderate positive correlation with "Practicality" (0.471) and "Transparency" (0.458), suggesting that an enhancement in quality standards is associated with increased feasibility and openness in the evaluation process. Conversely, the "Benefits" factor shows the weakest correlation with "Transparency" (0.154), implying that while benefits exist within clinical evaluation, they do not necessarily enhance transparency in assessment procedures. The "Constraints" factor demonstrates a relatively moderate correlation with "Transparency" (0.434) and "Practicality" (0.318), indicating that although challenges exist in the evaluation process, they may still coexist with efforts to maintain clarity and efficiency in practice.

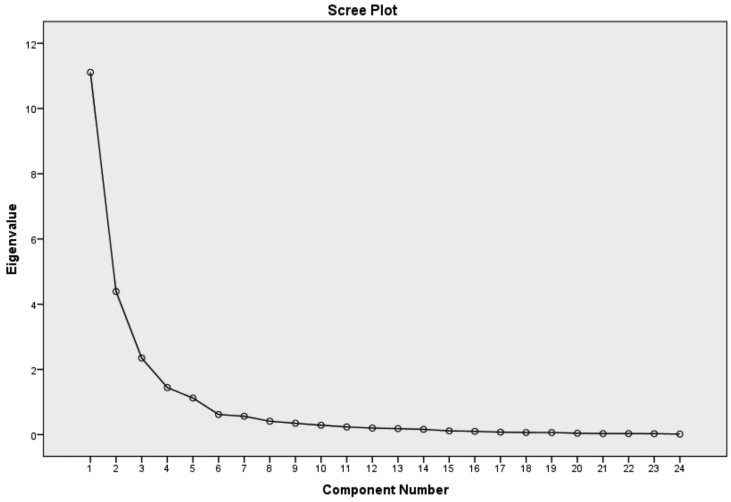

Figure 2. The factor analysis scree plot.

Table 3. Factor correlation matrix.

Factor	Quality	Constraints	Benefits	Practicality	Transparency
Quality	1.000	0.180	0.299	0.471	0.458
Constraints	0.180	1.000	0.204	0.318	0.434
Benefits	0.299	0.204	1.000	0.237	0.154
Practicality	0.471	0.318	0.237	1.000	0.494
Transparency	0.458	0.434	0.154	0.494	1.000

Thus, these findings indicate that the interrelation among the factors supports the effectiveness of clinical practice evaluation, where improvements in quality, practicality, and transparency enhance the evaluation process, while constraints still offer opportunities for targeted improvements. Table 3 is referenced to clarify these relationships.

The reliability of this questionnaire was evaluated by comparing the Cronbach's Alpha coefficient value to a constant value. It is considered acceptable if the Cronbach's Alpha coefficient is higher than the fixed value of 0.60.

Table 4 demonstrates that the reliability of all dimensions in the questionnaire shows excellent internal consistency, with Intraclass Correlation Coefficient (ICC) values exceeding 0.60 and statistically significant ($p < 0.05$). The highest ICC was found in the Quality dimension (0.95), while the lowest was in the Benefit dimension (0.76), with an overall ICC of 0.94. These results indicate that the developed questionnaire is sufficiently reliable and consistent in assessing nursing students' perceptions of clinical practice evaluation, making it suitable for use in nursing education contexts. The final version of the clinical practice evaluation quality questionnaire among nursing students can be seen in *Supplementary materials, Table 1*.

Discussion

This study aimed to develop and examine the validity and reliability of a questionnaire designed to evaluate the quality of clinical practice among nursing students. The instrument was constructed based on nine essential components identified through a comprehensive literature review, namely: validity, reliability, practicability, objectivity, feasibility, understandability, continuity, propriety, and efficiency, which were operationalised into 45 structured items. Content validity analysis indicated that the majority of items achieved an i-CVI score of 1.00, with an overall s-CVI of 0.97, reflecting a very high level of expert consensus. Factor analysis revealed five dominant dimensions, thereby confirming the structural validity and strong construct underpinning of the instrument. Consequently, the questionnaire was demonstrated to be both reliable and valid for assessing clinical practice in nursing education. Moreover, this instrument presents notable distinctions from existing evaluation scales, as it not only assesses clinical competence but also encompasses dimensions such as quality, constraints, benefits, practicality, and transparency. Whereas most conventional instruments predominantly focus on skill performance, this tool broadens the assessment scope by incorporating student experiences, ease of use, clarity of evaluation criteria, and fairness throughout the evaluation process. The inclusion of these additional dimensions is intended to more comprehensively measure and enhance the quality of clinical evaluation, while better reflecting the real-world experiences of nursing students during their clinical placements.

The results align with previous research highlighting the significance of validity and reliability in clinical evaluation instruments. Sellberg *et al.* (2019)[18] and Shrestha *et al.* (2021)[41] emphasised that high CVI values indicate expert agreement on an instrument's relevance. The importance of factor analysis in confirming structural validity has also been established in research by Andersson *et al.* (2020),[40] where high factor loadings suggested strong construct validity. Additionally, Saqr & López-Pernas (2022)[42] argued that intercorrelations among factors in an evaluation tool reinforce its conceptual soundness, which is reflected in the factor correlation matrix of this study. The findings further validate the applicability of reliability theory, where high Cronbach's Alpha values indicate good internal consistency.[43]

One notable unexpected result was the emergence of an additional factor in the factor analysis that was not initially hypothesised. This factor, which may reflect an underlying aspect of clinical evaluation not fully captured in previous models, suggests the need for further investigation. Similar findings were reported by Hung *et al.* (2021),[44] who observed that certain evaluation dimensions can emerge as distinct constructs during empirical testing. Understanding this unexpected factor may provide deeper insights into the complexities of clinical evaluation in nursing education.[45]

Despite its strengths, this study has certain limitations. The sample size, though adequate for factor analysis, may limit the generalisability of the findings across different nursing education settings. Previous studies, such as LoBiondo-Wood & Haber (2019),[46] have emphasised the importance of diverse and multi-institutional sampling to enhance external validity. Additionally, the reliance on self-reported responses could introduce biases, as students may provide socially desirable answers rather than reflecting actual experiences.[47] Future studies should consider employing mixed-method approaches, integrating objective clinical performance measures with survey responses to enhance validity. The validated questionnaire has significant practical implications for improving clinical evaluation in nursing education. It provides educators with a structured tool to assess students' competencies more accurately and identify areas needing improvement. Moreover, the instrument could be adapted for use in other healthcare education fields, such as medical and allied health training programs, to standardise clinical assessment methodologies.[48] Future research should explore the applicability of this questionnaire across different cultural and educational contexts to enhance its universality. Additionally, integrating digital platforms for data collection and analysis could improve efficiency and usability, as suggested by Tobón and Luna-Nemecio (2021).[43]

In conclusion, this study contributes to the development of a

Table 4. The score and the Interclass Correlation Coefficient (ICC) values of the Clinical Practice Evaluation Quality Questionnaire among Nursing Students.

Factor	Dimensions	ICC (>0.60)	Confidence interval 95%	p (<0.05)
1	Quality	0.95	0.93-0.96	0.00
2	Constraints	0.93	0.91-0.94	0.00
3	Benefits	0.76	0.68-0.83	0.00
4	Practicality	0.89	0.86-0.92	0.00
5	Transparency	0.91	0.88-0.93	0.00
	Total	0.94	0.93-0.96	0.00

valid and reliable clinical evaluation tool for nursing students. The findings confirm that the instrument effectively captures key evaluation dimensions, supporting structured and continuous assessments. While the questionnaire has demonstrated strong psychometric properties, further research is recommended to refine its applicability and address its limitations. Future studies should investigate its integration with digital assessment platforms and expand its validation in broader educational settings to ensure its long-term relevance and impact.

Conclusions

The findings of this study indicate that the developed questionnaire has been proven to be valid, reliable and effective in evaluating clinical practice among nursing students, with five key factors comprising Quality, Constraints, Benefits, Practicality and Transparency, which offer valuable insights for enhancing students' clinical competence. From a practical perspective, the questionnaire serves as a robust tool to support decision-making in nursing education by offering a structured and standardised approach to evaluation; therefore, its use should be accompanied by training for educational institutions and clinical supervisors to ensure accurate and consistent interpretation of scores. The practical implications of this study extend to the development of more transparent and systematic evaluation strategies, and encourage the implementation of intervention programmes such as targeted mentoring, feedback-based learning approaches and improved supervision models. Future research is recommended to further validate this questionnaire across various educational and clinical contexts to ensure broader and cross-cultural applicability, and to reconsider the excluded items to better accommodate the complexity of nursing practice. To maximise the impact of these findings, policymakers, educators and accreditation bodies in nursing education should consider adopting or adapting this instrument as part of their evaluation frameworks in order to foster a more equitable, consistent and effective assessment of clinical competencies.

References

1. Zolkefli Y. Moral courage and the role of nursing education. Malaysian J Nurs 2022;13:10–1.
2. Hustad J, Johannesen B, Fossum M, Hovland OJ. Nursing students' transfer of learning outcomes from simulation-based training to clinical practice: A focus-group study. BMC Nurs 2019;18:1–8.
3. Nguyen J, Smith L, Hunter J, Harnett JE. Conventional and complementary medicine health care practitioners' perspectives on interprofessional communication: A qualitative rapid review. Medicina (Kaunas) 2019;55:650.
4. Elvira M, Aulia F, Hidayati, et al. Developing a clinical learning model to improve nursing students' learning outcomes. Malaysian J Nurs 2024;15:43–50.
5. Abdullah MK, Abdulghani MF, Ibrahim RH, et al. Nurses' attitudes, knowledge, and practices concerning evidence-based practice:a cross-sectional study. Malaysian J Nurs 2024;15:4–11.
6. Tuomikoski AM, Ruotsalainen H, Mikkonen K, et al. How mentoring education affects nurse mentors' competence in mentoring students during clinical practice – A quasi-experimental study'. Scand J Caring Sci 2020;34:230–8.
7. Rahem A, Syahrir A, Ismail H, Hermansyah A. Revisiting early online learning experiences amid the COVID-19 pandemic in Indonesia: Benefits, barriers, and impact on pharmacy student learning outcomes. Pharm Educ 2022;22:989–96.
8. Kassymova G, Akhmetova A, Baibekova M, et al. E-learning environments and problem-based learning. Int J Adv Sci Technol 2020;29:346–56.
9. Bhakti P, Yusuf A, Bakar A, Lindayani L. Mediating Effect of motivation on the relationship between lecturer experience and learning environment with caring character among undergraduate nursing student in Indonesia. SAGE Open Nurs 2024;10:23779608231226070.
10. Martini S, Ariyanti F, Suyatno, Prasetyowati I. Competency test to measure the quality assurance in the teaching-learning process of Indonesian public health higher education institutions. Academia 2022;26:49–60.
11. Endaryanto A, Dewi A, Kusbaryanto, Nugraha RA. Pediatric residency training amid the COVID-19 pandemic: exploring the impact of supervision and clinical practice guidelines on clinical and financial outcomes. Comput Math Methods Med 2022;2022:2495064.
12. Oermann MH, Gaberson KB. Evaluating and testing in nursing education. Seventh. New York: New York: Springer Publishing Company, LLC; 2024.
13. Stamer T, Steinhäuser J, Flägel K. Artificial intelligence supporting the training of communication skills in the education of health care professions: scoping review. J Med Internet Res 2023;25 e43311.
14. Nugraha D, Melbiarta RR, Visuddho V, et al. Hybrid learning as alternative approach to improve Indonesian medical students' attitude towards clinical skills during COVID-19 pandemic. Korean J Med Educ 2023;35:377–88.
15. Hooda M, Rana C, Dahiya O, et al. Artificial intelligence for assessment and feedback to enhance student success in higher education. Math Probl Eng 2022;2022:1–19.
16. Sonnleitner P, Kovacs C. Differences between students' and teachers' fairness perceptions: exploring the potential of a self-administered questionnaire to improve teachers' assessment practices. Front Educ 2020;5:17.
17. Hodges AL, Konicki AJ, Talley MH, et al. Competency-based education in transitioning nurse practitioner students from education into practice. J Am Assoc Nurse Pract 2019;31:675–82.
18. Sellberg M, Palmgren PJ, Möller R. A cross-sectional study of clinical learning environments across four undergraduate programs using the undergraduate clinical education environment measure. BMC Med Educ 2021;21:258.
19. Di Lorenzo R, Venturelli G, Spiga G, Ferri P. Emotional intelligence, empathy and alexithymia: A cross-sectional survey on emotional competence in a group of nursing students. Acta Biomed 2019;90:32–43.
20. Lotfi M, Zamanzadeh V, Valizadeh L, Khajehgoodari M. Assessment of nurse–patient communication and patient satisfaction from nursing care. Nurs Open 2019;6:1189–96.
21. Øvrebø LJ, Dyrstad DN, Hansen BS. Assessment methods and tools to evaluate postgraduate critical care nursing students' competence in clinical placement. An integrative review. Nurse Educ Pract 2022;58:1–14.
22. Qowi NH, Suratmi S, Faridah VN, Lestari TP, Pramestirini RA, Pamungkas NRT, et al. The effect of online learning on student satisfaction in nursing education during the COVID-19 pandemic. J Ners 2022;17:115–20.
23. Uliyah M, Hidayat AAA, Ubudiyah M. A blended learning

using contextual teaching learning: strengthening nursing students' procedural knowledge and interprofessional collaboration. J Ners 2024;19:93–100.
24. Brún A De, Rogers L, Drury A, Gilmore B. Evaluation of a formative peer assessment in research methods teaching using an online platform: A mixed methods pre-post study. Nurse Educ Today 2022;108:1–7.
25. Clarke J, Riet P van der, Bowen L. Nurses and undergraduate student nurses' experiences in collaborative clinical placement programs in acute hospitals: An integrative literature review. Nurse Educ Today 2020;95:1–12.
26. Pande M, Bharathi SV. Theoretical foundations of design thinking – A constructivism learning approach to design thinking. Think Ski Creat 2020;36:1–17.
27. Efgivia MG, Adora Rinanda R., Suriyani, Hidayat A, Maulana I, Budiarjo A. Analysis of Constructivism Learning Theory. Proc 1st UMGESHIC Int Semin Heal Soc Sci Humanit (UMGESHIC-ISHSSH 2020) 2021;585:208–12.
28. Immonen K, Oikarainen A, Tomietto M, et al. Assessment of nursing students' competence in clinical practice: A systematic review of reviews. Int J Nurs Stud 2019;100:103414.
29. Garza KC. Understandings of speech and language practices for serving bicultural-bilingual children. The University of Texas at San Antonio; 2023.
30. Harrison R, Jones B, Gardner P, Lawton R. Correction to: Quality assessment with diverse studies (QuADS): an appraisal tool for methodological and reporting quality in systematic reviews of mixed- or multimethod studies. BMC Health Services Research 2021;21:144.
31. Creswell JW, Creswell JD. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 5th ed. California: SAGE Publications, Inc; 2022.
32. Edmonds WA, Kennedy TD. An Applied Guide to Research Designs: Quantitative, Qualitative, and Mixed Methods. 2nd ed. California: SAGE Publication, Inc; 2019.
33. Saputra MAS, Sansuwito T bin, Said FM. The high-quality of clinical practice evaluation for nursing students: a literature review. J Nurs Sci Res 2024;1:115–26.
34. Puspitasari WD, Febrinita F. Research validation tests. J Focus Action Res Math (Factor M) 2021;4:77–90.
35. Gizaw Z, Yalew AW, Bitew BD, Lee J, Bisesi M. Development and validation of questionnaire to assess exposure of children to enteric infections in the rural northwest Ethiopia. Sci Rep 2022;12:6740.
36. Kumar R. Nursing Research & Statistics. New Delhi: Jaypee Brothers Medical Publishers; 2019.
37. Watkins M. A Step-by-Step Guide to Exploratory Factor Analysis with SPSS. New York: New York: Routledge; 2021.
38. George D, Mallery P. IBM SPSS Statistics 27 Step by Step: A Simple Guide and Reference. New York: Routledge; 2021.
39. Taghinejad H, Mohammadyari E, Tavan H, Mohammadyari A. Investigating the validity and reliability of the GLFS-25 questionnaire by factor analysis in the elderly hospitalized at the intensive and cardiac care units. Heliyon 2023;9:e18111.
40. Andersson A, Brink E, Young KH, Skyvell Nilsson M. Development and validation of experienced work-integrated learning instrument (E-WIL) using a sample of newly graduated registered nurses – A confirmatory factor analysis. Nurse Educ Today 2023;128:105889.
41. Shrestha R, Kadel R, Mishra BK. A two-phase confirmatory factor analysis and structural equation modelling for customer-based brand equity framework in the smartphone industry. Decis Anal J 2023;8:100306.
42. Saqr M, López-Pernas S. Learning Analytics Methods and Tutorials. Cham: Cham: Springer Nature Switzerland; 2024.
43. Tobón S, Luna□nemecio J. Complex thinking and sustainable social development: Validity and reliability of the complex□21 scale. Sustainability 2021;13:6591.
44. Hung CC, Kao HFS, Liu HC, et al. Effects of simulation-based learning on nursing students' perceived competence, self-efficacy, and learning satisfaction: A repeat measurement method. Nurse Educ Today 2021;97:104725.
45. Tonapa SI, Mulyadi M, Ho KHM, Efendi F. Effectiveness of using high-fidelity simulation on learning outcomes in undergraduate nursing education: systematic review and meta-analysis. Eur Rev Med Pharmacol Sci 2023;27:444–58.
46. LoBiondo-Wood G, Haber J. Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice. St. Louis, Missouri: Elsevier Inc; 2019.
47. Reebals C, Wood T, Markaki A. Transition to Practice for New Nurse Graduates: Barriers and Mitigating Strategies. West J Nurs Res 2021;44:416-29.
48. Mills GE, Jordan AW. Educational Research: Competencies for Analysis and Applications. 13th ed. New Jersey: New Jersey: Pearson Education, Inc.; 2022.

Online supplementary materials
Table 1. Final version of the clinical practice evaluation quality questionnaire among nursing students.