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Psychometric evaluation of the indonesian version of the holistic nursing competence scale (HNCS)

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ABSTRACT

Introduction: The global demand for high-quality care requires valid, holistic instruments, especially in developing healthcare systems such as Indonesia, where existing tools are often fragmented. This study aimed to translate, culturally adapt, and validate the Indonesian version of the Holistic Nursing Competence Scale by evaluating its psychometric properties.

Methods: This study employed a cross-sectional descriptive design, sampling 208 registered nurses with a minimum of two years' experience from adult inpatient wards across Kalimantan Island. The instrument underwent rigorous forward-backward translation and expert review, achieving excellent content validity (S-CVI/UA = 0.99).

Results: Data factorability was confirmed by a high Kaiser-Meyer-Olkin (KMO) value of 0.962 and a significant Bartlett's test ($p < 0.001$). Exploratory Factor Analysis (EFA) extracted a robust three-factor structure, accounting for 69.1% of the total variance. These factors were identified as Competence in Professional Nursing Practice, Leadership and Professional Development, and Self-Reflection and Personal Growth. The Indonesian HNCS demonstrated high internal consistency, with Cronbach's alpha coefficients of 0.981, 0.953, and 0.872 for factors 1, 2, and 3, respectively.

Conclusions: The Indonesian version of the HNCS is a valid and highly reliable instrument, providing a standardized, contextually relevant framework for accurately measuring holistic nursing competence and addressing a critical national measurement gap.

Keywords: competence scale, cross-cultural adaptation, holistic nursing, instrument validation, psychometric

Introduction

Nursing service is a form of professional service and an integral part of healthcare delivery, founded on the science and art of nursing, and directed toward individuals, families, groups, or communities, whether healthy or ill (Ministry of Health of the Republic of Indonesia, 2020). This statement embodies the philosophical foundations of the nursing profession. As frontline healthcare providers and the largest segment of the total healthcare workforce, nurses must apply professional knowledge, skills, ethical principles, continuous professional development, and team development to meet patients' needs across all services (Girma *et al.*, 2025). The recognition of nursing as a profession confers a set of defining characteristics inherent to the concept of 'professionalism', namely, responsibility, a code of ethics, autonomy, and competence (Chin *et al.*, 2024; Ismail, Sohilait and Erawati, 2024). Competence constitutes one of the crucial stages in a nurse's professional journey, as articulated by Patricia Benner's *The Novice to Expert* theory of nursing skill acquisition. Within her framework, Benner asserts that the achievement of competence is realized through the nurse's commitment to continually learn from experience, engage in mentorship with peers, and strive to enhance the quality of care to ensure patient safety and protection (Sari, Arief and Ahsan, 2024; Zaitoun, 2024; Tuasikal, Dhamanti and Mahmudah, 2025).

Competence is defined as the demonstrated ability of an individual or professional to perform a task effectively, which is acquired through training or learning. In professions involving public safety and well-being, such as healthcare, competence is intrinsically linked to professionalism (Mrayyan *et al.*, 2023). As healthcare professionals with the most prolonged direct patient contact, nurses bear a significant legal and ethical responsibility to maintain their professional competence (Jiang *et al.*, 2017). This competence encompasses the integration of knowledge, technical skills, attitudes, and critical thinking, ultimately contributing to positive patient outcomes, professional growth, and organizational effectiveness (Hamid *et al.*, 2019; Hsu *et al.*, 2021; Mrayyan *et al.*, 2023; Umam *et al.*, 2024).

In Indonesia, the nursing profession is actively working to establish its distinct identity and move beyond the perception of being merely an assistant to medical personnel (Juanamasta *et al.*, 2021). The development and recognition of robust nursing competencies are crucial to this endeavor. Recognizing this need, the Indonesian nursing curriculum has emphasized the importance of Nursing Law, aiming to solidify the ethical and legal foundations of nursing practice and ensure professional accountability (Umihara, Rita and Mulyani, 2024). Nursing science synthesizes biomedical, psychological, social, behavioral, anthropological, and cultural sciences. High-quality nursing services and care delivery require guaranteed competency. The Ministry of Health of the Republic of Indonesia, through Decree Number HK.01.07/MENKES/425/2020, concerning Nursing Professional Standards, delineated five key competency areas for nurses. These areas, adapted from the ASEAN Nursing Common Core Competencies, are as follows: (1) practice based on ethics, legality, and cultural sensitivity; (2) Professional Nursing Practice; (3) Leadership and Management; (4) Education and Research; and (5) Development of Personal and Professional Quality. These competencies are intended to be cultivated throughout a nurse's education and professional career (Ministry of Health of the Republic of Indonesia, 2020).

However, a gap exists between the prescribed competency standards and the practical realities of professional practices. Many post-graduation nurses prioritize skill acquisition over the comprehensive development of all five competency areas. While continuing education through seminars, colloquiums, and workshops is mandated for license renewal, a comprehensive evaluation of nurses' competency across all domains is lacking (Triyuliana, 2017). This situation underscores the need for a robust and valid instrument to measure nursing competency in accordance with the Ministry of Health's standards. This situation is further reinforced by the limited number of studies related to the overall and holistic measurement of nursing competence in Indonesia. Based on the researcher's exploration, many existing studies still focus on specific competencies required by nurses, such as competency in delivering nursing care, nursing documentation, caring for patients with diseases, or performing care in specific nursing specialization areas (Rizany *et al.*, 2021; Ulliya *et al.*, 2023).

The limitations of existing psychometric instruments often manifest in an over-reliance on measuring merely cognitive competencies, which are inherently insufficient for holistically capturing the complete set of professional competencies required of contemporary nursing. Currently, available instruments primarily focus on specific and fragmented aspects of nursing competence, such as essential clinical skills, direct patient care abilities, and isolated communication techniques (Prendi *et al.*, 2022). Crucially, these limited assessments often fail to comprehensively evaluate the broader, non-technical domains of competence, including legal, ethical, educational, research, and lifelong learning skills, as explicitly mandated by national healthcare standards and the Ministry of Health. In light of this significant measurement gap, this study aimed to address this deficiency by conducting a rigorous psychometric evaluation of the Holistic Nursing Competence Scale (HNCS), originally developed by Takase & Teraoka (2011).

The HNCS was selected due to its conceptual alignment with the Indonesian Ministry of Health's regulation regarding Nursing Professional Standards, which are adapted from the ASEAN Nursing Common Core Competencies. The indicators within the HNCS demonstrate direct correspondence with national mandates: Staff education and management align with the leadership and management parameters; Ethically oriented practice correlates with practice based on ethics, legality, and cultural sensitivity; General aptitude relates to education and research; Nursing care in teams corresponds to professional nursing practice; and Professional development is linked to the development of personal and professional quality. By utilizing an instrument synchronized with Indonesia's national policies, this study provides practical validity for stakeholders in measuring nursing competence while simultaneously allowing for global benchmarking by comparing local results with international standards using identical indicators. The researchers acknowledge that developing a new indigenous instrument to achieve a level of psychometric maturity comparable to established international tools is a protracted process. Consequently, the HNCS was chosen for translation and adaptation, as its validity and high reliability have been consistently demonstrated across diverse cultural contexts, including South Korea, Turkey, and Iran (Aydin and Hiçdurmaz, 2019; Seo, Jang and Kim, 2022; Abad, Saadati and Ghaffari, 2025). Furthermore, this instrument captures critical dimensions such as self-reflection, personal growth, and leadership-

intrapersonal qualities that are frequently overlooked by the technical and theoretical nature of the Indonesian National Nursing Competency Examination. The findings of this study establish the suitability and validity of the HNCS as a holistic measure of nursing competence within the Indonesian healthcare context. This study is the first psychometric research conducted in Indonesia using an instrument that has been translated into Indonesian. It will, therefore, add to the reference for measuring the competency of Indonesian nurses within the Indonesian cultural context. These findings will also provide a robust framework for the comprehensive development of nursing competence measurement dimensions and offer insights into the continuous improvement of competence in areas still lagging the established parameters.

Materials and Methods

Study Design

This study employed a cross-sectional descriptive design to conduct a psychometric evaluation of the Indonesian adaptation of the Holistic Nursing Competence Scale (HNCS), originally developed by Takase & Teraoka (2011). Data will be collected from registered nurses working in adult inpatient wards across several hospitals on Kalimantan Island, Indonesia, from October 2024 to March 2025.

Population, Sample, and Sampling Technique

The target population for this study consisted of registered nurses with a minimum of two years' professional experience in adult inpatient care. The sample size was determined systematically, guided by established best practices for scale development and psychometric evaluation (Boateng et al., 2018). Specifically, the researchers adopted a 5:1 respondent-to-item ratio as the acceptable minimum requirement for stable factor solutions, as recommended by Hair et al. (2019). Based on the 36 items of the HNCS, a minimum threshold of 180 respondents was targeted.

A total of 208 registered nurses were recruited for this study. This over-recruitment was a deliberate strategy to provide a robust buffer against potential data attrition, such as incomplete entries or multivariate outliers, ensuring that the final dataset remained well above the required threshold after data cleaning. According to Comrey and Lee (1992), a sample size of approximately 200 is considered "fair" and adequate for identifying a stable latent structure, especially when the resulting factor solution demonstrates high clarity and strong loadings.

To further justify the statistical adequacy of the sample, a post-hoc power analysis was conducted using G*Power 3.1. The analysis revealed that with N = 208, an alpha level of 0.05, and assuming a medium effect size (r = 0.30), the study achieved a statistical power of 0.995, significantly exceeding the conventional 0.80 threshold. Furthermore, following the modern empirical framework proposed by Lorenzo-Seva and Ferrando (2024), sample sufficiency is fundamentally demonstrated by the stability and clarity of the factor solution rather than by fixed ratios. In this study, adequacy was empirically confirmed by a "marvelous" Kaiser-Meyer-Olkin (KMO) value of 0.962 and robust factor loadings ranging from 0.445 to 1.012, which collectively validated the reliability of the latent structure for the Indonesian version of the HNCS.

A convenience sampling technique was employed to recruit participants from four provinces across Kalimantan Island: East, South, Central, and North Kalimantan. This regional focus allowed for diverse representation of the nursing staff within the specific geographical and healthcare infrastructure context of the area, ensuring that the findings reflect the professional realities of nurses in these regions.

Instrument

The HNCS developed by Takase and Teraoka in 2011, served as the primary data collection instrument. The HNCS comprises 36 items designed to assess holistic nursing competence across five domains: (1) Staff education and management, (2) Ethically oriented practice, (3) General aptitude, (4) Nursing care in teams, and (5) Professional development. These domains are consistent with the indicators set by Indonesian Ministry of Health, with the following correspondences: staff education and management aligns with the Leadership and management parameter; Ethically oriented practice aligns with the Practice based on ethics, legality, and cultural sensitivity parameter; General aptitude aligns with the Education and Research parameter; Nursing care in teams aligns with the Professional Nursing Practice parameter; and Professional development aligns with the Development of Personal and Professional Quality parameter. Table 1 describes the alignment between HNCS domains and Indonesian nursing professional standards. The questionnaire presented to respondents consisted of statements with answer choices using a 7-point Likert scale for both Section A and Section B. Section A had the following answer choices: not at all, rarely, sometimes, occasionally, often, almost always, and always. Section B had the following answer choices: not competent at all, slightly competent, somewhat more competent, moderately competent, almost fully competent, fully competent, and competent. Previous studies by Takase and Teraoka, and subsequent research with the Korean version, demonstrated high reliability with Cronbach's alpha values of 0.967 and 0.969, respectively (Seo, Jang and Kim, 2022).

Instrument Translation and Adaptation

The adaptation of the HNCS followed established translation guidelines (World Health Organization, 2016). The original English version was independently

translated into Indonesian by two professional translators. The two Indonesian versions were then synthesized into one final Indonesian version. This final version was subsequently translated back into English to verify the equivalence of meaning (semantic equivalence). Following this, the synthesis version of the Indonesian HNCS was reviewed for content validity by a panel of five (5) experts. The panel consisted of two nursing management educators (Ph.D. level), two hospital nurse administrators (minimum 10 years of experience), and one psychometric expert. This panel reviewed the translated items for relevance, clarity, and representativeness, specifically referencing the five key competency areas set by the Indonesian Ministry of Health. Based on the reviewers' ratings, the Scale-level Content Validity Index with Universal Agreement (S-CVI/UA) was calculated, yielding a value of 0.99, thus establishing excellent content validity before the pilot testing phase. A pilot test involving 20 nurses was conducted to assess the clarity and comprehensibility of the Indonesian version. This sample size is consistent with the recommendation of Hertzog (2008), who suggested that a range of 10 to 40 participants is sufficient for preliminary instrument testing and feasibility assessment in nursing research.

Data Collection Procedure

Permission to conduct the study was obtained from the participating hospitals, including Suaka Insan Hospital Banjarmasin, Dr. Moch. Ansari Saleh Hospital Banjarmasin, Doris Sylvanus Hospital Palangkaraya, and AW. Sjahranie Hospital Samarinda, Malinau Regional General Hospital, and Taman Husada Bontang Regional General Hospital. Permission to use the HNCS was obtained from the original authors (Takase and Teraoka). Data were collected using self-administered questionnaires distributed to eligible nurses.

The eligible participants for this study were registered nurses with a minimum of two years of professional experience in adult inpatient care. Nurses assigned to pediatric units and operating theaters were excluded from the study, as these specialties require additional training and specific qualifications that differ significantly from the core holistic competencies measured in general adult care and acute units. However, registered nurses from adult intensive care and emergency departments were included, as they share the foundational professional nursing standards evaluated by the HNCS in the Indonesian healthcare context.

Respondents were recruited through formal collaboration with nursing directors at each participating hospital. Following the receipt of formal institutional permission for data collection, the recruitment process was initiated using a coordinated digital strategy. The study announcement was disseminated using online recruitment posters shared through institutional communication channels to increase visibility. Simultaneously, WhatsApp broadcast messages were sent by ward managers to internal ward groups, specifically targeting nurses who met eligibility criteria. These digital messages included a brief overview of the study and a direct link to the online questionnaire, facilitating a streamlined and accessible recruitment process in the participating hospitals.

The data collection process at each hospital lasted for one month, with a total study duration of six months, from October 2024 to March 2025. The research team systematically managed data collection across specific regions. The first researcher was responsible for data collection in East Kalimantan and North Kalimantan, the second researcher oversaw Central Kalimantan, and the third researcher managed South Kalimantan. The online questionnaire comprised a demographic section and the Nursing Competence Scale. Within the demographic section, respondents were asked to provide their contact details. This served a dual purpose: to facilitate the distribution of appreciation tokens for their participation and to act as unique identifiers. This measure allowed the researcher to audit the data and verify that no respondent submitted the questionnaire more than once, thereby ensuring the data integrity. The online form was administered via the Google platform, which allowed the researcher to restrict responses to a single entry per e-mail address.

Ethical Consideration

Ethical approval was obtained from the Health Research Ethics Committee of STIKES Suaka Insan (Certificate Number: 098/KEPK-SI/2/2023). Beyond institutional approval, several core ethical principles were followed. Informed consent was obtained digitally, and the recruitment announcement provided a clear explanation of the study objectives. The participants' progression to the questionnaire served as an expression of their voluntary agreement to participate. To protect confidentiality, while contact information was requested to facilitate the distribution of appreciation tokens and to serve as a unique identifier for auditing, these data were kept confidential and accessed only by the research team. To ensure data integrity and prevent bias, the online platform restricted responses to a single entry per e-mail address. Participants were also reassured that their decision to participate or withdraw would not impact their professional standing or employment.

Data Analysis

Data analysis was performed using JAMOVI 2.6.4 SOLID and JASP version 0.18.3. Descriptive statistics, including frequencies and percentages, were employed to summarize the demographic characteristics of the participants. Construct validity was assessed using Exploratory Factor Analysis (EFA) with Principal Axis Factoring (PFA) and oblimin rotation. This specific approach was selected to identify the latent factor

structure within the Indonesian nursing context, acknowledging that cultural nuances may lead to a dimensionality that differs from the original model. Before performing factor extraction, the factorability of the data was rigorously evaluated using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. In accordance with established psychometric standards, KMO values above 0.90 were categorized as "excellent", while the minimum acceptable threshold for factorability was set at 0.60 (Karimian and Chahartangi, 2024). Bartlett's test was considered significant at $p < 0.001$ (Sigudla and Maritz, 2023).

The criteria for item retention and factor extraction were based on several statistical parameters. Factors were retained if they had eigenvalues greater than 1.0, further supported by a visual inspection of the scree plot to identify the distinct inflection points. Individual items were retained within the model based on a factor loading threshold of > 0.40. Communalities (h2) were also calculated from item uniqueness to ensure that the extracted factors adequately captured the variance of each item. Values ranged from 0.319 to 0.850, indicating that the factors explained a substantial portion of the variance for each item (Hair *et al.*, 2019). An item was cross-loaded if it exhibited a secondary loading of > 0.32 or if the difference between the primary and secondary loadings was < 0.15.

Internal consistency was rigorously assessed using Cronbach's alpha for the overall scale and for each identified factor. Based on the established rule of thumb for Cronbach's alpha, a threshold of 0.70 is the most widely accepted standard for determining whether an instrument possesses satisfactory internal consistency (Hussey *et al.*, 2025). While this study focused on internal consistency and initial construct exploration through EFA, further stability testing, such as test-retest reliability and Confirmatory Factor Analysis (CFA), is recommended for future longitudinal validation phases to statistically finalize this competency framework.

Results

Demographic Data

A total of 208 nurses participated in the study. As shown in table 2, the majority of participants were female nurses (75.0%) who were married (85.0%), with the largest age group within the 30–39-year range (60.1%). Most respondents were Muslim (70.2%), with a dominant educational background of either a bachelor's degree (51.4%) or a diploma (45.2%), and worked as staff nurses (80.3%) in general inpatient units (81.7%). Geographically, the participants were mostly from the province of East Kalimantan (49.5%), followed by Central Kalimantan (26.4%) and South Kalimantan (23.1%).

Construct Validity: Exploratory Factor Analysis (EFA)

Before performing exploratory factor analysis, the researchers conducted a prerequisite test to ensure that the data were suitable for factoring. The initial requirement was the KMO measurement. The overall average KMO value was 0.962, indicating a very high value approaching 1 and well above the minimum threshold (0.6). This confirms that the data were highly adequate for factor analysis. The Measure of Sampling Adequacy (MSA) values were also high, ranging from 0.911 to 0.978, confirming that each variable was correlated with other variables within the factor. Bartlett's Test of Sphericity yielded $p < 0.001$, indicating that the correlation matrix was not an identity matrix. Therefore, significant correlations existed among the variables, and factor analysis was the appropriate method to analyze these data.

The plot in Figure 1 shows a significant decrease in the eigenvalue from Factor 1 to Factor 2. A distinct inflection point observed in the scree plot occurred after Factor 3, where the line began to flatten. Based on the Kaiser criterion (eigenvalue > 1), the points are above the dashed line (eigenvalue = 1) up to factor 3 or 4 (Factor 4 appears slightly above or very close to the threshold of 1).

Table 1. Alignment Between HNCS Domains and Indonesian Nursing Professional Standards

HNCS Domain (Takase & Teraoka, 2011)	Indonesian Nursing Professional Standards (Ministry of Health)	Alignment Rationale & Competency Focus
Ethically Oriented Practice	Area 1: Ethics, Legal, and Cultural Sensitivity	Both frameworks emphasize the delivery of care based on nursing ethics, patient rights, and legal accountability within a culturally diverse society.
Staff education and management	Area 4: Leadership and Management	These domains focus on the ability to manage nursing care units, supervise staff, and foster a professional environment through clinical leadership.
General aptitude	Area 3: Education and Research	This aligns with the capacity for evidence-based practice, critical thinking, and the application of research findings to improve clinical outcomes.
Nursing Care in teams	Area 5: Professional Nursing Practice	Both prioritize collaborative practice, effective communication within multidisciplinary teams, and the execution of holistic interventions.
Professional Development	Area 2: Personal and Professional Quality	This focuses on life-long learning, maintaining professional competence, and the continuous improvement of one's own nursing standards.

Table 2. Characteristics of the group of nurses studied (n=208)

Characteristic	Category	n	%
Age	30-39	125	60.1%
	40-49	51	24.5%
	<29	27	13.0%
	>50	5	2.4%
Gender	Male	52	25.0%
	Female	156	75.0%
Marital Status	Married	177	85.0%
	Single	30	14.5%
Religion	Hindu	3	1.4%
	Islam	146	70.2%
	Catholic	21	10.1%
	Protestant Christian	38	18.3%
Highest Formal Education	Diploma	94	45.2%
	Master and other advanced education	7	3.4%
	Bachelor's Degree	107	51.4%
Nursing Position	Head Nurse	16	7.7%
	Staff Nurse	167	80.3%
	Primary Nurse	19	9.1%
	Supervisor	6	2.9%
Working Unit	General Unit (Inpatient wards and similar)	170	81.7%
	Intensive Care Unit (Intensive wards including Emergency Department, ICU and similar)	38	18.3%
Province of Origin	South Kalimantan	48	23.1%
	Central Kalimantan	55	26.4%
	East Kalimantan	103	49.5%
	North Kalimantan	2	1.0%

However, based on the sharp and significant drop, the optimal number of factors was three. The method used for factor extraction was Principal Axis Factoring with Oblimin rotation (Table 2). Oblimin rotation is an oblique rotation that assumes that the resulting factors are correlated. The analysis yielded three factors: Factor 1 comprised 19 items with high loadings (ranging from 0.448 to 1.012). The items in this factor generally relate to the provision of nursing care and basic clinical/communication skills. Factor 2 included nine items with high loadings (ranging from 0.445 to 0.910, including a cross-loading from Item 20:0.445). These items generally relate to the role of educator and mentor, as well as leadership and advocacy. Factor 3 contained seven items with high loadings (ranging from 0.467 to 0.895). These items relate to self-reflection, self-awareness, and holistic attitudes/values. The EFA results indicate that the competencies/behaviors in the HNCS can be grouped into three clear and meaningful latent factors.

Table 4. Detailed HNCS-Indonesian Version of the nurses surveyed and Cronbach's alpha Coefficient

Category	Mean	SD	Cronbach's Alpha
Factor 1			**0.981**
Item 1	5.62	1.30	
Item 2	5.61	1.32	
Item 3	5.54	1.30	
Item 4	5.40	1.30	
Item 5	5.55	1.27	
Item 6	5.41	1.34	
Item 7	5.63	1.29	
Item 8	5.56	1.37	
Item 9	5.24	1.40	
Item 10	5.41	1.39	
Item 11	5.35	1.29	
Item 12	5.41	1.27	
Item 13	5.40	1.37	
Item 14	5.38	1.31	
Item 15	5.30	1.28	
Item 16	5.35	1.31	
Item 17	5.29	1.31	
Item 18	5.13	1.40	
Item 19	5.13	1.40	
Factor 2			**0.953**
Item 1 (Cross Loading)	5.13	1.30	
Item 2	4.79	1.50	
Item 3	4.88	1.42	
Item 4	4.77	1.44	
Item 5	4.58	1.63	
Item 6	4.82	1.53	
Item 7	4.94	1.50	
Item 8	4.26	1.76	
Item 9	4.98	1.40	
Item 10	4.83	1.65	
Factor 3			**0.872**
Item 1	5.47	1.27	
Item 2	5.48	1.29	
Item 3	5.22	1.47	
Item 4	5.23	1.34	
Item 5	5.85	1.10	
Item 6	5.87	1.14	
Item 7	5.33	1.48	

This study utilized an oblique rotation (oblimin), and Table 3 reports the pattern matrix coefficients. Unlike structural coefficients or orthogonal loading, pattern coefficients represent the unique contribution of a factor to an item. When factors are significantly correlated (as is often the case with nursing competencies), these coefficients can mathematically exceed 1.0 without indicating a Heywood case or reporting error. We verified that all uniqueness values remained positive (ranging from 0.150 to 0.681), confirming the validity of the solution.

Reliability

Table 4 presents the results of the reliability test, which was conducted to assess the internal consistency of the Indonesian version of the HNCS. The questionnaire comprised 36 items distributed across three distinct factors. The analysis yielded highly consistent

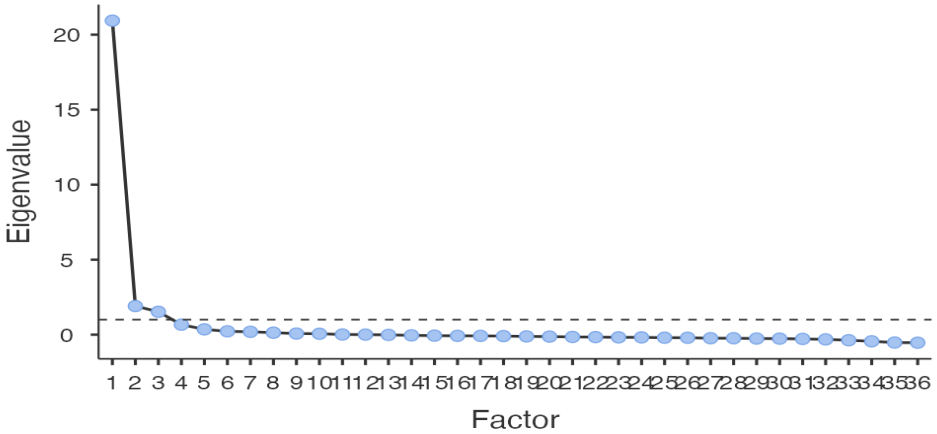

Figure 1. Scree plot of the psychometric properties of the HNCS – Indonesian Version

Cronbach's Alpha coefficients for all factors: Factor 1 scored 0.981, Factor 2 scored 0.953, and Factor 3 scored 0.872. Based on general psychometric standards, these values indicate an excellent level of reliability. Therefore, it can be conclusively stated that the instrument possesses a very high degree of internal consistency, confirming that all items consistently measure the construct of holistic nursing competence. The instrument is thus highly reliable and suitable for assessing holistic nursing competence.

Discussions

This study aimed to translate, culturally adapt, and evaluate the psychometric properties of the Indonesian version of the HNCS. To fulfill this objective, the study first established highly favorable factorability (KMO = 0.962), enabling a robust EFA. The EFA did not merely validate the tool mathematically but revealed a profound cultural implication: while the original HNCS and its validations in other countries utilized a structure with five domains, (Aydin and Hiçdurmaz, 2019; Seo, Jang and Kim, 2022; Abad, Saadati and Ghaffari, 2025) the Indonesian adaptation yielded a more parsimonious three-factor structure.

The EFA results suggest a potential structural shift in the manifestation of holistic competence within the studied population. While the original HNCS utilized a five-domain structure, the response patterns in this Kalimantan-based cohort may indicate a more integrated perspective of the three factors. However, this finding should be interpreted as a preliminary structural insight rather than a definitive cultural conceptualization. This structural shift likely reflects the specific operational realities and professional socialization of the nurses in this study's sample.

Following this structural validation, the instrument demonstrated excellent overall Cronbach's alphas (ranging from 0.872 to 0.981), which is highly consistent with the robust reliabilities reported for the Turkish and Korean versions (Aydin and Hiçdurmaz, 2019; Seo, Jang and Kim, 2022). Beyond mere statistical compliance, this high internal consistency indicates that the translated instrument is exceptionally stable and practically ready for deployment. Consequently, nursing administrators and hospital management can utilize this tool with high confidence, minimizing measurement errors when assessing clinical competencies within the Indonesian healthcare context.

This structural shift profoundly reflects the operational realities of the Indonesian nursing workforce. The shift amalgamates ethical, legal, and teamwork domains into a single "Competence in Professional Nursing Practice" factor and merges education with management into "Leadership and Professional Development." As indicated by the demographic data, the sample was predominantly composed of frontline staff nurses (80.3%) in general inpatient units, representing the backbone of the healthcare system in Indonesia. For these practitioners, ethical compliance and collaboration are not abstract, isolated domains; they are inseparable elements embedded within their daily clinical execution, aligning with the global concept of competence as an amalgamation of Knowledge, Skills, and Attitude (Mrayyan *et al.*, 2023; Suniyadewi *et al.*, 2024). Interestingly, while these nurses perceive their direct professional practice as highly proficient owing to continuous practical experience (Saiga *et al.*, 2024), their perceived leadership and management capabilities emerged as the weakest area. This uncovers a critical disparity between the Indonesian Ministry of Health's regulatory expectations for leadership (Ministry of Health of the Republic of Indonesia, 2020) and the actual clinical readiness of staff nurses, who often assume informal supervisory roles out of necessity without adequate preparation (Jung, Kim and Kim, 2020; Prendi *et al.*, 2022). Consequently, the practical implication of this result provides empirical evidence calling for Indonesian healthcare institutions to prioritize structured leadership development rather than solely focusing on basic clinical skills (Fukada, 2018; Heinen *et al.*, 2019).

A defining characteristic of the Indonesian HNCS is the emergence of "Self-Reflection and Personal Growth"

as a distinct, standalone dimension, which generated the highest perceived proficiency. This indicates that despite rigorous clinical workloads and high patient ratios, Indonesian nurses rely heavily on metacognitive awareness to sustain their humanistic approach to caring. The theoretical implication here strongly aligns with studies suggesting that humanism and internal reflection act as full mediators of technical competence (Yu, Kim and Kim, 2023)and supports systematic reviews identifying personal and ethical competence as a vital, separate dimension of nursing practice (Vallejo-Gómez *et al.*, 2021). The isolated cross-loading of specific items, such as the ability to serve as a role model, further reinforces this holistic paradigm, demonstrating that exemplary clinical practice is naturally intertwined with intrapersonal leadership (Girma *et al.*, 2025). This dimension proves that continuous professional mastery in Indonesia is strongly mediated by internal reflection rather than external regulatory pressures (Masfuri, 2017).

Regarding the factor structure, Item 20 exhibited cross-loading between Factor 1 and Factor 2. Although statistical parsimony might suggest its removal, we opted to retain this item due to its high theoretical significance. In the Indonesian, and specifically the Kalimantan, nursing context, the ability to serve as a role model is a core element that bridges clinical competence and leadership. Removing this item would diminish the scale's ability to capture the holistic nature of nursing leadership in local practice. Ultimately, the consolidation of the HNCS into a robust three-factor model provides a pragmatic framework for both institutional audits and independent evaluation among Indonesian nurses, which is crucial for enhancing self-awareness and improving patient safety outcomes (Retnaningsih, 2022; Zaitoun, Said and de Tantillo, 2023). However, these findings must be interpreted within the context of the study's limitations. The sampling strategy was concentrated on Kalimantan Island, and regional disparities in healthcare infrastructure or high workload intensities may influence how these competencies manifest on a national scale (Abadi and Norawati, 2022; Ridhuan, 2024). Additionally, because this study relied exclusively on EFA to extract the new structure, the exploratory model of three factors requires further validation. Future research utilizing Confirmatory Factor Analysis (CFA) across a more geographically diverse national cohort is essential to statistically finalize this robust and promising competency framework.

Conclusion

The Indonesian HNCS, with its robust reliability and contextually relevant three-factor structure, is a valid and essential tool for measuring holistic nursing competence in Indonesia. The findings support an integrated view of competence, where ethical care, teamwork, and clinical skills are unified in daily practice, while personal reflection and leadership represent crucial, distinct components for professional mastery.

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Declaration Of Generative Artificial Intelligence (AI) Use

The authors used an artificial intelligence-based language tool to assist with grammar correction and academic language refinement. All content was reviewed and verified by the authors, who take full responsibility for the manuscript.

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Availability of data and materials

The data supporting the findings of this study are available from the corresponding author upon request.

Authors' contributions

First Author: Conceptualization, Data Curation, Writing-Original Draft Preparation, Visualization, Investigation, Writing-Reviewing, and Editing.

Second Author: Methodology, Data Curation, Software Validation, Visualization, Writing, Reviewing, and Editing.

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Declaration of Interest

The authors declare no conflict of interest in this research.

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Table 3. Values for factor loadings of items on the HNCS – Indonesian Version (n = 208)

English Version	Bahasa Version	Factor 1 (Professional Practice)	Factor 2 (Leadership)	Factor 3 (Self-Reflection)
Providing Nursing care while complying with related laws.	*Mampu memberikan asuhan keperawatan dengan tetap mematuhi hukum berlaku.*	1.012		
Establishing a therapeutic relationship with clients, while understanding my position as a nurse.	*Membangun hubungan terapeutik dengan klien, sambil memahami posisi saya sebagai seorang perawat.*	1.004		
Communicating with clients in accordance with their age, cultural background, and value system.	*Mampu berkomunikasi dengan klien sesuai dengan usia, latar belakang budaya, dan norma yang mereka yakini*	0.897		
Confirming the adequate completion of a task when I delegate it to other nurses or nursing assistants.	*Memastikan penyelesaian tugas yang memadai ketika saya mendelegasikannya kepada perawat atau asisten perawat lain.*	0.859		
Providing clients and their families with necessary education, by selecting a teaching method that is appropriate for their understanding.	*Memberikan edukasi yang diperlukan kepada klien dan keluarganya, dengan memilih metode pengajaran yang sesuai dengan pemahaman mereka.*	0.859		
Communicating client's needs to other health care professionals in order to provide better patient care.	*Mampu menyampaikan kebutuhan klien kepada profesi kesehatan lain agar memberikan perawatan pasien yang lebih baik.*	0.840		
Always following basic principles in nursing practice.	*Selalu mengikuti prinsip-prinsip dasar dalam praktik keperawatan.*	0.826		
Providing client-centered nursing care while respecting the client's dignity and rights.	*Memberikan asuhan keperawatan yang berpusat pada klien dengan tetap menghormati martabat dan hak-hak klien.*	0.817		
Promptly reporting medical errors/near misses without concealing them when I am faced with them.	*Melaporkan dengan segera kesalahan medis/kekeliruan tanpa menutupi ketika saya menghadapi hal tersebut.*	0.812		
Responding to a client as an individual, while accepting the client's personal background (e.g., gender, religion, etc.) and value systems without bias.	*Menanggapi klien sebagai individu, sambil memperhatikan latar belakang klien (misalnya, jenis kelamin, agama, dll.) dan sistem norma tanpa bias.*	0.798		
Modifying nursing care plans and their priorities in accordance with clients' needs, appropriately and at the right time.	*Mampu melakukan modifikasi prioritas dan rencana asuhan keperawatan dengan tepat sesuai kebutuhan klien dan tepat waktu.*	0.767		
Utilizing communication to establish good relations with other nurses and health professionals, while understanding the purpose and methods of communication.	*Mampu memanfaatkan komunikasi untuk membangun hubungan baik dengan perawat dan profesi kesehatan lain, dengan memahami tujuan dan metode komunikasi.*	0.757		
Evaluating the outcomes of nursing care against the goals.	*Melakukan evaluasi hasil asuhan keperawatan berdasarkan tujuan.*	0.755		
Making an effort to acquire and maintain up-to-date knowledge and skills that are required for nursing practice.	*Berupaya untuk memperoleh dan mempertahankan pengetahuan dan keterampilan terkini yang diperlukan untuk praktik keperawatan.*	0.706		
Understanding and predicting risk factors and making an effort to prevent medical errors.	*Memahami dan memprediksi faktor risiko serta melakukan upaya untuk mencegah kesalahan medis.*	0.663		
Collecting information to gain a complete understanding of clients (e.g., physiological, psychological, social and spiritual needs).	*Mengumpulkan informasi untuk memahami kasus klien dengan lengkap (misalnya, kebutuhan fisiologis, psikologis, sosial dan spiritual).*	0.659		
Making an effort to identify my own learning needs by reflecting on my nursing practice.	*Berusaha mengidentifikasi kebutuhan belajar saya sendiri dengan merefleksikan praktik keperawatan saya.*	0.579		
Seeking answers the same day to questions arising from nursing practice.	*Mencari jawaban pada hari yang sama ketika muncul pertanyaan dari proses asuhan keperawatan.*	0.571		
Making my own learning plan for professional growth.	*Membuat rencana pembelajaran saya sendiri untuk pertumbuhan professional.*	0.466		
Endeavoring to provide nursing care that serves as an example for other nurses.	*Mampu melakukan asuhan keperawatan yang menjadi contoh bagi perawat lain.*	0.448	0.445	
Explaining the roles of nurses to other healthcare professionals in order to provide safe patient care.	*Menjelaskan peran perawat kepada profesional kesehatan lainnya, dan mencari pemahaman mereka.*		0.910	
Creating a culture and environment to facilitate learning in the workplace.	*Menciptakan budaya dan lingkungan untuk memfasilitasi pembelajaran di tempat kerja.*		0.875	
Providing continuous education/guidance to each nurse in accordance with their competence levels.	*Memberikan pendidikan/bimbingan yang berkesinambungan kepada setiap perawat sesuai dengan tingkat kompetensinya.*		0.863	
Facilitating Self-Directed Learning of other nurses.	*Memfasilitasi pembelajaran mandiri bagi perawat lain.*		0.818	

English Version	Bahasa Version	Factor 1 (Professional Practice)	Factor 2 (Leadership)	Factor 3 (Self-Reflection)
Collecting and examining information (e.g., health-related information and research outcomes) that is useful for improving the quality of nursing.	Mengumpulkan dan memeriksa *informasi (misalnya, informasi yang berhubungan dengan kesehatan dan hasil penelitian) yang berguna untuk meningkatkan kualitas keperawatan.*		0.763	
Facilitating the exchange of opinions through communication when conflict occurs between nurses.	*Memfasilitasi pertukaran pendapat melalui komunikasi ketika terjadi konflik di antara para perawat.*		0.744	
Pointing out the misconduct of other health care professionals in order to provide safe patient care.	*Menunjukkan kesalahan yang dilakukan oleh tenaga kesehatan profesional lain untuk memberikan perawatan pasien yang aman.*		0.696	
Assisting in identifying a solution which respects the opinions of all when conflicts occur between nurses.	*Ketika terjadi konflik diantara perawat, saya mampu membantu mengidentifikasi solusi yang menghargai semua pihak*		0.523	
Making my own decisions in practice and taking responsibility for them.	*Membuat keputusan sendiri dalam praktik dan bertanggung jawab atas keputusan tersebut.*		0.462	
Reflecting objectively and evaluating my own thinking processes.	*Melakukan evaluasi dan refleksi secara objektif terhadap proses berpikir diri sendiri.*			0.895
Identifying issues surrounding myself by deeply exploring the truth of the matter.	*Melakukan identifikasi hal-hal yang terjadi pada diri sendiri melalui eksplorasi mendalam tentang kebenaran dalam masalah yang terjadi.*			0.754
Observing things/matters objectively from diverse perspectives, without being automatically taking the standard view.	*Mengamati sesuatu secara objektif dari berbagai sudut pandang, tanpa secara otomatis mengambil pandangan standar.*			0.728
Being aware of any gap between the present and ideal self.	*Mampu menyadari kesenjangan keadaan diri saat ini dan ideal diri.*			0.715
Making an effort to identify the causes and solution of current problems,	*Melakukan identifikasi penyebab dan solusi dari masalah yang terjadi.*			0.661
Motivating and supporting colleagues when they are in a difficult situation.	*Bersemangat dan memberi semangat kepada orang lain ketika mereka berada dalam situasi yang sulit.*			0.490
Committing to promote the well-being of others with all my strength.	*Berjanji untuk meningkatkan kesejahteraan orang lain dengan segenap kekuatan saya.*			0.467
Eigenvalues		20.93	1.90	1.52
Variance explained (%)		38.1	20.3	10.7
Cumulative variance explained (%)		38.1	58.4	69.1

Note. KMO = 0.962; Bartlett's test of sphericity ($p<0.001$)