



A SYSTEMATIC REVIEW OF INSTRUMENTS MEASURING NURSES' COMPETENCY

Denny Rifki¹, Nurfika Asmaningrum², Dodi Wijaya³

¹Faculty of Nursing, University of Jember, Indonesia

²Faculty of Nursing, University of Jember, Indonesia

³Faculty of Nursing, University of Jember, Indonesia

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CORRESPONDENCE

Denny Rifki

E-mail: 232320102003@mail.unej.ac.id

Contact: +6282316102196

ABSTRACT

Nurse competence is essential to provide good care and is closely related to the quality of health services. To assess nurses' abilities in terms of education, professional development, and clinical performance evaluation, competency measurement is essential. To assess nurse competence, many questionnaires have been created. However, there are differences in the methods, validity, and scope of these questionnaires, so identifying the most appropriate and reliable questionnaire for various situations requires a thorough review. The purpose of this literature review is to identify existing instruments used to measure nurse competence.

INTRODUCTION

Nurse engagement is essential to providing quality health care. Not only technical expertise is required, but also additional skills such as theoretical understanding, critical thinking skills, and interpersonal skills are needed to relate to patients, families, and colleagues⁷. Ensuring that nurses have the competencies needed in an increasingly complex and dynamic environment and changing health care demands is a top priority for health organizations worldwide³⁶. Changes in health systems, advances in medical technology, and increasing patient expectations have transformed the role of nurses³⁰. Today's nurses are expected to provide more comprehensive care, manage more difficult cases, and collaborate better with other health care professionals. This requires nurses to have skills beyond just clinical skills; they must also have the ability to communicate, manage, and make decisions³¹.

Assessing nursing competency is critical for a number of reasons, including continued professional development, accreditation, and educational evaluation¹⁸. Measurement tools for nursing competency are crucial in guaranteeing the impartiality, consistency, and dependability of the evaluations³. In order to enhance service quality, these tools also assist health organizations in determining what kind of training and development needs they have



and in setting competency criteria. Choosing the best instrument for a given measuring task can be difficult, though, because there are so many options¹⁴. The competencies examined and the techniques of measurement employed by each instrument vary when it comes to assessing nurse competency¹⁰. While some instruments prioritize administrative or interpersonal skill, others could place a greater emphasis on clinical competency. This may result in discrepancies in the assessment results, which may influence decisions about certification, promotion, or training¹⁶.

Furthermore, extensive testing is required to determine the validity and reliability of these devices. Inaccurate assessments could be produced by poorly validated instruments, which could have an effect on nurses' professional development and the standard of care they offer¹⁷. As a result, it's critical to carry out a thorough evaluation of the instruments that are currently in use to make sure they have undergone scientific testing and are trustworthy for use in a range of nursing scenarios²². Finding gaps in the current instruments and potential areas for the need for new instruments can also be aided by a systematic examination of nursing competency measurement tools³³. For instance, more specialized tools would be required to assess nurses' proficiency with cutting-edge medical equipment or health information technology given the growing demand for technology-based care². Additionally, the instruments employed must be cross-culturally and contextually applicable due to the globalization of nursing education and practice standards²⁷.

This study involved a thorough review of the several tools available for assessing nurse competency. This review aimed to identify commonly used instruments, assess their validity and reliability, and comprehend the competence aspects that each instrument measures. As a result, it is anticipated that the study's findings will help academics, researchers, and healthcare organizations choose the best tool to evaluate nursing competency in diverse settings. It is envisaged that by developing a deeper understanding of the current instruments, more efficient methods for formal education and continuous training will be devised to enhance nurse competency. In the end, raising nurse competency will directly affect patient safety, nurse work satisfaction, and the quality of health services—all of which are critical to preserving the standard of the healthcare system going forward.

METHODS

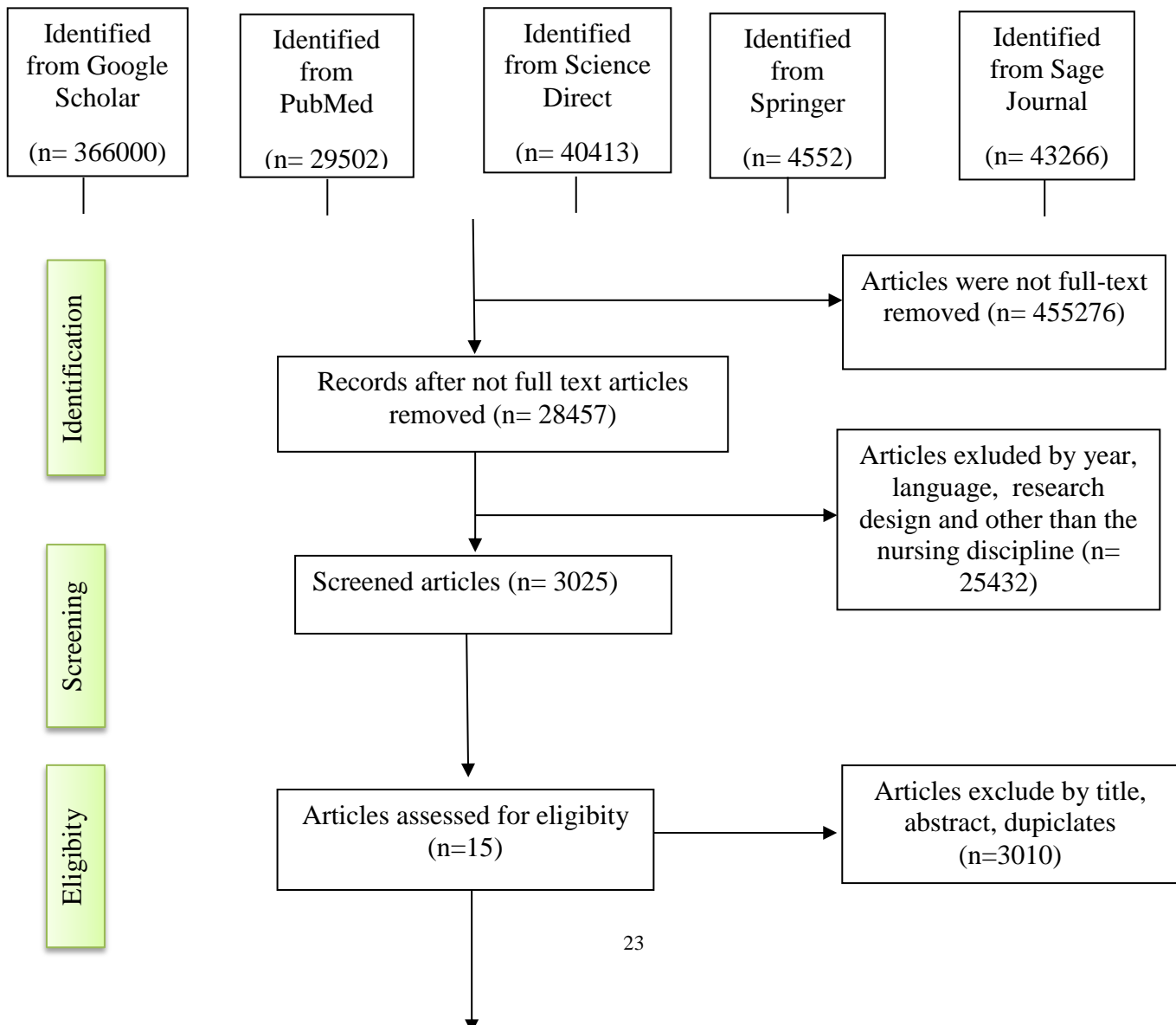
A systematic literature review was chosen as the research method of this study. Systematic literature review is a method that combines previous research to increase the body



of knowledge by providing a comprehensive summary of the literature on a subject, theory, or methodology³⁴. Components of a systematic review include a thorough search, methodical integration of search results, and evaluation of the volume, type, and quality of available data related to the research problem³⁷.

RESEARCH RESULTS

15 articles made it to the eligibility stage out of the 3025 articles that started the screening process. The articles included in this review were evaluated using the JBI Appraisal Tools in order to prevent bias. The quantity of articles is in line with the following databases: Springer (n=4), Science Direct (n=3), Sage Journal (n=3), PubMed (n=3), and Google Scholar (n=2). Numerous questionnaires were discovered from the papers that were part of this study. The pieces that were located were designated A1–A15. The table below provides a more thorough explanation of the article.



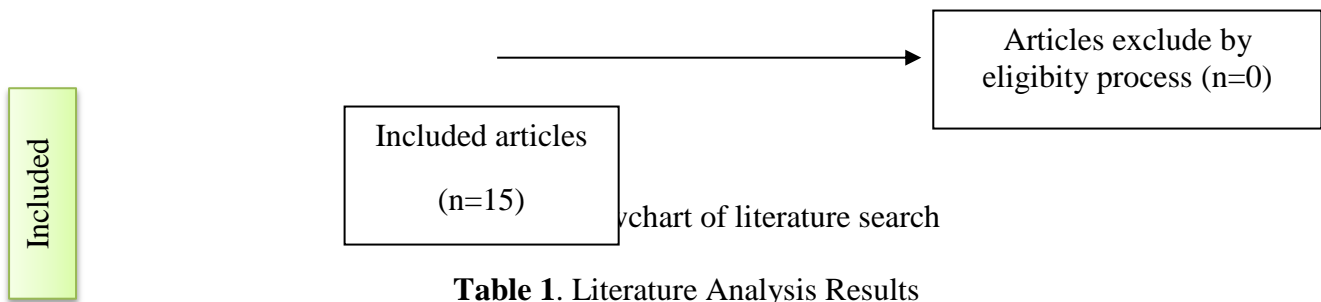


Table 1. Literature Analysis Results

ID	Author and Journal Identity	Questionnaire Name	Subscale	Objective	Population and Sample
A1	Faraji, A., Karimi, M., Azizi, S. M., Janatolmakan, M., & Khatony, A. (2019). Evaluation of clinical competence and its related factors among ICU nurses in Kermanshah-Iran: A cross-sectional study. <i>International journal of nursing sciences</i> , 6(4), 421-425.	Nurse Competence Scale	<ul style="list-style-type: none"> - Helping role - Teaching-coaching - Diagnostic functions - Managing situations - Therapeutic interventions - Ensuring quality - Work role 	To assess the clinical competency of critical care nurses in Kermanshah, Iran, as well as the associated demographic characteristics.	155 nurses
A2	Willman, A., Bjuresäter, K., & Nilsson, J. (2020). Newly graduated nurses' clinical competencies and need for further training in acute care hospitals. <i>Journal of clinical nursing</i> , 29(13-14), 2209-2220.	Professional Nurse Self-Assessment Scale of clinical core competencies II (ProffNurse SAS II)	<ul style="list-style-type: none"> - Direct clinical practice - Professional development - Ethical decision-making - Clinical leadership - Cooperation and consultation, - Critical thinking 	To evaluate recently graduated registered nurses' (NGRNs) self-reported clinical competency and the need for additional training in Swedish acute care hospital settings.	85 nurses



A3	Marin, S. M., Hutton, A., & Witt, R. R. (2020). Development and psychometric testing of a tool measuring nurses' competence for disaster response. <i>Journal of emergency nursing</i> , 46(5), 623-632.	The Nurses' Disaster Response Competencies	– Mitigation competencies – Preparedness competencies – Response competencies – Recovery competencies	To assess disaster nursing duties and competencies.	326 nurses
A4	Fang-Wen, H. U., Huan-Fang, L. E. E., & Yueh-Ping, L. I. (2021). Exploration of geriatric care competencies in registered nurses in hospitals. <i>Journal of Nursing Research</i> , 29(4), e159.	Self-Evaluation of Competencies to Provide Geriatric Care	– Demographic characteristics – Knowledge of geriatric care scale – Attitude of geriatric care scale – Self-evaluation of competence	The purpose of this study was to investigate the geriatric care competences of hospital nurses and to pinpoint the variables related to these competencies.	152 nurses
A5	Wang, L., Zhang, X., Zhang, P., Zhou, Q., Wang, Q., & Cheng, J. (2022). Development and psychometric evaluation of the trauma nurse core competency scale. <i>Frontiers in Public Health</i> , 10, 959176.	Trauma Nurse Core Competency Scale (TNCCS)	– Knowledge and skills – Comprehensive literacy – Professionalism & physical and mental health	To create and assess the Trauma Nurse Core Competency Scale's (TNCCS) psychometric qualities.	106 nurses
A6	Salameh, B., Amareh, D. B. S., Abdallah, J., Ayed, A., & Hammad, B. M. (2023). Evaluation of clinical competence and job satisfaction and their related factors among	Nurse Competence Scale	– Helping role – Teaching-coaching – Diagnostic functions – Managing situations	The purpose of this study is to appraise emergency nurses' clinical competency and associated	170 nurses



	emergency nurses in Palestinian hospitals. <i>SAGE Open Nursing</i> , 9, 23779608231208581.		<ul style="list-style-type: none">– Therapeutic interventions– Ensuring quality– Work role	variables in Palestinian hospitals.
A7	Pöyhönen, N., Ojantausta, O., Kaunonen, M., Vehviläinen-Julkunen, K., & Ikonen, R. (2024). Developing an Instrument to Measure Public Health Nurses' Competence Related to Breastfeeding Beyond 12 Months. <i>Journal of Human Lactation</i> , 08903344241254343.	The Long-Term Breastfeeding Competence Scale (LBCS)	<ul style="list-style-type: none">– Knowledge and Skills Dimension– Attitude Dimension	To offer 197 nurses families with appropriate breastfeeding guidance, public health nurses should create and test a tool that assesses their expertise in nursing children older than 12 months.
A8	Nilsson, J., Mischo-Kelling, M., Thiekoetter, A., Deufert, D., Mendes, A. C., Fernandes, A., ... & Lepp, M. (2019). Nurse professional competence (NPC) assessed among newly graduated nurses in higher educational institutions in Europe. <i>Nordic journal of nursing research</i> , 39(3), 159-167.	Nurse Competence Scale	<ul style="list-style-type: none">– Helping role– Teaching-coaching– Diagnostic functions– Managing situations– Therapeutic interventions– Ensuring quality– Work role	To evaluate 752 nurses and contrast professional competence self-reported by nursing students and nursing education among European higher education institutions' bachelor's degree graduates.



A9	<p>Nilsson, J., Johansson, S., Nordström, G., & Wilde-Larsson, B. (2020). Development and validation of the ambulance nurse competence scale. <i>Journal of emergency nursing</i>, 46(1), 34-43.</p>	<p>Ambulance Nurse Competency Scale</p>	<ul style="list-style-type: none"> – Nursing Care – Value-based Nursing Care – Medical Care – Care Environments – Care Environments Serious Events – Leadership Management – Supervision and Professional Conduct – Research and Development 	<p>To assess the psychometric qualities of a novel tool.</p>	213 nurses
A10	<p>Koy, V., Yunibhand, J., Rauth, A., Bircher, N., Prak, M., & Henker, R. (2023). Development and psychometric testing of a competency of nursing process questionnaire. <i>International Journal of Nursing Sciences</i>, 10(2), 245-250.</p>	<p>Competency of Nursing Process Questionnaire (CNPQ)</p>	<ul style="list-style-type: none"> – Assessment – Diagnosis – Planning – Intervention – Evaluation 	<p>To create and assess a Cambodian registered nurse competency of nursing process questionnaire (CNPQ).</p>	260 nurses
A11	<p>Dos Santos, F. C., Riner, M. E., & Henriques, S. H. (2019). Brazilian questionnaire of competencies of oncology nurses: Construction and test of content validation. <i>International journal of nursing sciences</i>, 6(3), 288-293.</p>	<p>The Questionnaire of Competencies of Oncology Nurses</p>	<ul style="list-style-type: none"> – Nursing care management – Patient safety and injuries prevention – Theoretical and practical knowledge and skills to work in the oncology unit – Support for oncology education and research 	<p>The purpose of this study was to discuss the development and content validation of the Brazilian Oncology Nurses Competencies Questionnaire.</p>	120 nurses



			<ul style="list-style-type: none">– Communication and interpersonal skills– Professional practice and nursing documentation– Leadership and teamwork– Oncology unit management		
A12	Yamada, M., Asakura, K., Takada, N., Hara, Y., & Sugiyama, S. (2022). Psychometric properties of the Japanese version of the career competencies questionnaire for nurses: a cross-sectional study. <i>BMC nursing</i> , 21(1), 263.	The Career Competencies Questionnaire	<ul style="list-style-type: none">– Reflective career competencies– Communicative career competencies– Behavioral career competencies	To assess the reliability and validity of the Career Competencies Questionnaire's Japanese translation (CCQ-J)	276 nurses
A13	Bae, J., Lee, J., Choi, M., Jang, Y., Park, C. G., & Lee, Y. J. (2023). Development of the clinical reasoning competency scale for nurses. <i>BMC nursing</i> , 22(1), 138.	Clinical Reasoning Competency Scale (CRCS)	<ul style="list-style-type: none">– Planning– Monitor– Regulation– Evaluation– Self-reinforcement– Self-instruction– Help-seeking– Empathy with patient– Multidisciplinary collaboration	To be developed a tool for measuring clinical reasoning	483 nurses
A14	Zaitoun, R. A. (2024). Assessing nurses' professional competency: a cross-sectional study in Palestine. <i>BMC nursing</i> , 23(1), 379.	The Nurse Professional Competence (NPC)	<ul style="list-style-type: none">– Helping role– Teaching-coaching– Diagnostic functions– Managing situations– Therapeutic interventions	To assess the degree of professional competence possessed by the nurses and to pinpoint variations	206 nurses



			<ul style="list-style-type: none">- Ensuring quality- Work role	according to demographics in three West Bank hospitals
A15	Do, J., & Shin, S. (2024). Development of nursing handoff competency scale: a methodological study. <i>BMC nursing</i> , 23(1), 272.	The Nurse's Handoff Competencies	<ul style="list-style-type: none">- Knowledge on handoff methods- Identification of patient information- Judgment and transfer of nursing situation- Formation of supportive relationships	To create a scale to assess nursing handoff proficiency and confirm the reliability and validity of the measure

Instruments Found in the Literature Review

After conducting the literature review process, 15 articles were obtained that were included in this study. From the 15 articles included in this study, 12 different instruments were found. The instruments found are described as follows :

Nurse Competence Scale

Benner's theory served as the foundation for Meretoja et al.'s design of the NCS. The study conducted by Meretoja et al. established the validity and reliability of this measure. The NCS questionnaire's Italian version was verified in the Dellai et al. It should be mentioned that other nations, such as Australia, the USA, Lithuania, Norway, and others, have translated and used this questionnaire. This scale's Persian version has been updated in Iran, and Cronbach's a coefficient reports that the scale's reliability ranges from 0.75 to 0.89. The current study used Cronbach's a coefficient (0.87) to measure the internal consistency of the questionnaire.`

Professional Nurse Self-Assessment Scale of clinical core competencies II (ProffNurse SAS II)

The 50-item ProffNurse SAS II, which is derived from the ProffNurse SAS I, is designed with the nurse-patient connection at its core. It measures nurses' clinical competence from a



holistic, lifelong learning, and dynamic perspective of nursing at various educational levels. The Nurse Clinical Competence Scale (NCCS) and NCS serve as the foundation for the original ProffNurse SAS's theoretical framework.

The Nurses' Disaster Response Competencies

The NDRCAQ demonstrated sufficient test-retest reproducibility, strong internal consistency, and factorial validity. Additionally, the tool demonstrated that it would be feasible to assess nurses' disaster response competencies. This tool would be beneficial to different nurse populations, even though it was designed for emergency nurses, as many disasters necessitate an enhanced nursing staff to handle the intense clinical demands. Future research could look at the scale's psychometric qualities with different nursing populations.

Self-Evaluation of Competencies to Provide Geriatric Care

Researchers used the AACN statements on geriatric care competencies to create the SCG. In this scale, twenty-five statements are rated on a four-point Likert scale, with points ranging from one meaning not at all confident to four meaning very confident. The total SCG score can range from 25 to 100, with higher scores indicating greater confidence in providing geriatric care. For this study, five experts—two professors of geriatric nursing, two geriatric clinical nurse specialists, and one geriatric physician—reviewed the content and judged the opinions. A Cronbach's alpha coefficient of 0.87 indicated good validity and reliability.

Trauma Nurse Core Competency Scale (TNCCS)

There were two sections to the official questionnaire. The initial section contained the respondents' general data, such as their gender, age (years), educational attainment, number of years spent working in trauma-related departments, and participation in trauma care training. The updated TNCCS, which comprised 46 components organized into three dimensions, made up the second section. A five-point Likert scale was used to design each item, with the following options: "not competent," "somewhat competent," "fairly competent," "sufficiently competent," and "very competent."

Long-Term Breastfeeding Competence Scale (LBCS)

The Long-Term Breastfeeding Competence Scale (LBCS), a tool that assesses health professionals' knowledge, abilities, and attitudes, was piloted for this study. The Extended Breastfeeding Knowledge and Attitudes tool, which included five knowledge items and twenty attitude measures, served as the foundation for the LBCS. The Finnish translation of



the original English instrument was followed by a professional translation, and the two translations were compared. Six new knowledge and skill questions that were operationalized based on a comprehensive examination of health professionals' competences for breastfeeding after 12 months were added to the translated instrument. Since they might be modified for the Finnish environment, four of the original knowledge items were added to the LBCS.

Ambulance Nurse Ambulance Nurse Competency Scale

The Swedish Society of Nursing and the Swedish National Association for Ambulance Nurses set the competency standards for specialized nurses providing prehospital care, which served as the foundation for the creation of the questionnaire. 42 statements of competencies pertaining to the standards for specialized ambulance nurses providing prehospital treatment make up the requirements. Every competency statement was restructured into a question for the questionnaire.

Competency of Nursing Process Questionnaire

The CNPQ is designed to assess RNs' nursing process competency on five different dimensions: planning (5 items), assessment (4 items), nursing diagnosis (5 items), intervention (7 items), and evaluation (3 items). The CNPQ total score was used to determine the degree of CNPQ in this stage; the higher the score, the greater the perceived competency of the nursing process. The CNPQ was composed as a questionnaire. The items were answered on a five-point Likert scale: 1 = I don't feel confidence at all, 2 = I feel not confident, 3 = I think I need more practice, 4 = I feel confident, and 5 = I feel proficient at that skill.

The Questionnaire of Competencies of Oncology Nurses

Eight sub-dimensions of competencies are included in the 30-item self-administered questionnaire: The first area consists of four items related to nursing care management; the second is about patient safety and injury prevention; the third is about theoretical and practical knowledge and skills needed to work in an oncology unit; the fourth is about support for oncology education and research; the fifth is about communication and interpersonal skills; the sixth is about professional practice and nursing documentation; the seventh is about leadership and teamwork; and the eighth is about oncology unit management. Using a 5-point Likert scale, this tool shows how frequently nurses apply the



professional competencies. The scale ranges were as follows: 1 denoted not performing; 2 bad performance; 3 regular performance; 4 often I perform; and 5 very often.

Career competencies Questionnaire CCQ-J

In order to evaluate career competencies, the preliminary 21-item CCQ-J was used. Six first-order factors, each loaded onto three second-order factors, make up the original CCQ. First, reflection on motivation (three questions) and reflection on attributes (four items) make up reflective career competencies. Second, networking (four elements) and self-promotion (three items) make up communicative career competencies. The third set of behavioral career competencies consists of four items related to career control and three items related to work exploration. The prior study's Cronbach's alpha for the CQ was 0.90, while each subscale's coefficient ranged from 0.76 to 0.82. Every item is scored using a five-point Likert scale, with 1 denoting total disagreement and 5 denoting total agreement.

Clinical Reasoning Competency Scale (CRCS)

The CRCS was created in Korean, and it was edited for readability and ambiguity by a specialist in Korean literature and language. The response measure for the preliminary items was a 5-point Likert scale, with 1 representing strongly disagree and 5 representing strongly agree. Following the completion of the preliminary CRCS, 21 nurses were given a pilot questionnaire to see if there were any items or instructions that they had trouble understanding. A 5-point Likert scale (1 being strongly disagreed and 5 being highly agreed) was used for the scale. A higher score denotes a higher level of clinical reasoning proficiency.

The Nurse Professional Competence (NPC)

The European Strategy for Nursing and Midwifery of the World Health Organization and Swedish national standards served as the foundation for the development of the Nurse Professional Competency Scale by Jan Nilsson and colleagues in Sweden. Nursing care, value-based nursing care, medical and technical care, teaching/learning and support, documentation and information technology, legislation in nursing and safety planning, leadership in and development of nursing care, and education are the eight competency domains and total of 88 items that make up the original NPC scale. The NPC's short version was utilized for this investigation. Previous studies have validated the validity and reliability of the NPC Scale, and all domains' Cronbach's alpha values were greater than 0.70.



The Nurse's Handoff Competencies

The validity and reliability of the developed scale provided the final confirmation of the nursing handoff competency measure. The scale has 25 items overall and is divided into 4 factors: "formation of supportive relationships (6 items)," "identification of patient information (8 items)," "judgment and transfer of nursing situation (7 items)," and "knowledge on handoff methods (4 items)." The measuring range of the 4-point Likert scale, which comprises four categories—strongly disagree (1), disagree (2), agree (3), and strongly agree (4) 25–100 points.

DISCUSSION

The use of questionnaires to measure the level of competence in nurses is important. Because nurses are the front line in the context of health services to patients¹⁵. This means that nurses must have the skills and competence to provide care to patients. The level of competence of nurses also affects the level of quality of service to patients. With a high level of quality of service to patients, the level of patient satisfaction with the performance of health care providers will also increase²⁴. Increasing the competence of nurses can be started from when nurses before graduating to become professional nurses so that after they graduate they will be ready to work as professional and competent nurses¹⁹. This is supported by the existence of several questionnaires used to measure the level of competence for nurses, even when they have not graduated so that what is lacking can be fixed and when they graduate they can become competent nurses.

The selection of the right instrument also affects the accuracy of measuring the level of nurse competency⁵. As previously explained, each instrument has qualifications and specifications that are used in special nursing areas such as maternity, disaster nursing and geriatric nursing. However, general instruments such as the Nursing Competency Scale (NCS) can be used to measure the level of competency for various nursing backgrounds, such as in research, the Nursing Competency Scale (NCS) is used to measure the level of competency in ICU nurses¹¹. The Nursing Competency Scale (NCS) can also be used to measure the level of competency in emergency nurses. This can be an alternative as a general instrument that can be used to measure the level of nurse competency in all areas, when there is no special instrument created to measure competency in that area³². But what needs to be underlined is that the results will not be as specific and complex as measurements using a



questionnaire specifically designed to measure the level of nurse competency in a particular area.

Cultural diversity in the world also has an influence on the selection of instruments to be used. Cultural differences can result in differences in the validity of the instruments used because previously the instruments were developed and applied in a particular country⁴. However, in this study, several instruments that were developed have undergone modifications that have been adjusted to the culture where the instrument will be applied. such as the Nursing Competency Scale (NCS) instrument which was originally developed in Finland²¹. But this instrument has been modified and translated into various countries and various languages, such as Australia, the USA, Lithuania, Norway, Iran and many more. And from the results of the validity test that has been carried out, it shows that this instrument is still valid for use in various cultures and different languages¹².

The method of evaluating nurse competency greatly influences nursing practice and health policy. This instruction helps to establish clear and measurable competency standards, which are essential for certification, accreditation, and supervision of the profession⁹. The results of these measurements can also be used to evaluate nurse performance and design more efficient training programs that support ongoing professional development²⁹. To ensure that nurses selected have the skills needed for a particular job, competency instruments are also essential in recruitment and promotion⁹. Additional outcomes include improved quality of care and patient safety, as appropriate competency assessments help identify areas for improvement and ensure that nurses are prepared to handle challenging clinical situations³⁵. In addition, the instrument has the potential to ensure that nursing education remains relevant to the demands of contemporary clinical practice and assist policymakers in developing human resource management policies in the health sector²³. Finally, it is important to consider how the instrument can be adapted to be relevant across cultural and geographic settings, and to support global nursing competency standards.

CONCLUSION

Research on instruments used to measure the level of nurse competence has found several instruments that can be used in the daily clinical practice of nurses. The instruments found are not only general instruments but researchers also found several instruments that are



specific to assess certain nursing subject areas. So that it can be used as an option for nurses to measure the level of nurse competence in the area or subject population to be measured.

REFERENCES

1. Bae, J., Lee, J. H., Choi, M., Jang, Y., Park, C. G., & Lee, Y. J. (2023). Development of the clinical reasoning competency scale for nurses. *BMC Nursing*, 22(1). <https://doi.org/10.1186/s12912-023-01244-6>
2. Brown, J., Pope, N., Bosco, A. M., Mason, J., & Morgan, A. (2020). Issues affecting nurses' capability to use digital technology at work: An integrative review. In *Journal of Clinical Nursing* (Vol. 29, Issues 15–16, pp. 2801–2819). Blackwell Publishing Ltd. <https://doi.org/10.1111/jocn.15321>
3. Charette, M., McKenna, L. G., Maheu-Cadotte, M. A., Deschênes, M. F., Ha, L., & Merisier, S. (2020a). Measurement properties of scales assessing new graduate nurses' clinical competence: A systematic review of psychometric properties. *International Journal of Nursing Studies*, 110. <https://doi.org/10.1016/j.ijnurstu.2020.103734>
4. Charette, M., McKenna, L. G., Maheu-Cadotte, M. A., Deschênes, M. F., Ha, L., & Merisier, S. (2020b). Measurement properties of scales assessing new graduate nurses' clinical competence: A systematic review of psychometric properties. *International Journal of Nursing Studies*, 110. <https://doi.org/10.1016/j.ijnurstu.2020.103734>
5. Chen, Q., Huang, C., Castro, A. R., & Tang, S. (2021). Instruments for measuring nursing research competence: A protocol for a scoping review. In *BMJ Open* (Vol. 11, Issue 2). BMJ Publishing Group. <https://doi.org/10.1136/bmjopen-2020-042325>
6. Do, J., & Shin, S. (2024). Development of nursing handoff competency scale: a methodological study. *BMC Nursing*, 23(1). <https://doi.org/10.1186/s12912-024-01925-w>
7. Dong, X., Lu, H., Wang, L., Zhang, Y., Chen, J., Li, B., Huang, X., Wan, Q., Dong, S., & Shang, S. (2020). The effects of job characteristics, organizational justice and work engagement on nursing care quality in China: A mediated effects analysis. *Journal of Nursing Management*. <https://doi.org/10.1111/jonm.12957>
8. dos Santos, F. C., Riner, M. E., & Henriques, S. H. (2019). Brazilian questionnaire of competencies of oncology nurses: Construction and test of content validation. *International Journal of Nursing Sciences*, 6(3), 288–293. <https://doi.org/10.1016/j.ijnss.2019.06.005>
9. Egerod, I., Kaldan, G., Nordentoft, S., Larsen, A., Herling, S. F., Thomsen, T., & Endacott, R. (2021). Skills, competencies, and policies for advanced practice critical care nursing in Europe: A scoping review. In *Nurse Education in Practice* (Vol. 54). Elsevier Ltd. <https://doi.org/10.1016/j.nepr.2021.103142>
10. Eskolin, S. E., Inkeroinen, S., Leino-Kilpi, H., & Virtanen, H. (2023). Instruments for measuring empowering patient education competence of nurses: Systematic review. In *Journal of Advanced Nursing* (Vol. 79, Issue 7, pp. 2414–2428). John Wiley and Sons Inc. <https://doi.org/10.1111/jan.15597>
11. Faraji, A., Karimi, M., Azizi, S. M., Janatolmakan, M., & Khatony, A. (2019a). Evaluation of clinical competence and its related factors among ICU nurses in Kermanshah-Iran: A cross-sectional study. *International Journal of Nursing Sciences*, 6(4), 421–425. <https://doi.org/10.1016/j.ijnss.2019.09.007>
12. Faraji, A., Karimi, M., Azizi, S. M., Janatolmakan, M., & Khatony, A. (2019b). Evaluation of clinical competence and its related factors among ICU nurses in



- Kermanshah-Iran: A cross-sectional study. *International Journal of Nursing Sciences*, 6(4), 421–425. <https://doi.org/10.1016/j.ijnss.2019.09.007>
13. Goniewicz, K., Salimi, H., Anna Naylor, K., Pawłowski, W., Cheng, J., Copyright, fpubh, Wang, L., Zhang, X., Zhang, P., Zhou, Q., & Wang, Q. (n.d.). *Development and psychometric evaluation of the trauma nurse core competency scale*.
 14. Immonen, K., Oikarainen, A., Tomietto, M., Kääriäinen, M., Tuomikoski, A. M., Kaučič, B. M., Filej, B., Riklikienė, O., Flores Vizcaya-Moreno, M., Perez-Cañaveras, R. M., De Raeve, P., & Mikkonen, K. (2019). Assessment of nursing students' competence in clinical practice: A systematic review of reviews. In *International Journal of Nursing Studies* (Vol. 100). Elsevier Ltd. <https://doi.org/10.1016/j.ijnurstu.2019.103414>
 15. Kajander-Unkuri, S., Koskinen, S., Brugnolli, A., Cerezuela Torre, M., Elonen, I., Kiele, V., Lehwaldt, D., Löyttyniemi, E., Nemcová, J., de Oliveira, C. S., Palese, A., Rua, M., Salminen, L., Šateková, L., Stubner, J., Sveinsdóttir, H., Visiers-Jiménez, L., & Leino-Kilpi, H. (2021). The level of competence of graduating nursing students in 10 European countries—Comparison between countries. *Nursing Open*, 8(3), 1048–1062. <https://doi.org/10.1002/nop2.712>
 16. Kang, K., Lee, M., & Cho, H. (2021). Interpersonal skills mediate the relationship between communicative and clinical competencies among nursing students: A descriptive study. *Nurse Education Today*, 99. <https://doi.org/10.1016/j.nedt.2021.104793>
 17. Kao, C. C., Chao, H. L., Liu, Y. H., Pan, I. J., Yang, L. H., & Chen, W. I. (2022). Psychometric Testing of the Newly Developed Competence Scale for Clinical Nurses. *Journal of Nursing Research*, 30(2). <https://doi.org/10.1097/jnr.0000000000000472>
 18. Lejonqvist, G. B., & Kajander-Unkuri, S. (2022). Evaluating nursing competence with the Nurse Competence Scale from an ontological and contextual point of view: An integrative literature review. In *Nordic Journal of Nursing Research* (Vol. 42, Issue 1, pp. 7–17). SAGE Publications Ltd. <https://doi.org/10.1177/20571585211000972>
 19. Lundell Rudberg, S., Westerbotn, M., Sormunen, T., Scheja, M., & Lachmann, H. (2022). Undergraduate nursing students' experiences of becoming a professional nurse: a longitudinal study. *BMC Nursing*, 21(1). <https://doi.org/10.1186/s12912-022-01002-0>
 20. Marin, S. M., Hutton, A., & Witt, R. R. (2020). Development and Psychometric Testing of a Tool Measuring Nurses' Competence for Disaster Response. *Journal of Emergency Nursing*, 46(5), 623–632. <https://doi.org/10.1016/j.jen.2020.04.007>
 21. Meretoja, R., Isoaho, H., & Leino-Kilpi, H. (2004). Nurse Competence Scale: Development and psychometric testing. *Journal of Advanced Nursing*, 47(2), 124–133. <https://doi.org/10.1111/j.1365-2648.2004.03071.x>
 22. Mišovičová, K., & Tomagová, M. (2023). The instruments for evaluation the quality of nursing work life. In *Pielęgniarstwo XXI Wieku* (Vol. 22, Issue 2, pp. 108–114). Sciendo. <https://doi.org/10.2478/pielxxiw-2023-0019>
 23. Mlambo, M., Silén, C., & McGrath, C. (2021). Lifelong learning and nurses' continuing professional development, a metasynthesis of the literature. *BMC Nursing*, 20(1). <https://doi.org/10.1186/s12912-021-00579-2>
 24. Nabizadeh-Gharghozar, Z., Alavi, N. M., & Ajorpaz, N. M. (2021). Clinical competence in nursing: A hybrid concept analysis. *Nurse Education Today*, 97. <https://doi.org/10.1016/j.nedt.2020.104728>
 25. Nilsson, J., Johansson, S., Nordström, G., & Wilde-Larsson, B. (2020). Development and Validation of the Ambulance Nurse Competence Scale. *Journal of Emergency Nursing*, 46(1), 34–43. <https://doi.org/10.1016/j.jen.2019.07.019>



26. Nilsson, J., Mischo-Kelling, M., Thiekoetter, A., Deufert, D., Mendes, A. C., Fernandes, A., Kirchhoff, J. W., & Lepp, M. (2019). Nurse professional competence (NPC) assessed among newly graduated nurses in higher educational institutions in Europe. *Nordic Journal of Nursing Research*, 39(3), 159–167. <https://doi.org/10.1177/2057158519845321>
27. Osmancevic, S., Schoberer, D., Lohrmann, C., & Großschädl, F. (2021). Psychometric properties of instruments used to measure the cultural competence of nurses: A systematic review. In *International Journal of Nursing Studies* (Vol. 113). Elsevier Ltd. <https://doi.org/10.1016/j.ijnurstu.2020.103789>
28. Pöyhönen, N., & Ojantausta, O. (2024). Developing an Instrument to Measure Public Health Nurses' Competence Related to Breastfeeding Beyond 12 Months. *Journal of Human Lactation*, 4(3), 433–444.
29. Pueyo-Garrigues, M., Pardavila-Belio, M. I., Canga-Armayor, A., Esandi, N., Alfaro-Díaz, C., & Canga-Armayor, N. (2022). nurses' knowledge, skills and personal attributes for providing competent health education practice, and its influencing factors: A cross-sectional study. *Nurse Education in Practice*, 58. <https://doi.org/10.1016/j.nepr.2021.103277>
30. R Klawunn, & ML Dierks. (2022). Expectations of patients for the implementation of new nursing technology. *European Journal of Public Health*, 32(3), 131–178. https://academic.oup.com/eurpub/article/32/Supplement_3/ckac131.178/6765748
31. Renghea, A., Cuevas-Budhart, M. A., Yébenes-Revuelto, H., Pulgar, M. G. del, & Iglesias-López, M. T. (2022). “Comprehensive Care” Concept in Nursing: Systematic Review. *Investigacion y Educacion En Enfermeria*, 40(3). <https://doi.org/10.17533/udea.iee.v40n3e05>
32. Salameh, B., Amarneh, D. B. S., Abdallah, J., Ayed, A., & Hammad, B. M. (2023). Evaluation of Clinical Competence and Job Satisfaction and Their Related Factors Among Emergency Nurses in Palestinian Hospitals. *SAGE Open Nursing*, 9. <https://doi.org/10.1177/23779608231208581>
33. Salminen, L., Tuukkanen, M., Clever, K., Fuster, P., Kelly, M., Kielé, V., Koskinen, S., Sveinsdóttir, H., Löyttyniemi, E., & Leino-Kilpi, H. (2021). The competence of nurse educators and graduating nurse students. *Nurse Education Today*, 98. <https://doi.org/10.1016/j.nedt.2021.104769>
34. Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2024). How to Do a Systematic Review: A Best Practice Guide for Conducting and Reporting Narrative Reviews, Meta-Analyses, and Meta-Syntheses. *Annu. Rev. Psychol*, 70, 747–770. <https://doi.org/10.1146/annurev-psych-010418>
35. Vaismoradi, M., Tella, S., Logan, P. A., Khakurel, J., & Vizcaya-Moreno, F. (2020). Nurses' adherence to patient safety principles: A systematic review. In *International Journal of Environmental Research and Public Health* (Vol. 17, Issue 6). MDPI AG. <https://doi.org/10.3390/ijerph17062028>
36. Vatnøy, T. K., Karlsen, T. I., & Dale, B. (2019). Exploring nursing competence to care for older patients in municipal in-patient acute care: A qualitative study. *Journal of Clinical Nursing*, 28(17–18), 3339–3352. <https://doi.org/10.1111/jocn.14914>
37. Williams, R. I., Clark, L. A., Clark, W. R., & Raffo, D. M. (2021). Re-examining systematic literature review in management research: Additional benefits and execution protocols. *European Management Journal*, 39(4), 521–533. <https://doi.org/10.1016/j.emj.2020.09.007>



38. Yamada, M., Asakura, K., Takada, N., Hara, Y., & Sugiyama, S. (2022). Psychometric properties of the Japanese version of the career competencies questionnaire for nurses: a cross-sectional study. *BMC Nursing*, *21*(1). <https://doi.org/10.1186/s12912-022-01035-5>