



Review Article

Medication Competence: A Concept Analysis

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ABSTRACT

Concept analysis means clarifying the meaning of concepts for diverse reasons. Concepts are the fundamental building blocks of theory construction. Hence, it is crucial to have solid and reliable notions. Therefore, concept analysis is a good starting point for learning how to think logically in relation to terms, definitions, and uses in theory development. Hence, the purpose of the paper is to perform a detailed concept analysis on medication competence in the context of nursing. Also, to develop a precise description of the concept for use in research and to enhance its usage and communication in healthcare. For this paper, the Walker and Avant concept analysis approach was used to create a thorough knowledge of the phenomenon medication competence. The literature review was performed from different electronic databases such as Google Scholar, PubMed, PubMed Central and PakMediNet. For the literature search, different keywords were used such as: medication competence, medication management, medication skills, medication safety, nurses, and student nurses. Results: defining attributes were found: knowledge, skills, and attitude. Antecedents for medication competence are proper training, work experience, motivation, critical thinking, pharmacovigilant, proper dose formulation, and self-confidence. Consequences for medication competence were highlighted as the accuracy of medication calculation skills, prevention of medication errors, and improved patient outcomes by maintaining patient safety practices. Additionally, nurses can use medication competence to build interprofessional collaboration, communication, leadership, and delegation skills. Additionally, it is believed that this analysis would provide insight to the nurses and other healthcare personnel as a strong foundation for clinical practice research, and theory development.

INTRODUCTION

Medication competence is a significant element of the healthcare system to uphold the safety of patients. However, adverse drug reactions are also a major health-related problem leading to unusual patient harm. Medication competence among nurses is essential to maintaining patient safety [1, 2]. Medication competence is interchangeable with drug safety or pharmacovigilance. Pharmacovigilance is "the science and activities relating to the detection, assessment, understanding, and prevention of adverse effects or any other possible drug-related problems" [3]. Similarly, 'medication competence' is a complex term that combines knowledge, skills, attitudes, values, and performance. Medication administration is the

last stage of the medication process, and nurses play a pivotal role during the administration phase [4]. The Joint Commission emphasizes improving patient safety at all stages [5]. In the complicated and multifaceted healthcare system, nurses are considered the front lines of administering medications and are frequently seen as the patient's protector to prevent drug mishaps [6]. It is reported that nurses spend almost 40% of their duty time on medication administration [7]. A research study established an association between medication competencies and nursing skills in managing medications and maintaining patient safety [8]. However, the concept of medication competence is not fully understood yet in the

perspective of nursing. Hence, this concept paper followed the eight steps guideline of Walker and Avant [9]. Thus, this analysis might help nurses to deliver better patient-centre care with the collaboration of other professionals. As a result, it will help for better patients' outcome.

First Step	Select a concept
Second Step	Determine the purpose of the analysis
Third Step	Identify all uses of the concept
Fourth Step	Defining attributes
Fifth Step	Identify a model case
Sixth Step	Identify borderline, related, and contrary cases
Seventh Step	Identify antecedents and consequences
Eighth Step	Define empirical referents

Select a concept

Medication competence is a crucial academic focus to train nurses and other healthcare workers to apply evidence-based care and ensure proper medication administration. Despite that, a high range of 9.4% to 80% of medication administration errors (MAEs) was recorded in Middle East countries [10]. However, the safety of patients is a prime and significant element of the nursing profession. Hence, nurses and other health-related workers should be competent enough to prevent such blunders of medication-related errors. Therefore, the concept of medication competence is most important for healthcare professionals. It is believed that by using this concept analysis as a guide, nurses would be able to better comprehend medication competence and advance their nursing practice.

Determine the purpose of the analysis

The primary purpose of this concept analysis is to define the concept of medication competence and to establish an operational definition of medication competence. Additionally, to determine and clarify the attributes, antecedents, and consequences of the concept of medication competence. Moreover, a comprehensive concept analysis will enhance awareness and proper utilization in the healthcare sectors and in the nursing profession. Most research emphasizes the analysis of medication errors and numerous strategies to improve medication competence to save patients' lives [11].

What's known
Substantial research is being done on the prevalence, contributing factors and reporting barriers of MAEs.
Nurses have a crucial role in providing safe medication administration to patients.
Literature predominately focuses on various strategies to improve patient outcomes and reduce MAEs.
What's new
Medication competence is a complex and multifaceted concept that can significantly impact nursing practice, and patients care. Further clarification of medication competence is needed to comprehend the meaning, definition, antecedents, attributes, and consequences that help delineate this concept from other related terms.
This concept analysis provides a reference for nurses to understand medication competence better and improve nursing practice.
Moreover, it will help nurse researchers to plan further researches to develop and test the medication competence among nurses to improve patients' safety.

Identify all uses of the concept

Extensive literature was reviewed to clarify the concept of medication competence. Moreover, renowned dictionaries like Oxford and Merriam-Webster were also examined to understand the concept better. However, found a separate definition of both words "medication" and "competence" in dictionaries. Literature was searched by famous medical and nursing electronic databases engines such as PubMed, Google Scholar, PakMediNet, and BioMed Central. According to the Merriam-Webster dictionary, 2021 medication is a process of medicating or a medicinal substance. When elaborated further, it is found that it is a chemical substance used to treat illness, lessen pain, and act treating. While, competence means the skills, expertise, and necessary knowledge to carry out a task successfully [12]. According to the Oxford Dictionary, medication is a drug to prevent or treat disease. Competence is possessing the skills, knowledge, or essential ability to complete an action successfully and effectively [13]. The theory or theoretical framework "Benner's Novice to Expert Theory" that appeared most frequently in the literature. According to this theory competent means nurses are quicker and more accurate in identifying trends and the nature of clinical conditions [14]. Also, they can analyse patients' data and concentrate on essential details and trends that could foretell the course of the illness process. Other healthcare professionals have not elaborated on the concept of medication competence, but they have focused on medication safety and medication errors. According to Sulosaari et al., 2011, for medication competence, nurses need a strong command of the eleven items such as communication, interdisciplinary collaboration, information seeking, anatomy and physiology, pharmacology, calculation of medicine, administration of medicine, medication education, documentation, assessment and evaluation, and promoting medication safety as component of patient safety. Further, all eleven competency items joined together in three competence categories: (1) decision-making, (2) theoretical, and (3) practical [15]. Varied healthcare professions have different pharmaceutical processes, but all require the same fundamental skills to maintain patient safety. The capacity to decide wisely and take the right measures for the care of patients based on interdisciplinary cooperation is essential for nurses on the front lines of patient advocacy [16]. The overall analysis found that the concept of medication competence plays a substantial role in healthcare, especially within the nursing profession. Other healthcare professionals have also similarly used the term medication competency globally [17]. For instance, radiologist technicians were instructed to utilize the word theoretical medication competency,

which was considered as a foundation for practical and judgement abilities to maintain patient safety [18]. According to nursing literature, medication competence is defined as a complex combination of knowledge, skills, performance, values, attitudes, and decision-making competence [19]. However, the literature is very limited in elaborating on the definition of medication competence. A research study measured the doctor's pharmacotherapy competency and confidence, which increased with experience [17]. It is also disclosed that the knowledge and attitude related to the rationale use of medicine significantly improved with educational intervention among intern doctors. It means in-service educational sessions, seminars, and workshops for medication competence are important for up-to-date knowledge for the sake of better patients' outcome.

Defining attributes

Based on the literature, three attributes of medication competence are included in this analysis: knowledge, skills, and attitude. (1) knowledge, including awareness regarding medicines like pharmacokinetic (drug absorption, distribution, metabolism, and excretion) and pharmacodynamic (biochemical and physiologic effects of the drug) supported by nursing knowledge; (2) skills, including the ability to calculate proper medication dose [19, 20]. Moreover, perform physical activities in clinical areas such as vital sign checking, physical assessment and administering medication thorough understanding and continuous observation of the patient's condition that is necessary for drug management; (3) attitude, including the feeling for the patient, behavioural factor and respond to effects that can lead to providing high-quality and safe patient care [21]. Hence, considering the literature and attributes, medication competence is defined as a complex combination of knowledge, skills, and attitudes related to medication administration.

Identify a model case

A patient with pneumonia was being cared for by a nurse; during the assessment, the nurse found that the patient needed medicine because of shortness of breath. On that basis, the nurse consults with the doctor to advise some medication for the patient. Hence, the doctor advised Salbutamol solution for nebulization. Before applying nebulization, the nurse checked vital signs, reviewed the entire history, and tried to follow the patient's 10 rights, such as right patient, medication, dose, route, time, education, documentation, refuse, assessment, and evaluation. During the assessment, the nurse noticed the patient's heart rate was almost 130 beats per minute. The nurse recalled that Salbutamol causes tachycardia. Hence, she thought not to apply nebulization with Salbutamol because Salbutamol will cause more tachycardia, and

patients will suffer more. Therefore, the nurse again approached the doctor and got another order based on the tachycardia scenario. Once again, the nurse revised the assessment scene, followed the patient's rights, and applied nebulization. In this scenario, the nurse exemplifies all the characteristics of medication competence, including utilized knowledge, skills, and attitude.

Identify borderline, related, and contrary cases

Borderline case

A pneumonia sufferer was being treated by a nurse; during the assessment, the nurse found that the patient needed medicine because of shortness of breath. On that basis, the nurse consults with the doctor to advise some medication for the patient. Hence, the doctor advised Salbutamol solution for nebulization. Before applying nebulization, the nurse checked vital signs, reviewed the entire history, and tried to follow the patient's 10 rights, such as right patient, medication, dose, route, time, education, documentation, refuse, assessment, and evaluation. During the assessment, the nurse noticed the patient's heart rate was almost 130 beats per minute. The nurse thought that Salbutamol would cause tachycardia. But she documented the heart rate in the patient's file and started nebulization as per the doctor's advice. As the nurse began nebulization, right after 30 minutes, the patient developed chest pain, and the heart rate reached 160 beats per minute. In this case, the nurse demonstrated all but one attribute "attitude" of medication competence not performed.

Contrary case

A nurse was on duty in the medical ward, and a patient's relative came to the nursing counter and said that our patient was suffering from a breathing problem; the nurse told him to inform the doctor. Hence, he consulted with the doctor, and the doctor had written some medicines in the file. After that same relative came toward the nurse and requested to check the doctor's order and start medication. The nurse checked the file and communicated that I am giving medicine for shortness of breath shortly. After a few minutes, the nurse started nebulization as per advised. As the nurse began nebulization, right after 30 minutes, the patient developed chest pain, and the heart rate reached 160 beats per minute. In this instance, however, the nurse failed to exhibit any defining characteristics of medication competence, leading to patient harm.

Related case

A nurse was assigned on duty in the oncology department; during the round, the nurse found that the patient known case of lung cancer exhibited some problems with breathing. Therefore, the patient immediately needed medicine or oxygen support to control the breathing problem. On that basis, the nurse took comprehensive

history and carefully read patients' files. She read the medication chart and found ipratropium nebulization is being advised as needed. Before applying nebulization, she checked vital signs, followed all rights of medication, and applied nebulization with oxygen. As a result, the nurse saved the patient from harm. In this scenario, the nurse represents a concept of medication expertise by dealing with the patient without wasting time; she thoroughly reviewed the patient's file and started oxygen support and medicine to relieve the breath problem.

Identify antecedents and consequences

Antecedents

Antecedents are events that must take place before a concept. There are multiple antecedents found related to medication competence. It is revealed by Sneek in 2016 that proper training, work experience and motivation have been recognized as the primary components for the development of medication competence. Additionally, other studies found that critical thinking, pharmacovigilant, proper dose formulation, and self-confidence are the foundational elements for the development of medication competence [1, 2, 22, 23].

Consequences

According to Walker and Avant (2011), consequences result from the concept's happening. A literature review on medication competence was carried out to clarify the consequences. According to research, medication competence enhanced the accuracy of medication calculation and numeracy skills and helped to prevent medication errors [24]. The authors revealed that medication competence would improve patient outcomes by maintaining patient safety practices [22]. Furthermore, nurses can use medication competence to build interprofessional collaboration, communication, leadership, and delegation skills [23]. Moreover, medication competence can help to decrease the gap between theoretical, practical and decision-making competence. It ultimately reduces mortality, morbidity, hospital stay, and cost.

Define Empirical Referents

As per Walker and Avant, it is the last part of the concept analysis to disclose the empirical referents for defining attributes. For the attribute of knowledge, empirical referent would include self-report assessment, interview-based questionnaire, and in-depth interviews may also be conducted. In addition, direct observation may be undertaken during patient assessment and medication administration. For the attribute of skills, empirical referent would include questions and observations on accurate calculations of medication, efficient information technology use, clinical judgment, proper medication

administration skills, and clear documentation. Regarding attitude, attitude can be measured by observation/observing actions, including professional behaviours, caring, compassion, responsibility, accountability, and collaboration with patients, families, and other healthcare team members.

CONCLUSIONS

This concept analysis followed the eight steps of Walker and Avant. It clarified the definition of medication competence based on detailed literature. Moreover, defining attributes, antecedents, and outcomes are also identified.

Authors Contribution

Conceptualization: R

Methodology: SU

Formal analysis: SU, AUK

Writing-review and editing: SU, AUK, JK, SA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

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