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Enhancing interprofessional collaboration in medication management: The roles of nurses, pharmacists, health records, emergency services, and cardiology

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***Abstract*---**Background _ Although there is ample data supporting the positive impact of nurse-pharmacist cooperation on clinical health outcomes and cost effectiveness in increasing drug safety among adults in acute care settings, there is a lack of research in community settings. Aim of Work – The objective is to consolidate information and examine the nurse's role in medication management during transitional care. Methods – A comprehensive systematic review was done. A systematic search was conducted in electronic databases comprising PubMed (including Medline), Web of Knowledge, Scopus, and Cinahl, covering the period from January 2010 to April 2021. covered in this study were original qualitative and quantitative research papers published in English that specifically examined the nurse's involvement in managing medications during transitional care. This covered situations when patients moved between short-term, long-term, and community healthcare settings. Results – Through the search method, 10 papers were retrieved. These studies were published in English between the years 2014 and 2021. Their primary emphasis was on the nurse's involvement in managing patients' medications throughout transitional care in different healthcare settings. The review results were presented narratively using three categories devised by the authors, due to differences in the objectives and approaches of the chosen research. Under the area of 'medication reconciliation process', the nurse engaged in activities such as gathering medication history, conducting medication review, identifying medication discrepancies, collaborating on medication reconciliation, and making necessary adjustments. The second category, referred to as 'partnership with other healthcare professionals', emphasizes the nurses'

responsibility in addressing medication-related issues, facilitating multidisciplinary communication and consultation, coordinating discharge plans, and overseeing patient monitoring. Under the area of 'supply of support to healthcare recipients', the nurse's duties included engaging in interpersonal contact with patients, providing education on medications, simplifying medication regimes, and managing symptoms during transitional care. Conclusion – Nurses have a vital role in ensuring the safe handling and administration of medications throughout the transition of care. Consequently, it is essential to provide them authority and increase their participation in medication control programs inside the hospital system. To ensure patient safety and prevent medication mistakes during transitional care, it is crucial for medications management to include teamwork across many disciplines and excellent communication among healthcare personnel.

***Keywords*---**multidisciplinary teamwork, medications management, nurse, patient safety, review, transitional care.

Introduction

Transitional care has gained significance in patient care within the healthcare system as a result of reduced hospital stays and the growing need for post-discharge care [1] Due to the correlation between patient handovers in transitional care and the occurrence of adverse events, transitional care has been recognized as a part of the patient care journey that carries a significant risk [2-4]. Transitional care refers to a series of established methods that aim to guarantee the smooth and organized transition of healthcare services when a patient moves between different levels of care within the same or different healthcare settings.The transmission of vital information and the responsibility for patient care across healthcare institutions is a crucial and indispensable aspect of ensuring quality and safety in healthcare [7,8]. Insufficient patient or caregiver training, incorrect communication among healthcare professionals, inadequate assessment of medication availability, and low health literacy levels are factors that may impede successful transitional care across healthcare settings.As a result, transitional care has emerged as a focal point of study and practice in the field of medical sciences [9].

Transitional Care: Management of Medications and Ensuring Patient Safety

Ensuring patient safety and preventing hospital readmissions requires achieving optimal transitional care between healthcare settings. Research has shown that effective transitional care can reduce the relative risk of readmission within 30 days of discharge by 50% and result in a cost savings of $2 for every $1 spent in the healthcare system. Transitional care programs serve as a bridge between pre-discharge and post-discharge interventions at various points in time. Promoting patient participation, as well as fostering cooperation and communication among healthcare personnel, is promoted throughout the whole healthcare journey, from admission to primary care settings until the patient's discharge back to their own home.

Medicines management is an essential component of the provision of high-quality care and patient safety in transitional care [14]. One of the primary solutions for patient safety from the perspective of the World Health Organization (WHO) is to ensure medication safety in transitional care [15]. Also, medication-related issues have been considered to be substantial components of high-quality care in transitional care, in particular, that the medication regimen be transferred as safely as possible [16,17]. Transitional care programmes can help with reducing medication-related problems, improving access to medication therapy, providing comprehensive medication counselling, and bridging gaps in medication care following hospital discharge [10]. However, patients in transitional care between healthcare settings are prone to medication errors due to the lack of appropriate communication between healthcare providers, insufficient education and training, inappropriate follow-up, inadequate medication reconciliation, and lack of engagement of patients and their family caregivers in medicines management [18]. Preventable adverse drug events in transitional care account for 46%–56% of all medication errors [19]. A systematic review reported that 11%-59% of the medication history errors at admission and discharge had the potential to harm the patient [20]. Redmond et al [21] in a Cochrane review on 20 studies reported that 559 out of 1000 patients were at the risk of one or more medication discrepancies during standard transitional care programmes. Points of care transition in the healthcare system that pose a risk of medication-related harm to patients include the transition from hospital to home, admission to the hospital, hospital admission, transfer, and discharge, discharge from the hospital, post-discharge, and admission to the emergency department.

Effective medicines management is a complex undertaking in both short-term and long-term healthcare settings including hospitals and nursing homes and requires collaboration by healthcare providers such as nurses, physicians and pharmacists to maximize positive healthcare consequences and to minimize practice errors [14]. Medicines management is one of the most complex interdependent clinical challenges in health care and each healthcare provider involved in transitional care has independent, joint and overlapping responsibilities [27, 28]. Nurses are considered to be key members of the transitional care team [29,30]. Their crucial role encompasses evaluating the transitional care plan, recognizing potential problems and then resolving them in order to improve patient safety [31]. Involvement of nurses in medicines management of transitional care helps with the provision of access to care for patients with fragmented care or those at high risk of readmission. It has been proposed that their job serves as a substitute for emergency services by enhancing the efficiency of referring doctors and facilitating the transition of care back to community healthcare providers via patient education and medication self-management [32].

Aim of the Work

Although nurse engagement in medication practice safety and transitional care success are crucial, there is currently no comprehensive understanding of the nurse's role in managing medications during transitional care in the global literature. This systematic review of the worldwide literature seeks to determine the specific responsibilities and contributions of nurses in the administration of

medications during transitional care. This research sought to consolidate information and examine the nurse's role in managing medications during transitional care.

Methodology

In order to choose suitable keywords, the study team engaged in internal talks and relied on their expertise in the areas of transitional care and medications management. In addition, they performed a preliminary search in both broad and specific databases to identify pertinent terms. The papers on the nurse's role in medicines management during transitional care were identified using the Boolean search method. The search was conducted using the keywords: nurs* AND (participation OR involvement OR engagement OR role) AND ("transitional care" OR "transition of care" OR "care transition" OR "healthcare transition" OR "continuity of patient care") AND ("medicines management" OR medication OR medicines OR drug OR "pharmaceutical preparations" OR pharmaceuticals). Assistance and assistance were provided by a knowledgeable librarian throughout the process of searching. Consequently, we conducted a comprehensive search of online databases such as PubMed (including Medline), Web of Knowledge, Scopus, and Cinahl to identify articles published in online peer-reviewed scientific journals between January 2010 and April 2020. The grey literature search included examining policy papers, clinical recommendations, and cross-referencing bibliographies to enhance the comprehensiveness of the search. The inclusion criteria for selecting relevant studies were as follows: the studies had to be both qualitative and quantitative, with a focus on the role of the nurse in managing medicines during transitional care in short-term and long-term healthcare settings, as well as community healthcare settings. Additionally, the studies had to be published in peer-reviewed scientific journals. Articles that did not have direct connection to the nurse's work or focus on the function of other healthcare professionals engaged in medications management were omitted.

Analysis of the chosen studies reveals a shift towards point-of-care testing

The chosen studies examined the management of medications during the transfer of patients between different healthcare settings. These settings include the emergency department to the medical ward, the hospital to long-term care facilities and home, the hospital to home, different wards within the hospital, the skilled nursing facility to home, admission to discharge at the hospital, the emergency department to discharge, home hospice, and nursing homes.

The role of nurse in managing medications throughout the transition of care

Due to variations in the methodology, aims, and outcomes of the investigations, a meta-analysis was not possible. Therefore, our review findings were given in a narrative format. Three distinct areas were found regarding the nurse's involvement in ensuring the safety of medication management during transitional care. These categories include the "medication reconciliation process," "collaboration with other healthcare providers," and "provision of support to healthcare recipients." The identification of these groups was based on an examination of the data from the investigations, as shown in Figure 1.

Process of Medication Reconciliation

This topic explores the nurse's involvement in assessing medications during transitional care across different healthcare settings. Nurses were shown to have a vital role in medicines management by conducting the reconciliation process, which involves assessing an accurate list of a patient's current medications and comparing it with the current list being used. The nurses were assigned three primary duties, namely "evaluating the patient's medication history," "detecting any inconsistencies in medication," and "participating in the process of reconciling medications." These obligations were defined as follows.

Evaluation of Medication History

During the admission process to healthcare centers or during the transition between healthcare levels, nurses were responsible for gathering medication history from patients. Chhabra et al [39] observed that clinical nurses played a role in the medication reconciliation process upon admission. Therefore, emergency nurses gathered information on the patient's medication history, while admitting floor nurses obtained more details and sent a medication reconciliation report to the admitting doctors. The average duration of time that admitting floor nurses spent gathering medication history before putting admission orders was 11 minutes, whereas after placing admission orders it was 16.6 minutes. Although there was no significant difference in the mean time spent, the time spent per medicine after issuing admission orders (2 minutes) was greater than before it (0.94 minute). In the study conducted by Chan et al. [46], nurses were responsible for obtaining accurate medication history and performing medication reconciliation for patients admitted to the cardiology ward, critical care unit, or those transferred between wards.

Medication Discrepancy Identification

The tasks of nurses include reviewing drugs comprehensively, gathering information to discover prescription discrepancies, and providing pharmaceutical assistance and deprescribing processes. In Lovelace et al.'s transitional care plan, the case management nurse conducted an initial evaluation and thorough medication review either during the first home visit or via a follow-up phone call following the patient's departure from the hospital. The nurse practitioner who treats patients outside of the hospital worked together with the nurse responsible for coordinating patient care during visits to their homes. The prescriptions were evaluated based on the evaluation given by the case management nurse. Adjustments were made and drug renewals were requested if the case management nurse encountered challenges in accessing primary healthcare doctors. Prusaczyk et al. [42] discussed the provision of transitional care to older adults, both with and without dementia, during the transition from the hospital to long-term care facilities and home. They observed that registered nurses were able to safely administer medication to 99% of patients, while advanced practice registered nurses were able to do so for 37% of patients. Advanced practice registered nurses were characterized as having a significant role in doing medication review and medication reconciliation.

The research conducted by Tjia et al. focused on exploring the viewpoints of nurses on their involvement in assisting family caregivers with medication management and providing support throughout the transition to home hospice care. Nurses saw medication review as an essential element of medication assistance and the deprescribing process. The nurse's duty involved reviewing the medication roster to identify necessary and unnecessary drugs, explaining their purpose to the family caregiver, and consulting with the physician to obtain advice on discontinuing unnecessary medications in order to avoid side effects, adverse drug reactions (ADRs), and polypharmacy. Prior to making any decisions on modifications to crucial medications, the nurse would diligently oversee the medication regimen of the patient and the family caregiver.

Vogelsmeier [45] found that nurses in nursing homes played a crucial role in conducting medication reconciliations. They were responsible for evaluating medication history and identifying any inconsistencies in prescription orders throughout the transfer to nursing homes. Several nurses engaged in "active information seeking" by examining transfer documentation and engaging in discussions with residents and family to get a comprehensive understanding of medication history and the rationale behind medication orders. Some individuals engaged in "passive information seeking" by assuming that medicine orders during transfers were accurate. They believed that time constraints and excessive workloads made it difficult to identify anomalies in medication orders. A significant number of nurses actively participated in the cognitive process known as "sense-making," in which they attempted to find disparities in medicines. Regarding this matter, signals such as rules/regulations, particular prescriptions, and the occurrence of mistakes and adverse effects were factors to be taken into account when considering any inconsistencies.

Collaborative Responsibility in Medication Reconciliation

In the research conducted by Otsuka et al. [41], nurses who were part of interprofessional post-acute care clinics were responsible for managing medications for patients who were discharged from the hospital and returned to their own homes. The medication reconciliation procedure was initiated by evaluating the patients' ability to complete their new prescriptions. This was done by making telephone calls to the patient or their caregiver within two working days after discharge.

According to Al-Hashar et al. [47], nurses play a supporting role in collaborating with pharmacists and doctors to ensure accurate medication reconciliation throughout a patient's hospital stay, from admission to discharge. Nurses rank themselves second only to physicians in medication reconciliation due to their ability to: gather a precise medication history upon admission, confirm and resolve any inconsistencies between the medication history list, the medications ordered upon admission and during transitions, and transmit the discharge medication list to the subsequent healthcare provider. Nurses said that they ranked second only to pharmacists in providing information and counseling to patients about drugs following their release. Pharmacists consider the nurses' participation in medication reconciliation to be less significant compared to that of pharmacists and doctors. This is because nurses are not responsible for

providing the patients' discharge medication list to the next healthcare provider. Physicians observed that the nurse has a supporting role in the medication reconciliation process, with the primary responsibilities falling on themselves and the pharmacist in transitional care.

Cooperation with Other Healthcare Providers

This category delineates the nurse's responsibility in overseeing the administration of medications throughout the transitional care process across different healthcare settings, while working in conjunction with other healthcare professionals. The research conducted by Manias et al. [48] examined communication about medications management throughout the transition from emergency departments to medical wards. The study found that nurses in medical wards took a proactive approach by addressing concerns about medicines with physicians. The nurses in the medical ward assessed the clinical parameters of patients who were moved from the emergency department and informed physicians about the obtained information, which resulted in appropriate modifications to the medication. Upon the patient's transfer to the nursing home, the nurses subsequently coordinated the modification of medications by contacting the general practitioner by telephone [48].

Healthcare professionals, including nurses, physicians, and pharmacists, used different types of communication, both synchronous and asynchronous, to collaborate and manage medications during transitions of care. Nurses believed that verbal communication was crucial for quickly providing appropriate care, but they also recognized the value of asynchronous communication, such as discharge summaries and referral letters. Precise and clear documentation of communication content was crucial to ensure accuracy and readability, hence preventing prescription inconsistencies throughout transitions of care. Nurses recognized the need of written communication in order to confront the demands of a rapidly evolving workplace [48].

In the research conducted by Lovelace et al. [40], some patients were sent to nursing homes for temporary rehabilitation after being discharged from the hospital. This decision was made in accordance with the transitional care program that was developed. The pharmacist reached out to the nursing home to get a roster of drugs prescribed upon discharge. Subsequently, the pharmacist sent the list and relevant details to the case management nurse, who then called the patients or their caregiver to arrange a visit to their residence. After doing a home visit, case management nurses will inform the transition care program team and the patients' main care physician and care manager about any inconsistencies in medication. The case management nurse would also work along with a pharmacist to create an accurate discharge medication plan, including necessary modifications to the print size for patients with poor vision.

In Vogelsmeier's [45] study, it was discovered that nursing home doctors depended on the nurse's knowledge and suggestions to determine the prescriptions that the resident should be taking. This reliance was due to the fact that the physicians exclusively offered treatment to residents inside the nursing home setting. The doctors had little knowledge of the residents' medical treatment

before they were transferred. They seldom spoke with other healthcare professionals and were not present during the transfer. Consequently, nurses were the primary providers of information on the management of medications and would ask the physician to conduct necessary evaluations and examine laboratory results. Prior to prescribing medication, the nurse would confer with the physician.

Reidt et al. [43] examined a model of interprofessional cooperation that enhanced the process of transitioning patients from a skilled nursing facility to their homes. Nurses assumed the primary responsibility for discharge planning from the skilled care facility. Prior to discharge, the pharmacist would examine the electronic health record to assess the dietary supplement prescriptions and over-the-counter medications in terms of their purpose, effectiveness, and safety. The pharmacist would also verify that any changes made to the medications during the hospital and skilled nursing facility stays were still suitable. The pharmacist addressed unexplained changes by collaborating with the nurse practitioner and providing advice, such as initiating or discontinuing medications, modifying dosages, or ensuring that appropriate laboratory tests were obtained for the discharge medication plan. Furthermore, the pharmacist and nurse together established the drug plan for discharge. In addition, the nurse supervised the adverse effects of certain medications and provided patients with reminders about their follow-up visits.

Provision of assistance to those receiving healthcare

This category focuses on the nurses' role in providing help to healthcare receivers in managing medications throughout transitional care across different levels of healthcare. Tjia et al. [44] investigated the viewpoints of nurses on their involvement in assisting family caregivers with medication management and providing support throughout the transition to home hospice. Nurses offered instruction and training to family caregivers, with a focus on enhancing their understanding and expertise in relation to symptoms. In order to facilitate the development of skills, their emphasis was placed on managing symptoms rather than organizing and administering medications. To simplify the medication regimen for patients and family caregivers, nurses eliminated unnecessary medications. This helped to build trust and improve communication by showing attentiveness to patients and their caregivers, and by understanding the concerns of family members involved in caregiving when reducing the number of prescribed medications.

Prusaczyk et al. [42] assessed the effectiveness of transitional care treatments delivered by different healthcare providers to older persons, both with and without dementia, throughout the transition from the hospital to long-term care facilities and home. Nurses were the main caregivers responsible for instructing patients on medicine use and teaching them how to handle and supervise symptoms after their release. Experienced registered nurses with advanced skills also assisted in providing information on the treatment and monitoring of symptoms. The Al-Hashar et al [47] research highlighted the significant contribution of nurses in providing instructions and counseling to patients on medication following their discharge. In their study, Manias et al. [48] emphasized

that effective interpersonal communication between healthcare workers, particularly nurses, and patients is crucial for ensuring drug safety. The provision of medication instructions for patients throughout their transition between their homes and the hospital enabled patients to have a more proactive role in the management of their medications.

Conclusion

This research specifically examined the responsibilities of nurses in managing medications during transitional care and assessed its effects on patient safety. The study used both qualitative and quantitative research results using an integrated review approach to provide a thorough understanding of the investigated phenomena. Proper emphasis should be placed on degree-level education and in-service training for nurses, given their crucial role in medications management throughout the transitional care phase. Efficient administration of medications and the prevention of pharmaceutical mistakes need the acknowledgment of duties and positions, as well as a collaborative and communicative approach across different healthcare disciplines, such as nurses, physicians, and pharmacists. Healthcare professionals engage in multidisciplinary cooperation and communication to jointly share goals, demonstrate shared responsibility and authority, make choices collaboratively, and collaborate to enhance drug safety during transitional care. Furthermore, it is crucial for health professionals to acknowledge the nurse's responsibility in medications management in order to guarantee the safety of medication during transitional care. Future research should investigate how nurses can play a more active role in managing medications during transitional care. This research should use both qualitative and quantitative methods to examine the impact on patient care outcomes, such as medication adherence, emergency department visits, and readmission rates to long-term healthcare facilities.

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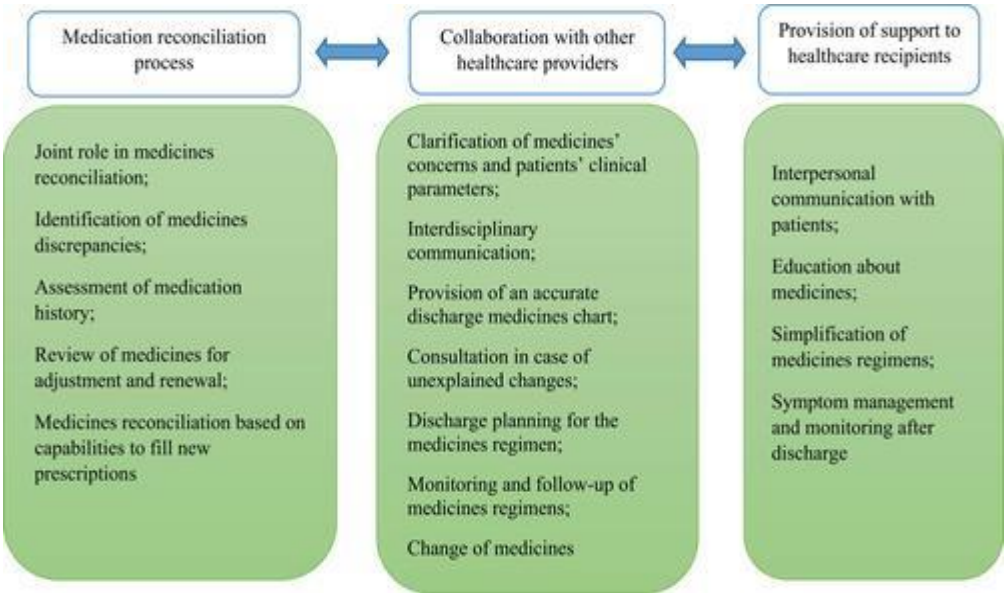

Figure 1. The nurse's involvement in the management of medications during transitional care.