

Original Research Article

Student Nursing Competency; Definition, Components and levels: A Systematic Review

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Abstract

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The assessment of students nursing competence is an issue of interest worldwide. Nursing competency includes core abilities that are required for fulfilling one's role as a nurse. The following databases were included in the search strategy: (Ovid databases (including Medline, Embase, PsycINFO, and HealthSTAR) (ISI, SCOPUS, ProQuest, Iranmedex, Google Scholar, PubMed) and Persian (Scientific Information Database) databases. The researcher assessed the eligibility of the study by title, abstract, full-text and assessed the methodological quality of the included studies and then analyzed the study findings literal synthesis approach. The initial search yielded 142 results and twelve reviews were finally included following critical appraisal and met the inclusion criteria and were included in this review. The nursing student competency was defined as a general students' nursing competence commonly compromise twelve components as; patient-centered care, communication, evidence-based practice and research, critical thinking and innovation, personal traits, quality of practice, collaboration, professional practice evaluation, management of nursing care, resource utilization and legal and ethical practice. Seven nursing student competency levels were identified. Despite the current systematic review of nursing student competency, its components and levels, the need for further research to reform nursing student competency, components, and levels is required

Keywords: Core competency, Components of competency, Student nursing competency

INTRODUCTION

Healthcare organizations confront diverse challenges such as; informatics technology, advances in the healthcare industry, decreased funding, issues such as disease structure changes and a rapidly aging population and matter for accountability (*Fan et al., 215; Francis, 2015; Jukema et al., 2015; Fukada, 2018*). Nowadays, providing high-quality nursing care is a requirement that depends on the nursing competency. Nurses are always objecting to how they can participate as professionals to society; they challenged to take professional responsibilities for unendingly providing direct care, protecting individual lives, and supporting activities of

daily living. Competency, as a general term, gets away from an integrated definition due to varied opinions shared by experts in the field. Competent is an integrated knowledge, skills, abilities, and judgment required to practice nursing safely and ethically (*College of Nurses of Ontario, 2018a*). It is the capacity to do something successfully and efficiently (*Oxford dictionary 2015*). As reported by an *American nursing association (2015)* the competency in the context of nursing has defined as putting up expected and measurable levels of performance through the integration of knowledge, skills, abilities, and judgment grounded in scientific knowledge

and nursing practice principles.

Nursing competency includes core abilities that are required for fulfilling one's role as a nurse. The competency in nursing students is the responsibility of nursing faculties; they responsible for graduating competent students especially in the clinical area because it is the core for nursing students. Competency in the clinical area influenced by the quality care of nursing students. Competence is an ability acquired through experience and learning. As defined by (Wu, et al, 2006) the clinical competence is the efficiency in solving complicated problems by application of the integration of knowledge, practical skills, professional judgment, and the attitude of students. In the nursing field, the nurse needs to put in an application for their acquired knowledge, professional skills, and individual traits to each situation in their clinical experience. Accordingly, to confirm that students gain competencies; it is necessary to integrate the teaching skills into course curricula in a holistic approach to teach rigorous knowledge and broad skills (Pereira, et al., 2014). Nursing competency was defined as the ability to take action by combining knowledge, skills, values, beliefs, and experience acquired as a nurse" and explained that competency can be viewed as an integrated performance reflecting the professional nurse's feelings, thoughts and judgment (American nursing association, 2006; the Conference for Nursing Education model, 2017; International Council of Nurses, 2005 and Nakayama et al., 2008). There were statistical significant positive correlation among nurses' knowledge and performance and productivity (Mahdy and Mahfouz, 2016). There is highly significant correlation stage of implementation of evidence-based guidelines occurred. (Arafat et al., 2018).

Also improvement in total level of nurses' attitude and performance and there was a positive statistical significant correlation between nurses' (Mahdy, 2019).

The ultimate goal of nursing education is the clinical competence and includes the ability to apply professional knowledge and skills, communication and interpersonal skills, and advanced problem solving and decision-making skills (Hakimzadeh et al., 2012). The application of nursing needs a compound of many traits as nursing students, they need extremely specialized competencies to learn accurately how to determine patients' states and predict and cope with the problems that may occur during nursing care (Kelson, 2014; Khatiban et al., 2014; Blazon et al., 2015; Ross et al., 2016). Clinical competence includes general competencies (such as management and communication skills, professional skills, group performance, and ability to provide primary and specialized health care services), and specific competencies (such as quality care assessment, implementation of specific processes, performance monitoring, and ability to monitor health and disease) (Ghanbari, 2017). Nurses at

the undergraduate level should play an important role in developing the competency of new routines in quality improvement programs for patients.

Research Questions

The study questions were:

1. What is the global definition of nursing students' competency?
2. What are the components of the nursing students' competency?
3. What are the nursing students' competency levels?

METHODS

This study was a systematic review of nursing students' competencies. The following databases were included in the search strategy: (Ovid databases (including Medline, Embase, PsycINFO, and HealthSTAR) (ISI, SCOPUS, Pro-Quest, Iranmedex, Google Scholar, PubMed) and Persian (Scientific Information Database) databases.

The search strategy combined the intervention terms (student nursing competency, undergraduate nursing competency, student nursing ability, competency-based education, clinical nursing skills) with the relevant population group (nursing students, undergraduate nursing students) (2003–2020).

The initial search yielded 142 results. The abstracts and titles of these results were manually reviewed using the following criteria:

1. The articles were publication from (2003–2020).and written by English.
2. The paper targeted populations of nursing students
3. Application of different aspects of competency in nursing students; and originality of the paper. 142 articles were found, including, 35 articles in Ovid, 23 in Google Scholar, 27 articles in Pub Med, 20 articles in SID, 24 articles in Proquest and 13 articles in Iranmedex. Table 1

RESULTS

Based on these inclusion criteria, 130 results were excluded. 12 papers were analyzed in full for this integrative review. The core concepts in the nursing students' competency scope were related to the definition, components, and levels of nursing student's competency. In the following, the responses of the questions are explained.

Table 1. Final retrieved articles in the review process

Authors and Year	Title	Participants	Study design	Key findings	Conclusion
Nehir, et al., 2016	Competency in Nursing Students: A Systematic Review	20 studies	Systematic literature review	Nursing students' competency is the individual experiences, dynamic process, and positive interactive social and beneficial changes in the equality of one's professional life.	More reviews that are systematic, concept analyses, and even meta-analysis needed to scrutinize specifically nursing students' competency in academic and clinical settings.
Fukada, 2018	Nursing Competency: Definition, Structure, and Development	4 studies	Systematic literature review	competency levels necessary for nursing professionals, training methods and so on	It is important to clearly define nursing competency to establish a foundation for the nursing education curriculum. It is also important to identify the developmental process of nursing competency for continuous professional development after obtaining a nursing license.
Bam, et al., 2020	Self-assessed competencies of nurses at an emergency department in Ghana	109 conveniently sampled nurses	A descriptive cross-sectional quantitative study	Participants generally had good competencies in the performance of emergency nursing procedures.	Most ECs are being manned by non-specialist nurses hence there is the need for regular in-service training in the identified competency domains for general nurses who work in it.
Fan, et al., 2015	Performance evaluation of nursing students following competency-based education.	312 second-year undergraduate nursing students	quasi-experimental design	Required core competencies and metacognitive abilities improved significantly in the competency-based education group as compared to the control group after adjusting for covariates.	Competency-based education is worth implementing and may close the gap between education and the ever-changing work environment.
Arrigoni, et al., 2017	Nursing students' clinical competencies: a survey on clinical education objectives	1,758 clinical internships	An observational study	A level of heterogeneity and complexity intrinsic to the University of Pavia educational system, characterized by clinical settings with different clinical levels (Research hospital and other traditional hospitals) that offer different levels of training.	For educational activities, such a self-evaluation form represents an ideal instrument for identifying areas in need of improvement.
Wu, et al., 2014	Application of nursing core competency standard education in the training of nursing undergraduates	42 nursing undergraduates	Quasi-experimental	Significantly higher performance in the health information collection, physical assessment, scenario simulation and communication in the experimental group	Nursing core competency standard education is helpful for the training of nursing students' core competencies.

Table 1. Continue

Faraji, et al., 2019	Evaluation of clinical competence and its related factors among ICU nurses in Kermanshah-Iran: A cross-sectional study	155 Iranian nurses	Cross-sectional study	Nurses' clinical competence of critical care nurses was at a "very good" level, and the use of clinical competence in practice was at a "good level."	Given the importance of clinical competencies in practice, nurses' clinical competence should be evaluated objectively and positive measures should be taken to promote the application of their clinical competence.
Wallace, et al (2014)(10)	Skill Development and Reflective Writing Rubrics	8 NP faculty members and preceptors	Two Focus groups session	Rubrics scoring tools clarify levels of competency in practitioner nurse	Having a complete understanding of the transitional needs of new NPs from students to advanced practitioners can markedly improve future efforts in role development and skill acquisition and thereby ease the shortage of PCPs.
Forsberg, et al ((2014)(9)	30 registered nurses	Qualitative descriptive	A short interview with structured questions	For making clinical decisions, high specific competence, and experience were so important.	For assessing the clinical reasoning process and clinical decision -making, the virtual patient's model is suitable but how to score and grade such exams is the challenge.
Wilhelmsson, et al ((2012)(11)	Inter-Professional Competence	78 students	Systematic theoretical base	A metacognitive model for interprofessional education and practice has been developed as a tool for analyzing professional competence on three levels: individual, team, and organization with seven basic components of professional competence and the way they are related and interact.	The IP learning situations for IPE educators and developing professional practitioners is more helpful than one profession's perspective.
Olson (2014)	Interactive Process for Cross Sectorial Development	93 students	Competency discussion	Some domains have been used to develop a framework for integrating one health competencies into programmers and curricula based on a common understanding of an inter-professional, multi-sectoral approach to operating effective health systems from the village to the clinic.	Priorities include the production of a working set of competency domains. Sharing of these domains is more important than ownership or approval and informing work in global health about commonalities between and among development efforts forms the basis for the accomplishment of the goal.

Table 1. Continue

Muraraneza and Mtshali (2018)	Implementation of the competency-based curriculum in pre-service nursing education	65 staff and 514 students	observations and document analysis	Two main categories emerged: (a) Process of implementing Competency-based curriculum which generated two sub-categories: (1) Implementation, (2) monitoring and evaluation; (b) outcome-based education generated three subcategories: (1) health care system, (2) graduates, and (3) nursing education system.	A middle-range theory serves as a guide to implementing a competency-based curriculum in pre-service nursing education
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Question 1: What is the comprehensive definition of nursing students' competency?

To acquaint, define, and measure the competency in a nursing student is complicated. *Safadi et al. (2010)* defined that competence is the concept used to determine whether or not a nurse is fulfilling the required standards for safe practice. As described in (*Fukada, 2018*), nursing competency is a complex integration of knowledge including professional judgment, skills, values, and attitude. it is important to clearly define nursing competency to establish a basis for the nursing education curriculum. Having competency leads to an improved quality of patient care and increased patient satisfaction with the nurses and helps promote nursing as a profession and improve nursing education and clinical nursing (*Nobahar M (2016)*). Nursing competency has been extensively handled in the literature in terms of safety and quality of nursing care (*Heydari, et al., 2016*). Nurses' professional competence is a crucial factor in clinical practice. *World Health Organization (WHO)* requires equipping all the member countries with professional competency. Professional competency in nurses is defined as a combination of skills, knowledge, attitudes, values, and abilities that bring about effective or high performance in occupational and professional positions (*Levett-Jones, et al., 2011*). Nursing faculty are responsible for graduating competent students and being competent themselves; however, the required competencies of clinical nursing faculty who instruct students in the clinical area are unidentified. *Pereira et al., (2014)* mentioned that the most effective way to ensure students acquire competencies is to integrate the teaching of those skills into course curricula in a holistic approach to teach disciplinary knowledge and generic skills.

Question 2; what are the components of nursing students competence?

NMBI, (2015) Defined competence as the ability of the registered nurse to practice safely and effectively, attaining his/her professional responsibility within his/her scope of practice. The aim is to ensure that the student nurse obtains the skills of critical analysis, problem-solving, decision-making, meditative skills, and abilities essential to the art and science of nursing. Safe and effective practice requires a sound-enhancing of theoretical knowledge that informs practice and is in turn informed by that practice. Within a complex and changing healthcare environment it is essential that the best available evidence inform practice. Thus there are twelve components of nurse competency: Legal and ethical practice, leadership, patient-centered care, communication, evidence-based practice, and research, critical thinking and innovation, personal traits, quality of practice, collaboration, professional practice evaluation, management of nursing care and resource Utilization. Table 2

The third question: What are the nursing students' competency levels?

Competency is the capacity to do something successfully and efficiently (*Oxford dictionary 2015*). The need to produce a competent, confident, critical thinker with the ability to lead, to question, and to be questioned is the core of modern preregistration in nursing education programs. Thus the basic factors of nursing student's competency are (delivery of quality nursing care, management of care, and professional identification, the levels of nursing students' competence as the following:

Table 2. The Discussion of 12 Components of Nursing Students Competency

No.	Discussion of each component
1	Legal and ethical practice: Integrates accurate and comprehensive knowledge of ethical principles, the Code of Professional Conduct, and within the scope of professional nursing practice, in the delivery of nursing practice (NMBI, 2015).
2	Leadership: The ability to influence the behavior of individuals or groups of individuals within their environment in a way that will facilitate the establishment and acquisition/achievement of shared goals (American Organization of Nurse Executives. (2015).
3	Patient-centered care: The Nurse of the Future will provide holistic care that recognizes an individual's preferences, values, and needs and respects the patient or designee as a full partner in providing compassionate, coordinated, age and culturally appropriate, safe and effective care (Massachusetts Department of Higher Education Nursing Initiative, 2016).
4	Communication: interact effectively with patients, families, and colleagues, fostering mutual respect and shared decision making, to enhance patient satisfaction and health outcomes (Price, O., and Baker, J. (2012).
5	Evidence-based practice and research: It is the integration of the best research evidence, clinical expertise, and patient needs that will result in the best patient outcomes (Melnyk, et al., 2010).
6	Critical thinking and innovation: involves students thinking broadly and deeply using skills, behaviors and the ability to think critically was a contributory factor to the development of nursing student competency and helped nurses to provide safe nursing care to patients and innovation in all learning areas at school and in their lives beyond school(Sedgwick, and Harris, 2012).
7	Personal traits: nurses have identified as being required and valuable for success in their profession that is always asking more of them, such as self-confidence, self-control, accountability, patience, critical thinking, and decision making (Every nurse.org, 2018).
8	Quality of practice: The Nurse uses data to monitor the outcomes of care processes, and uses improvement methods to design and test changes to continuously improve the quality and safety of health care systems. (QSEN, 2007)
9	Collaboration: the nurse collaborates with the healthcare consumer, family, and others in the conduct of nursing practice (AMN Healthcare Education Services, 2017).
10	Professionalism: means the nurse must demonstrate accountability for the delivery of standard-based nursing care that is consistent with moral, altruistic, legal, ethical, regulatory, and humanistic principles (Colorado Council on Nursing Education, 2007).
11	Management of nursing care: Effectively manages the nursing care of clients/ groups/ communities (NMBI, 2015).
12	Resource Utilization: refers to the process of making the most of the resources available to you in order to achieve the objective that you want to (Gupta, 2017).

1. Nursing students have sufficient and acceptable levels of educational abilities but his/her abilities still need to be checked and supervised; they do not have sufficient and acceptable levels of clinical abilities (Fikre, 2016).

2. Nursing students are proficient in educational abilities, but still, need periodic checking and supervision of their abilities of some special points in educational and clinical settings.

3. Students have limited information about the nursing profession therefore they are trying to determine if they will continue their education (Adibelli and Korkmaz, 2017).

4. Most of the learned theoretical subjects did not come into practice after graduation.

5. A most important problem in nursing education was not applying the studies and research done in the clinical practice and this would lead to non-evidence based training.

6. Nursing students are expert in educational abilities, are proficient, and have sufficient and acceptable levels of clinical abilities; they may need periodic checking and supervision in his/her abilities.

7. Nursing students are experts in educational and clinical abilities and are teachers and supervisors of educational and clinical skills and proficiencies.

DISCUSSION

In this study, the researchers comprehensively define and describe the definition, components, and levels of nursing students' competency in light of previous studies using the systematic review approach. Some authors studies stated that the definitions related to competency have changed over time and most researchers suggest it is better to describe competence from a holistic perspective. Therefore, based on a holistic perspective, nursing competency can be generally written as behavior statements that reflect the skills, knowledge, attitudes, and judgment required for effective performance in the nursing profession. Generally, the terms competence and competency are often used interchangeably; competency defined as the ability of the nurse to integrates the knowledge, skills, abilities, and judgment required to

practice nursing safely and ethically. While competence means The collection and application of measurable knowledge, skills, abilities, judgment, and attitudes required by a registered nurse throughout their professional career to practice safely and ethically (CCRN, 2019).

As regards to components of student nursing competency, the current result mentioned twelve components of nursing competency. All of these components update nursing professional capabilities The discussion of these 12 components is presented in Table 2. This review presents clear synthesized descriptions of each component to assist subsequent researchers. This is in agreement with the announcement that competency represents the integration of knowledge, skills, values, and attitudes (Pijl-Zieber *et al.*, 2014; Pijl-Zieber *et al.*, 2014). As shown previously, nursing competency has various definitions, and different components have been indicated. Therefore, future studies are needed to clarify the relationships that exist among the components that support each nursing competency and in what order each element is acquired. Furthermore, it is important to develop nursing competency training methods, evaluate their effectiveness, and conduct further research, which contributes to improving nursing quality.

Kirwa and Gakere (2016) advocated that students are anxious and worried when practically attending to a patient. This is perceived to be lack of enough skills, lack of preparation, and lack of enough knowledge. Nursing students' experiences of their clinical practice should offer greater insight for nursing faculty to develop a strategy in nursing education that is effective for clinical teaching. The difficulty in the application of meaning in relation to competence is further confused by the way nurses are educated or trained. Milligan (1998) debated that good nurse education facilitates the examination of knowledge relevant to practice that results from incompetence. Developing professional competency is vital, but not easy (Karami *et al.*, 2017).one very important point to overcoming the unclear nursing students' competency is that the determination of competency is often influenced by a student's level of comfort, confidence, and self-efficacy in a variety of contexts and considers more than one perspective The study illustrated seven levels of nursing student competency in an academic and clinical setting. the present findings illustrated seven levels of competency Windsor *et al.*, (2011)asserted that the data analysis generated three analytical findings: the existence of a hierarchy of competencies that priorities soft skills over intellectual and technical skills; the appearance of skills as personal qualities or individual attributes; and the absence of context in the assessment.If students lack exposure to basic nursing skills, they may gain insufficient experience for even minimal competency (Bradshaw *et al.*, 2008 and Bradshaw *et al.*, 2012). Furthermore, more research is required to see the integration of attending clinical and

skill about perceived clinical competence in the study area.

CONCLUSION

The results highlighted that the nurses needed to be more competent and committed to their organizations. Developing professional competency and organizational commitment is vital, but not easy. This study suggests that human resource managers should pursue appropriate strategies to enhance the professional competency and organizational commitment of their nursing staff. It is necessary to conduct more comprehensive studies for exploring the status and gaps in the human resource management of healthcare in different cultures and contexts.

Despite the current systematic review defined more globally described definition, components, and levels of nursing students' competency in different academic and clinical settings; the need for further research to reform nursing student competency, components, and levels in the nursing student competency concept. The results highlighted that the nurses needed to be more competent and committed to their organizations. Further research should consider cross-cultural validation of instruments and influencing factors related to nursing competency. Moreover, the study suggested that human resource managers should pursue appropriate strategies to enhance the professional competency of their nursing staff. It is necessary to conduct more comprehensive studies for exploring the status and gaps in the human resource management of healthcare in different cultures and contexts. Therefore, the authors suggested that nursing students attend their theoretical class and seek and utilize the available resource (such as peers and instructors). They also suggested that nurse educators give special attention to those who need support and missed their theoretical classes. Finally, the researcher recommends that providing pre-clinical orientation for the readiness of the students (small visits to the wards prior the placements, etc), planning of the activities to strengthen the instructor-student communication, and informing the clinical staff (especially clinical nurses) about learning objectives may be proposed are very important to build clinical competence.

Authors' Contributions

Abeer Yahia Mahdy carried out the paper's conception, analysis, and interpretation of data and drafted the paper.

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