LAB University of Applied Sciences

MEDICATION MANAGEMENT SKILLS

Descriptive literature review

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Abstract

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Medication management is a crucial skill for healthcare providers, which requires a lot of clinical knowledge and practice in order to achieve medication safety as an integral aspect of patient safety. Nursing professional play a significant role in patient's medication process with the aim to bring evidence-based approaches to provide patient with better, safer and more comfortable care.

The thesis aim is to discover and clarifying the definition of medication management.

The purpose of this thesis is to promote awareness of nursing student about medication management, which is especially beneficial for junior and senior nursing students.

This thesis use descriptive literature review, focus on using available resources on PubMed, EBSCO and LAB Primo with inclusion and exclusion based on year, language, type of text, keywords and topics relation to nursing. After that the data collected were analysis by inductive qualitative method.

This thesis is a small insight about medication management, a clarification that especially beneficial for nursing student to understand more about medication management.

Keywords
Medication management, Medication safety, Nursing student, Nursing, Medication

Contents

Appendices

Appendix 1. Selected articles in alphabetic, order by author(s), title and purpose of publication and main finding.

1 Introduction

Medication management is a crucial skill that required a lot of understanding and practicing, achieving medication safety as an integral aspect of patient safety. Registered nurses play a significant role in patient medication process with the aim to bring evidence-based approach to providing patient with better care, safer and more convenient care. (Cureatr, 2021).

The topic providing an opportunity to understand and being skilled at medication management for nursing students. It is crucial nursing student to remember and implement medication management as much as possible to ensure a sturdy working life ahead, medication management is a wide skill in which consist of many aspects be taking in consideration while practice and it is not a simple matter to be ignore. (Moloney et al. 2020.)

The thesis aim to discover and clarify the importance of nursing medication management process to patients, why it is needed for patient safety, and a clear view for nursing student relations into medication.

2   Theoretical framework

2.1   Medication

The key concepts of this thesis are medication management, medication skills and medication safety.

2.1.1   Medication management

Nursing medication management is a process of nurses, which help patients to understand the necessity of taking medication as prescribed and avoiding adverse effects associated with the treatment due to improper medication uses (Cureatr 2021.)

Medication skills is a set of skills mandatory skills in nursing performance, as registered nurses play a vital role in patient medication treatments and medication administration is unofficially their responsibilities (Luokkamäki et al. 2020, 52).

The implementation of medication safety is concentrate not only on the proper medication uses of patients, but also the errors that occurs in medication management and administration, in order to promote patient care quality as well as guarantee the safety of patient during medication treatments (Anna et al. 2016).

2.1.2   What is medication management?

Throughout the history of healthcare, medicines hold a crucial role in curing and preventing further develop of sickness, bacteria or even virus. Nowadays science makes it way through modern society and bringing along its many benefits in life and in healthcare, nowadays medication brings solution to cure and prevent most of the diseases in the history of humanity and facing new challenges as the society develops. But there are two side of every coin, beside the usefulness and powerfulness of modern medication come with its own problems, addiction, drugs abuse and mistakes, accidently happen during the care for patient could lead to the worst consequences. (Austin 2017.)

In addition, medication management or medicines management is a technic, or a system consist of many steps, can be considerate as a solution for modern problems that requiring the skills, knowledge, and precise judgment to ensuring the safety of medication uses and improving healthcare quality. (Austin 2017.)

In the light of this, medication management can be established by a set of combination between key skills like: problem solving, critical thinking and personal knowledge with evidence based. Problem solving skill is a reflex of thinking, when the problem occurs a set of

questions about patient information (vitals signs, allergies, and medication), and the solution to these problems. Critical thinking is the most important skill of nursing clinical performances, which requires evidence-based knowledge combining with the information retrieve from accessing patient information (patient profile, interviewing patient, observing and assessment from charts and tools…) and finally combining it with working experiences, an achievement from learning, strong and sturdy foundation of evidence-based knowledge and practice experiences. (Rassool 2007, 204.)

This definition means that medication plays a key role in the process of patient treatment and recovery as well as the complication factor when using incorrectly can cause serious harm. (Rassool 2007, 206.)

2.1.3   What is the purpose of medication management?

Medication management has been delineated as the implication of safe and effective use of prescription, and over-the-counter medicinal products. This definition confirms the dangerous of medication, both prescribed and over the counter that could lead to a numerous case of harm especially in geriatric and mental ward. (Rassool, 2007, 201-203.)

Medicines or drugs are from chemical components, which will cause a series of chemical reaction inside the body to control the homeostasis function of organs and neurological system to improve patient's condition or release pains inside patient's body. This could be considered as a good sign, but there are also adverse drug events and reactions, or even medical errors when administrate incorrectly and inappropriately to be taken into consideration. (Sandars & Cook 2007, 12.)

As a result, medication management was created as a clinical process based on evidence-based knowledge and practice. Medication management is used by health care systems world-wide with the purpose of preventing these adverse effects and errors from happening, as well as improving and adapting to create a better care quality for patients. By following the guidelines, engaging the problems with evidence-based solutions, healthcare professionals are responsible for ensuring that patients will receive accessible to high-quality and up-to-date medication information. Therefore, this is not only a solution for patient's medication safety but also an education for nurse, improving their own knowledge, their communication skills and patient orientate in building relationship with customer. (WHO, 2019, 30-33.)

2.2 The roles of a Registered Nurse and a nursing student in medication management?

According to Sandar & Cook (2007, 14-15), the role of nurses in healthcare is to alleviate pain and suffering of patients. Moreover, the bigger aspect of nursing is to maintain patient safety, which includes medication management, administration and patient education. (Sandars & Cook 2007, 14-15.)

This does not mean all the responsibilities are placed on nurse's shoulder, but it is nurse's responsibility to encourage all the personnel and professional staff participating in care delivery for patients including doctors and pharmacists. The role of nurses in medication administration is crucial but does not conclude everything. The nurse is tackling and handling orders from doctor, checking and ensuring everything is in order, providing patient with knowledge when it comes to medication treatments. Alongside, the nurse is responsible for ensuring, observing, and making notes when delivering medicines. This ensures the first step in the process of patient safety regarding to medication, by safeguard medication administration to the correct patient (questioning name, checking on patient wristband…). Monitoring patient before and after administrating medicines is part of nurse's responsibilities (checking for any symptoms or adverse effects…), writing down everything that happens during the care and medication administration, correcting and reporting when there is mistake happen during the care. But most importantly, a Registered nurse always takes a responsibility on self-mistake, honest, fair, and ethical. (Butts & Rich 2020, 68-69, 72.)

For nursing students, especially in self-experiences, by ensuring correct patient in administrating medication, following scientific guideline and supervisor guidance to ensure safety for clients. For more experienced nursing students, it is important to remember hands hygiene to reduce unnecessary risks toward patient safety, setting questions and seeking for answers to prevent unclear instructions. Expert at patient risk management is some of the best way to avoiding mistakes from happen as well as to perform smooth and knowledgeable practice. (Austin 2017).

2.3 Safety in medication management

With the growing reliance on medication therapy, patients who receive medication treatment are vulnerable to potential harms from medication errors. Drug management is the key concept to prevent mistakes from happening. The most common error in drug management is medication errors. Medication errors include wrong medication administration, wrong use of medication, wrong doses or even wrong patient. To avoid those problems, a systematic process was created to ensure the process from the phase of medication preparation to

ensure the correct amount, the right patient and how the medication is properly adminis-
trated work inside patient's body. This system works based on a two-failsafe step, which
ensure the correct amount of medication go to the right patient and further develop using
technology, a firm grip upon medication management that will ensure patient safety and
avoid mediation complication in the future (Hughes & Blegen. 2008).

3   Thesis aim, purpose, and research questions

The thesis aim to explore and clarify the importance of nursing medication management process to patients, why it is needed for patient safety, and a clear view for nursing student relations into medication.

The purpose of this thesis is to use literature review clarifying the definition of medication management, why it is needed for patient safety in medication treatment, and a clear view for nursing student relations into medication.

The research questions are:

1. What is Medication Management?

2. What is the purpose of Medication Management?

3. What are the roles of a nurse and nursing student in medication management?

4   Methodology

4.1   Literature review method

This thesis is conducted by a method of literature review, which focuses on using available resources like scientific, evidence-based materials as well as on answering research questions regarding the topic of medication management. Moreover, inductive content analysis is used in the phase of data analysis, which is appropriate with this literature review. (Aveyard, 2014).

By summarizing scientific articles gathered from different topics and using them to create a better vision about medication management, there is an increase in the variety of healthcare-related topics and medication is always worthy to discuss about. Therefore, making a literature review thesis will pose as a small guide, for a nursing student to get a better view about the complication world of medication. (Aveyard 2014, 1.)

According to Cooper et al. (2018), data collecting and analysing is considered as a crucial component of a literature review, based on the concept of finding key words, which focuses solely on the main topic to identify and seek for answering to the research questions. (Cooper et al. 2018.)

The process of making a literature review consists of choosing the topic for thesis while forming thesis questions the related to the main topic, after searching and selecting data from various sources, the qualitative data is chosen based on scientific researches related to nursing study. After analysis of the collected data, a conclusion and discussion will be made to summarize the process of both making and seeking for the answers of the thesis questions. (Leite et al. 2019.)

4.2   Inclusion and exclusion criteria

In the process of searching data, there is a wide variety of data can be found online, so the inclusion and exclusion system come to term to increasing the effective of data collection. (Patino & Ferreira 2018)

Inclusion	Exclusion
Publications within 10 years	Publication before 2011
Languages: English	Non-English topics
Full-text body	Abstract only

Relevant study	Non-relevant study
Related to Nursing field	Non-nursing field
Based on keywords used	Duplicated articles

Table 1: Data searching inclusion and exclusion

Diving deep into the big sea of available knowledge, topic key word covering a huge amount of topics, and to further narrowing down the search by using related keywords resulted in lesser related diverse topics found than using only the main key words. The narrowing down key words were used with provided database and the mention year limit from 2011 to 2021. The result amount while searched across different platforms is monumental, medication management is a big topic ranged from different wards to many other topics, but to narrow down, the material uses in this thesis will focus on answering the thesis questions and other topic related to self-experiences on ward practice.

4.3   Data collecting and research

The data collecting process was operated by using the databases through computerized simple searching for terms and keywords, which are related or based on the thesis questions while under strict searching using inclusion and exclusion criteria. The searching terms include "medication management", "medication safety" and "nursing student".

The data searching process was conducted on four main databases like: Emerald, PubMed, EBSCO, and LAB primo. The purpose of using multiple databases is to improve the diversity of materials. The database use in searching is known for its reliability and validity nursing related research.

Keyword(s)	Databases	Finding	Finding based on abstract	Chosen article(s)
Medication management OR **Medication Safety** AND **Nursing Students**	EMERALD	188	2	2
Medication management AND **Medication Safety** AND **Nursing Students**	PubMed	153	2	2

Medication management OR **Medication Safety** AND **Nursing Students**	EBSCO CINAHL	6378	4	4
Medication practice AND **Nursing students**	LAB Primo (CINAHL collection)	4061	2	0
Medication education AND **Nursing students**	PubMed	1032	3	0
Medication safety AND **Nursing students**	PubMed	151	5	5
Medication errors prevention AND **Nursing students**	PubMed	22	2	2

Table 2: Data searching and collecting

The articles were chosen based on the content providing in abstract related to topic of this thesis. Even though the searching process produce more than 10 000 result, only fifteen article was related to the topic of this thesis and was separated for further screening in data analysis. The articles choosing methods is based on their titles and reviewer reading through abstracts to find similarity and relation to topic.

After screening throughout the chosen articles, a total of five topics was used to analysis and discuss further. The screening processes eliminate duplicate and un-related topic due to lacking information in the body of the topic despite mention in abstract. Altogether five articles were chosen to this thesis (see appendix 1)
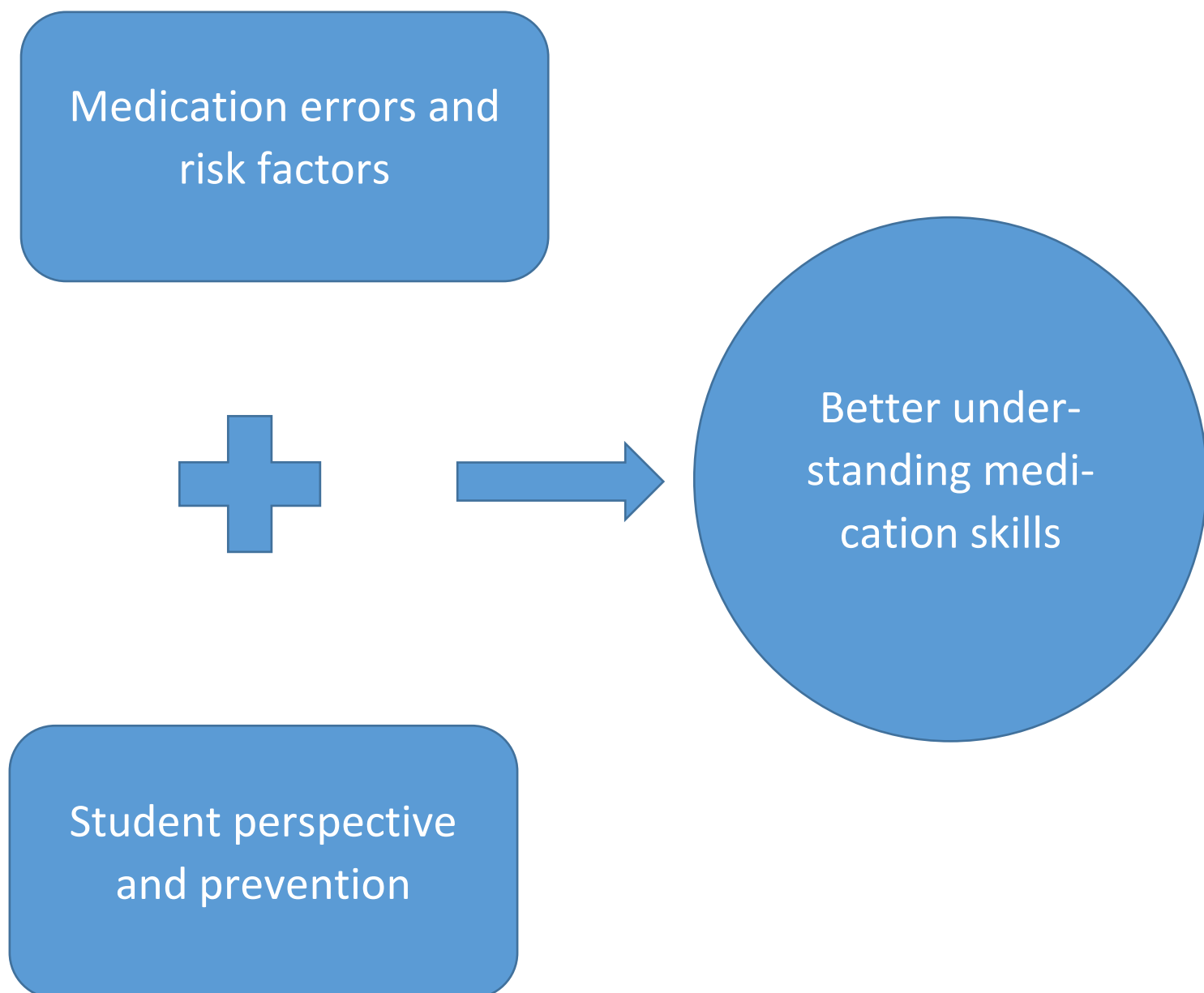
4.4 Data analysis

An inductive content analysis was used to analysis the chosen topics. Inductive content analysis is a qualitative method used to develop content based on finding and research from article and verbal contents (CHRON, 2021).

Inductive content analysis is a good method to demonstrate the finding in study process as it provides the tool to implement the contents found in a variety of materials, by using this

method, it makes it easy to understand the finding and easier to understand the content is about (CHRON, 2021).

The screening process was done, two subthemes come from five topic, that focus on how medication errors in practice and how it effects the student or study (practice) process. The main point of each topic with be display in the result. A figure was made to illustrate the subthemes that will be focusing on.

Figure 1: A better understanding in medication skills by reviewing medication errors through nursing student practice and prevention.

Medication errors and risk factors

Student perspective and prevention

Better under-standing medi-cation skills

5   Result

Follow the finding in five articles chosen, this chapter will be focus on two sub-themes in Figure one, to find the answers for final questions about nursing student's role in medication management and how to prevent errors from happening and improve the quality of care for patients.

5.1   Medication errors and risk factors

When administrating medication, it is impossible to say that there will not be any mistake. No matter how big or small the factor causing it is, there is one thing to be sure that the safety of patient is on thin ice and as a nursing student about to graduate, it is important to look back, identify the problem that healthcare professional is facing and fortifier the foundation before it crumbles (Gorgich et al, 2016).

According to Gorgich (et al, 2016), the most common mistake was made by students while practicing in medical ward was calculation errors, lacking pharmacological knowledge, unable to follow medical orders, distraction, and stress from emergency. Also, mention in the same article, it is possible that students, who are lacking of tutorial in their practical placement, can cause a serious misunderstanding due to the high workload place heavily on nurse shoulders that led to mistakes to happen. Research was conducted to further identify the problem that nursing student is facing, the result reported that not paying attention in the detail of medication prescription and medication calculation errors have highest percentage of them all (Gorgich et al. 2016).

While the first paragraph mentions that errors mostly come from the students itself and focuses more on identifying the problems that student are having, then in the article of Cancino et al. (2020) mentioned that factor causing medical errors place on nurse and the ability to provide guidance for nursing students. In this article it says that poorly learning and ingrained practicing are the causes to begin with. Without proper guidance of problem identification, students are making more mistakes than the one, who have a good guidance during professional practice (Cancino et al, 2020.)

In the article written by Sulosaari (et al, 2015) stated that learning environment plays an important role in nursing student and opportunities to practice is the lacking factor causing more problems to happen. Since students do not get enough practice time and the age factor could cause student to struggle to medication calculation that led to errors from happening. (Sulosaari et al. 2015.)

This researchs show that a sturdy foundation in medication safety, plays an important role in the study and practice process of nursing students. These mistakes are easily missed and have a huge impact on the future of nursing practice. Mistakes can be improved and fortify to create a better learning environment and learning experiences. In the next part of this thesis will be focusing on the prevention as well as student perspectives on medication errors.

5.2   Student perspective and prevention

According to Nabilou (et al, 2015), student perspectives on medication errors was familiar as an unavoidable obstacle, where patient safety sets to be a crucial and top priority. Nursing students to be believe that there is a gap between theoretical and practical knowledge in patient safety concerning drug management. In student perspective, the best solution to prevent medication errors is to create a better practice environment, an error-reporting system that help identify the problems, mistakes and to improve.

In the same article, a group of students went through a survey and agreed upon a conclusion that filling the knowledge gap and errors recognizing process will help improve the equalization of medical treatment. By using an effective strategy to indicate the lack of understanding in the complex of treatment and mediation system, by further develop and providing patient with proper instruction of safe care, error management is the best way to improve safety in patient care and medication management. (Nabilou et al. 2015.)

A new learning system call 4C/ID was created to help students understand better in medication education, the system focuses on procedural information in a form of a checklist. This checklist then acts as an instruction guiding step that help students further understand of the safe drug delivering skills. The checklist is infused with the aspect of patient safety and medication-safety. This is a useful and supportive system that help student in implementation and processing information from practice of administrate drugs safely (Musharyanti et al. 2021.)

6   Discussion

6.1   Discussion of the result

As a result, this literature is clear to see from various sources of information all focus on the important of correct medication usage and medication safety in healthcare delivering. Understanding that medication management is not only a concept of definition but also is a skill based on evidenced based practice requiring a lot of communication, self-familiar with the effect of medicines and administration techniques. This thesis provides an insight about medication system, advising on how to administrate and prepare patients for medical treatment, a base knowledge that simplified a complex problem so that it is easier for nursing students to understand. Also, this thesis is providing a view into what nursing students and nurses struggle in understanding the concept of medication safety and their own perspective on the same topic. (Gorgich et al, 2016.)

6.2   Discussion of the thesis process

Throughout the process of drafting this thesis, the hardest part was to find related topics to the main objective of this thesis. While searching for relevant materials, the keywords using for searching was broad, leading to too many widen topics. The results change when narrow down to student perspectives and prevention, which focus more on the group which have medication problems and trying to find solution from within (Nabilou et al, 2015).

This thesis covers a wide topic, that could be considered as one of the biggest problems that healthcare professional worldwide is facing, left alone nursing students. Throughout the search for writing materials, it could be considering time-taking due to the long list of related-topic and even more time consuming to identify and choose topic that concepts the topic of this thesis.

6.3   Thesis validity and reliability

This thesis was written following the literature review as it is impossible to gather information via interview and survey, this thesis uses other sources and materials found online. The use of online material needs to be taken into consideration before using, a list of Inclusion and exclusion was illustrated in *Table 1* to set the limit to article found and used. After choosing articles that fit this thesis interest, a further screening was done to remove the extra duplication and un-related topics, this thesis ensures all the sources were used with zero plagiarism, is committed, and followed LAB University of Applied Science thesis guidelines during the conduction of this thesis.

The reliability of this thesis can be considered simplified, thesis aim was to identify and provide understanding from a nursing student's perspective, and this thesis uses related topics and priority student perspective above all. This thesis understands the struggle that students are facing in medication management and problems, providing a simple view into the big topic. Following the process of making this thesis, writer worked hand in hand with language teacher and thesis instructor, to ensure the correct form and guidelines were applied and used. The finding in the result will be illustrated in the discussion as part of finding and understand process (Aveyard, 2014).

7 Conclusion

The finding in this thesis answers all the question set out in the beginning of the making process. This thesis is a small insight about medication management, understanding the definition by further investigate into identify medication management, its own purpose and what kind of danger does it pose to patient.

Medication management is a complex system, providing patient with medical treatment, along site with its benefit is the threat of addiction, overdose and patient safety is on the line. The topic set out and identifying the problem that healthcare workers are facing and preventing which illustrate in the safety aspect of medication treatment. To help nursing student and nurse further understand the situation, this thesis discusses the relationship of nursing student by identify two sub-themes that help improve better understand in medication management (Gorgich et al, 2015.)

By identify the problem that nursing student are facing, writer identify medication errors under student perspective. Nursing students are making mistake in medication administrating are not the only problem, the working environment and lack of understanding of medication create a frail foundation that crumble when using in practice. In the second sub-theme, the problem was identified, and nursing student perspective was taken into considerate to provide with prevention. (Sulosaari et al, 2015).

Mediation treatment is a wide topic and come along with-it own problem, nursing student are trying to adaptive into this system require a lot of understand and practice. A good practice environment and clear instruction will improve the quality of medication management practice in hospital. (Nabilou et al, 2015).

8   Suggestion for further studies

This thesis is focusing on nursing students and nursing perspective into the deep and big sea of medication knowledge, this thesis only covers what problem that nursing student are facing and help provide a leam into it. For further studies, this thesis could be used as a foundation to look further into the problem that happen in separative ward and hospital model.

The important finding of this thesis is that not only nursing finds it hard to practice medical treatment but also nurse, who starting to work or new graduate nursing student, find it hard or struggle to work due to the large amount of workload and knowledge pouring in from work that led to many mistakes were made and patient safety was put on the line.

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Appendices

Appendix 1: Selected articles in alphabetic, order by author(s), title and purpose of publication and main finding.

Author(s) Year of publication Name of the journal	Title of publication	Purpose of publication	Main finding
Cancino, D. K., Arias, M., Caballero, E. & Escudero, E. Publication: 2020	Development of a safe drug administration assessment instrument for nursing students	An analysed topic focus on medication errors and an instrument was created to assess safe drug administration for nursing students.	Research shows that some of the reasons why safe drug administration protocols fail or have poor adherence are, on the one hand, related to poorly learned and highly ingrained professional practices. This justifies the implementation of instruments such as this in academic processes. Studies have associated simulation focused on skills with the development of safe health care practices.
Gorgich, A. C. E., Barfroshan, S., Ghoreishi, G. & Yaghoobi, M. Publication: 2016 Vol. 8, No. 8	Investigating the Causes of Medication Errors and Strategies to Prevention of Them from Nurses and Nursing Student Viewpoint	Understand the causes of medication errors and how to prevent from nurses and nursing student perspective.	The study showed that the main causes of medication errors in nursing students were wrong medication calculations, lack of pharmacological information, unreadable orders in medicine cards, environmental conditions lead to distraction and having stress in the emergency, that they were reported as five causes that have most effect on medication error occurrence in nursing students. In Esmaeil study entering wrong drug in the

			medicine card and not paying attention to the dosage of the drug in that were reported as causes of medication errors. However, the highest rate of medication errors occurred in the emergency ward.
Musharyanti, L., Haryanti, F. & Claramita M. Publication: 2021	Improving Nursing Students' Medication Safety Knowledge and Skills on Using the 4C/ID Learning Model	A new system call 4C/ID was created, aiming to improving medication safety of nursing student based on research use in practice.	Procedural information was given in the form of checklists of safe drug delivery skills. The checklists were used by students in guiding the steps in administering oral and intramuscular drugs administration. Aspects of patient safety and medication-safety were integrated into the checklists. This is useful to help students to implement the supportive information into the practice of administering drugs.12 The researchers gave the checklists before the simulation took place so that students have time to properly prepare before the simulation activities in the skills laboratory.

| Nabilou, B., Feizi, A. & Seyedin, H.

Publication: 2015 | Patient Safety in Medical Education: Students' Perceptions, Knowledge and Attitudes | Access student's perception on patient safety, their understanding and attitudes toward patient safety education in medical. | A group of students (33%) did not accept the inevitability of errors and about one quarter of them stated that the expert doctors never make errors, which reflects a misunderstanding of the nature and pattern of human errors. Failure to report of near miss errors indicates unawareness of its consequences and potential effects on the improvement of services. Using effective strategy after error occurrence indicates lack of understanding of the complexity of the system and the processes of treatment and care. One third of respondents were neutral about medicine culture that reflects their confusion and lack of proper induction of the safe care, error management and statutory formal training of patient safety.

Medical and paramedical students in Iran were familiar with medical errors as an unavoidable barrier between 'best care' and what is actually provided. However, there was little knowledge about the multi-factorial mechanisms underlying occurrence of errors. Also, a knowledge gap and interest to learn patient safety was found. Establishing formal curriculum |

			on patient safety and maintaining this change in health care culture is essential. Also, it is recommended to formulate better policies for patient safety. These will finally reduce all types of errors in complex environments such as hospitals and will make quality improvement in clinical practice.
Sulosaari, V., Huupponen, R., Maija, H., Puukka, P., Torniainen, K., Kilpi, H.L. Publication: 2015	Factors associated with nursing student's medication competence at the beginning and end of their education.	The topic aim to evaluate the theoretical, practical and decision-making to identify factors associated with nursing student's competence at the beginning and end of their education.	To regulate their learning activities, students may let themselves be directed by external sources, or they may direct themselves to be able to acquire new knowledge and solve new problems independently. Of the environmental factors contributing to learning, clinical practice within health care institutions has been highlighted by students as important for the development of medication competence