Degree Programme Students' Perspectives on the Medication Passport in Facilitating Learning of Pharmacotherapy

Piispanen, Katri

Väkiparta, Laura

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Katri Piispanen
Laura Väkiparta
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Katri Piispanen & Laura Väkiparta

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The thesis aims to explore the perspectives of nursing degree programme students on the medication passport, its effect on learning, its rate of usage and possibilities for its improvement through a qualitative study. The medication passport is a learning tool which was developed by Turku University of Applied Sciences in an attempt to unify the education of pharmacology and safe pharmacotherapy in Finland. It was incorporated into the Laurea University of Applied Sciences nursing curriculum in 2010.

This study was carried out in connection with the project "Facilitating Learning of Pharmacology and Medication in Nursing" which was organized at the Laurea University of Applied Sciences at Otaniemi. The aim of the project was to improve the curriculum on pharmacology and medication.

The study was completed by distributing a questionnaire made up of open-ended questions to twenty six degree programme nursing students at Laurea UAS Otaniemi from two different student groups. The results were analyzed and organized into common themes using a phenomenographic research method.

The results of the study suggest that while students view the medication passport as a potentially useful tool in learning, they feel that it should be improved in order to be effective. This thesis aims to use these results to explore and suggestions on how the passport could be improved and studied in the future.

Laurea-ammattikorkeakoulu **Tiivistelmä**
Otaniemi
Degree Programme in Nursing

Katri Piispanen & Laura Väkiparta

Kansainvälisen linjan sairaanhoitajaopiskelijoiden näkökulmia lääkehoidon passista lääkehoidon oppimisen apuvälineenä

Vuosi   2013   Sivumäärä   41

Tämä opinnäytetyö pyrkii kuvaamaan englanninkielisten sairaanhoitajaopiskelijoiden mielipiteitä lääkehoitopassista, sen vaikutuksesta oppimiseen, sen käytöstä ja sen kehitysmahdollisuuksista laadullisella tutkimusmenetelmällä. Lääkehoitopassi on oppimisväline, joka kehitettiin Turun Ammattikorkeakoulussa tavoitteena yhdistää farmakologian ja turvallisen lääkehoidon opettaminen Suomessa. Se omaksuttiin Laurea Ammattikorkeakoulun opetussuunnitelmaan vuonna 2010.

Tutkimus toteutettiin hankkeeseen Facilitating Learning of Pharmacology and Medication in Nursing, joka järjestettiin Otaniemen Laurea Ammattikorkeakoulussa. Hankkeen tavoite oli kehittää opintosuunnitelmaa farmakologian ja lääkehoidon osalta.

Tutkimus suoritettiin haastattelemalla kahtakymmentä kuutta kansainvälisen linjan sairaanhoitajaopiskelijaa Otaniemen Laureassa strukturoidulla ja avoimella kyselylomakkeella. Vastaukset analysoitiin käyttämällä fenomenograafista tutkimusmetodia, jotta vastaukset pystyttäisiin tunnistamaan ja järjestämään teemoittain.

Tärkeimmät tulokset viittaavat opiskelijoiden suhtautuvan lääkehoitopassiin mahdollisesti hyödyllisenä oppimisvälineenä ja he kokevat, että sitä voitaisiin kehittää edelleen tehokkuuden lisäämiseksi. Tämä opinnäytetyö pyrkii hyödyntämään tuloksia kartoittaakseen lääkehoitopassin kehittämismahdollisuuksia.

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Contents

1   Introduction

The fields of medicine and nursing are constantly developing, therefore nursing education must develop along with them. The curricula of nursing programs are also under scrutiny to make sure that students graduate with up to date knowledge. Skills and knowledge in pharmacotherapy are an important part of nursing competence. The term pharmacotherapy was chosen to represent all aspects of medication therapy, from knowledge of pharmacology to administering medication through different routes to monitoring the patient for potential side effects. Some sources refer to the same concept as simply medication therapy. During practical placements, students apply their knowledge from theoretical lessons and, under supervision, carry out pharmacotherapy. A study in Canada shows the need for improving the education of medications in order to avoid situations where a nursing student makes a mistake during a practical placement (Harding & Petrick 2008). Several studies in Finland have verified that graduating nurses have inadequate skills in pharmacotherapy (Veräjänkorva 2003, Grandell-Niemi, Hupli, Leino-Kilpi & Puukka, 2004).

The medication passport was developed in 2006 at the Turku University of Applied Sciences (UAS) as a part of a larger developmental project to standardize the learning of pharmacotherapy in Finland. The passport began as a printed document which organizes the different aspects of pharmacotherapy into a checklist. It is meant to be used at practical placements so that nursing students have a framework to follow their progress in achieving hands-on experience in pharmacotherapy (Lääkehoitopassi 2012). It was accepted into the Ministry of Social Affairs and Health guidelines on safe pharmacotherapy (Sosiaali- ja terveysministeriö 2006) and adopted into the curriculum by the other universities of applied sciences in Finland in 2010. There has been past research on how nursing students, schools and tutors perceive the medication passport and its use from when the passport was taken into use. It requires the student to be independent and motivated for it to be an effective learning tool (Helminen & Larm 2009, Uurasmaa 2010).

The purpose of this thesis is to review current students' perspectives on the medication passport as a facilitator of learning in medication, their use of the medication passport and how it can be improved two years after its adoption into the curriculum. By interviewing the English degree programme nursing students, it aimed to gain a more comprehensive and culturally competent view of the medication passport. The research was carried out through a qualitative survey of two student groups at different stages of their education to gain a wider spectrum of the opinions.

The theoretical framework of this thesis consists of defining the concept of the medication passport and the concepts related to it. These were deemed to be the contents of

pharmacotherapy in Finland and the learning of nursing and pharmacotherapy in Finland. The curriculum of Laurea University of Applied Sciences (UAS) Otaniemi was used as an example to describe the implementation of learning in nursing and pharmacology and of the implementation of the medication passport. The research group studied consisted solely of students from Laurea UAS Otaniemi since other schools' curricula might differ in the implementation of teaching of pharmacotherapy.

This thesis is a sub-project of the larger project "Facilitating Learning of Pharmacology and Medication in Nursing", which was formed in Laurea UAS Otaniemi in order to develop the pharmacology and medication portions of the curriculum for nursing students. Other sub-projects have focused on action based research on new ways of teaching different aspects of pharmacology. This thesis connects to the project by researching how the students perceive the medication passport, how the medication passport is used by the students and finally, by providing ideas on how it can be improved based on the research.

2   Facilitating Learning of Pharmacotherapy in Nursing

Nursing studies in pharmacotherapy include pharmacology, medication calculations and theory on the safe implementation of pharmacotherapy throughout the studies. Schools are given guidelines by the Ministry of Education and the Ministry of Social Affairs and Health (2006) on what knowledge in pharmacotherapy nursing students must possess at the end of their studies. Schools however are free to make their own study plan on how to implement those guidelines and it has been shown that graduating nurses have unequal levels of competence and expertise on pharmacotherapy (Veräjänkorva 2003).

New methods of teaching, learning and measuring practical skills have been developed in attempt to ensure that students possess equal skills and knowledge in pharmacotherapy. The development process has, for example, produced the first national guidelines in pharmacotherapy (Sosiaali- ja terveysministeriö 2006) and limited prescription rights for nurses, optics and oral hygienists (Finlex 1089/2010). The collaboration of this developmental process has included researchers from various sectors; from schools and hospitals and from the Ministry of Social Affairs and Health, the European Union (2013) and the World Health Organization (2013).

2.1   Expertise in Nursing

A nurse (this includes registered nurses, public health nurses and midwives, but all are referred to as nurse throughout this thesis) is a licensed health care professional with a protected occupational title, laid down by a government degree and defined by special

regulations concerning obligations and restrictions, for example patients' rights and confidentiality (Finlex 1200/2007). The Ministry of Education has produced guidelines on nursing education in order to ensure the equal and international competences of Finnish nurses. The ministry has defined professional nursing expertise into ten different subcategories: ethical activity, promotion of health, decision-making in nursing, teaching and guidance, co-operation, research, development and leadership, multicultural nursing, societal activity, clinical nursing and medication (Opetusministeriö 2006).

A nurse is an expert in nursing and the primary objective is to take care of patients. The nurse implements and develops nursing interventions and helps individuals, families and communities to define, improve and maintain health in different environments. This is done in a health-promoting, illness preventing, healing and rehabilitative way. The nurse supports and empowers patients in different situations and acts as an advocate for the patient. The nurse is an independent expert in the nursing field and their actions are guided by up-to-date and evidence-based principles and guidelines of the professional field, maintained by constant re-education. The nurse is a part of a multi professional team and must be able to co-operate and negotiate with other health care professionals (Opetusministeriö 2006).

2.2 Learning in Nursing

Learning is defined as "the acquisition of knowledge or skills through study, experience or being taught" (Oxford University Press 2012). The knowledge is usually divided into two subcategories; theoretical knowledge, or 'knowing that', and practical knowledge, 'knowing how'. Theoretical knowledge can be obtained from various different sources; it is characterized as objective and scientifically proven. Practical knowledge is obtained through experience. Both of these categories of knowledge are needed in nursing and they go hand in hand (Benner 1984). Becoming an expert in one's professional field requires mastering and understanding the professional knowledge and skills of the field, gaining the ability to implement this knowledge and skills in practice and the ability to maintain and develop professional knowledge (Ruohotie & Honka 2003).

Dreyfus and Dreyfus (1986) developed a theory of expert cognition by studying the development of skills and knowledge of the informants. The beginner lacks experience-based knowledge and has difficulties in seeing all aspects of a situation; the qualified practitioner is capable of understanding the entire process and acting in a planned and goal-oriented manner. The expert can utilize intuitive thinking processes in understanding the entirety and structuring this understanding. The expert obtains more knowledge than they are able to voice out (Dreyfus & Dreyfus 1986). Benner (1984) studied the theory in relation to nursing and found it coherent.

Learning in nursing is based on obtaining knowledge and learning and this knowledge is the foundation of nursing expertise (Chapelhow, Crouch, Fisher & Walsh 2005). The nurse is then able to interpret and understand the problems and situation of the patient. The nurse is able to use evidence-based nursing practices to create and implement proactive nursing interventions (Kassara, Paloposki, Holmia, Murtonen, Lipponen, Ketola & Hietanen 2005).

Theoretical nursing knowledge makes up a large portion of the curriculum for the degree programme in nursing at Laurea UAS Otaniemi. The curriculum is designed so that each theoretical course builds upon the knowledge from previous courses. Education begins with the basics of nursing theory and philosophy, and the basics of understanding the person as an organic and spiritual whole. This knowledge then supports the learning of nursing assessment, planning, interventions and documentation. Courses on understanding disease and medical treatment are held by doctors or other specialists before each practical placement, for example a surgeon will hold a course on common surgical procedures and patients before the surgical nursing placement. As the education progresses, the students deepen their basic nursing knowledge by considering the ethical, multi professional, leadership and innovation sides of nursing in-depth (Opetussuunnitelma Degree Programme in Nursing).

The skills required in nursing are practical knowledge. It is not just knowing how to perform the necessary actions but also knowing why and when they are performed. It includes situation assessment, which requires skills in communication, observation, decision making and prioritizing. Planning in nursing and carrying out interventions require cognitive skills like reflection, thinking, decision making and guidance. Nursing evaluation requires skills in communication and the ability to use medical equipment to attain specified measurements, for example, measuring blood pressure, blood sugar or severity of depression symptoms. These skills are developed with knowledge and improve with experience (Lauri 2006).

Nursing education includes practical placements to develop knowledge through experience. The Laurea UAS curriculum includes seven practical placements, which are worth eighty credits, almost one fifth of the entire education. These placements aim to develop skills in specific fields of nursing. The placements begin with geriatric nursing, which focuses on encountering patients in a holistic and respectful way and implementing and developing basic nursing skills. The other placements focus on medical-surgical, mental health, home care and pediatric nursing. The last three placements, which account for thirty five credits, are intensive placements related to the student's own path of specialization. During the intensive studies, students focus on developing the skills needed in the nursing area they are specializing in. They also focus on developing decision making skills, professional teamwork, thinking about new innovations and critically analyzing the health care industry. The aim of

the placements is to develop from students into nurses by implementing the knowledge gained from theoretical lessons (Opetussuunnitelma Degree Programme in Nursing).

2.3   Safe Pharmacotherapy

Pharmacotherapy is an area of expertise that ensures the safe, effective, appropriate and economical use of drugs in treating patients (World Health Organization 2013). The purpose of pharmacotherapy is not only to cure illnesses, but to prevent illnesses, treat and prevent the symptoms and delay them. Pharmacotherapy is always multi professional teamwork between the patient, the doctor and other trained health care personnel. It is an essential part of nursing and a central medical treatment method that can take place anywhere from hospitals to homes (Sosiaali- ja terveysministeriö 2006).

The national guide for the safe implementation of pharmacology, pharmacotherapy and blood transfusions in Finland strives to unify principles in the implementation of pharmacotherapy, its content and evaluation and to clarify the responsibilities, obligations and division of labor related to pharmacotherapy. The guide instructs professionals on how they can maintain and ensure their knowledge and skills in pharmacology (Sosiaali- ja terveysministeriö 2006).

The process of pharmacotherapy begins when a patient needs medication therapy. A doctor prescribes the medication according to the results of the assessment of the patient. This assessment can be implemented by a nurse or a public health nurse, but most prescription can only be done by a doctor. Medication is prescribed based on the necessity, safety, frugality and effect of the medication (Sosiaali- ja terveysministeriö 2006).

Implementation of pharmacotherapy is carried out according to clear and sufficient instructions from the doctor. The basis of safe pharmacotherapy is that the right patient gets the right dosage of the right medication at the right time, through the right route and with an appropriate method. The person implementing pharmacotherapy can be the patient himself, but implementation always requires adequate skills and knowledge in order to be successful and safe. It is crucial to provide the patient with adequate guidance in order to involve them in the planning, implementation and evaluation of their care (Sosiaali- ja terveysministeriö 2006, Sairaanhoitajaliitto 2008).

An important part of the process of pharmacotherapy is the evaluation of the effectiveness of the pharmacotherapy, through observation and documentation of the effects and side-effects as well as the implementation itself. This includes being aware of and documenting deviations from planned pharmacotherapy. The patient always has to be informed if a deviation occurs

and deviations should always be reported in order to develop safe pharmacotherapy further (Sosiaali- ja terveysministeriö 2006).

2.4   Expertise in Pharmacotherapy

Pharmacotherapy is not only the technical knowledge of dispensing medications correctly to the patient. The expertise has to include mastering pharmacological, juridical, physiological, patho-physiological and mathematical knowledge. Expertise in pharmacotherapy includes knowledge of the laws and guidelines directing the practice. It includes skills in aseptic practice, preparation and administration of medication as well as medication calculations, monitoring of the patient and evaluation of the effects of medication. Knowledge of the procedures related to blood transfusions is also part of this expertise (Opetusministeriö 2006).

Pharmacotherapy is a part of holistic care, and the entirety of pharmacotherapy has to be comprehended, starting from why the medication is being administered and what are the effects of the medication. It is mandatory to master the handling and the logistics of medications, from how the medicine is stored and prepared to how it is disposed correctly (Sosiaali- ja terveysministeriö 2006). Expertise includes mastering the knowledge of central methods of pharmacotherapy in treating national diseases prevalent in Finland and with patients of different ages (Opetusministeriö 2006).

The description of what is expertise in pharmacotherapy has to be included in the pharmacotherapy plan, which each working unit must have. The pharmacotherapy plan includes the contents and the practices of pharmacotherapy carried out on that unit and are based on the guidelines by the Ministry of Social Affairs and Health (2006). The plan describes the competence required for the expertise in pharmacotherapy, the plan for orientation of new nurses, additional education necessary to reach this competence and the plan on how to maintain and develop this competence further. The goal is for the personnel in the unit to all have the necessary specialized expertise in pharmacotherapy required by that particular unit (Sairaanhoitajaliitto 2008). Ensuring the development and maintenance of up-to-date skills and knowledge is not only the responsibility of the unit, but of the individual nurse (Finlex 559/1994).

Expertise in pharmacotherapy has been defined by Veräjänkorva (2003) as consisting of theoretical and practical skills. Practical skills are divided into two subcategories of implementing pharmacotherapy and guidance of the patient. For safe and successful pharmacotherapy the involvement of the patient is as important as the appropriate medication administration (Sairaanhoitajaliitto 2008). The theoretical skills can be divided into five subcategories of pharmacology, mathematical skills, anatomical knowledge, legal

responsibility and ethical skills. This expertise is achieved from the education and from experience, from theoretical classes and practical placements and after graduation, from working life and supplementary courses (Veräjänkorva 2003).

Pharmacology is a complex field and pharmacists possess its expertise. Nurses must have a basic knowledge of pharmacology to carry out safe pharmacotherapy. The responsibility of prescribing lies with the doctor but nurses must administer and educate patients about medication. There has been research that nurses who have a solid knowledge of pharmacology feel more confident in pharmacotherapy and patient education (King 2004).

While a nurse is not expected to be aware of all medications, active ingredients and their dosing, they must know how to interpret information on pharmacology. Most commonly nurses must use their knowledge of pharmacology to interpret doctor's orders and the medication packaging. They must be able to recognize what is the active ingredient listed on the package as opposed to the trade name, and what the strength of the preparation is. The Pharmaceutical Information Center of Finland maintains a directory called the Pharmaca Fennica of all medications in use in Finland and their essential information. A nurse should possess enough knowledge of pharmacology to be able to read and understand the information presented in the Pharmaca (Nurminen 2011).

Pharmacology can be separated into pharmacokinetics and pharmacodynamics. Pharmacokinetics, which is the study of how the body absorbs, distributes, metabolizes and excretes the medication. A nurse must understand how a medication is absorbed and what can hinder absorption so that they can effectively assess the potential effectiveness of a medication. They must have an understanding of how medication is distributed through the body in order to assess, for example, if a dose of medication will reach toxic levels in a certain patient. Medication metabolism is the process of the body changing the form of the medication in order for it to be excreted. This usually occurs in the liver, and a nurse must be aware of this with patients with compromised liver function. Excretion is the medication leaving the body, usually through the kidneys. Again, a nurse must have knowledge of medication excretion with patients with compromised kidney function (Downie, Mackenzie, Williams & Hind 2008).

Pharmacodynamics is the study of how medications cause changes in the biochemical or physiological workings of the body. Nurses should have a basic knowledge of why medications work, by knowing what the medication affects in the body (Downie, Mackenzie, Williams & Hind 2008).

Nurses give medication through many different routes, from enteral to intravenous, but also to the eyes, ears and the respiratory system. Expertise in this area of pharmacotherapy includes understanding the different actions of absorption related to different routes of administration. Orally given medications will be absorbed through the digestive tract, requiring the nurse to understand the anatomy and function of the organs. They must be able to understand how the digestive tract works in order to effectively evaluate if the medication will be absorbed correctly. For example, a medication which is immediately absorbed by the stomach may not work correctly for a patient who has had the stomach removed due to cancer. Anatomical knowledge of the lungs is necessary to understand the effect of inhaled medications. The circulatory system must be understood in order to know how intravenous medications take effect and spread through the body (Tokola 2010).

Anatomical knowledge is especially important in the case of injection medications. The nurse must be aware of the difference between giving injections subcutaneous (under the skin into the adipose tissue), intramuscular (into muscle tissue) or intravenous (straight into the bloodstream). Expertise in this area of anatomy includes understanding that subcutaneous injections should be given into areas which are more likely to have adipose tissue and that the needle should only be inserted a few millimeters to avoid the muscle tissue (Tokola 2010). Intramuscular injections have specific preferred sites of the outer thigh, the upper quadrant of the buttocks or the shoulder. Expertise consists of knowing the anatomical position of these areas and being able to find them through physical examination. These have been studied to be the safest and having the least risk of hitting a nerve or the bloodstream (Veräjänkorva, Huupponen, Huupponen, Kaukkila & Torniainen 2006).

Anatomical knowledge is also crucial in understanding the effects of pharmacotherapy in the human body. Understanding the difference between normal and illness induced changes in the body and being able to differentiate them from the effects of the pharmacotherapy belongs to anatomical expertise. Knowledge of the different anatomical functions of the human body is the basis to understanding how the medication is metabolized and absorbed (Kassara, Paloposki, Holmia, Murtonen, Lipponen, Ketola & Hietanen 2005).

Mathematical skills in nursing have been under scrutiny after numerous studies testified that especially graduating nurses lack knowledge in mathematics and medication calculation. (Veräjänkorva 2003, Grandell-Niemi, Hupli, Leino-Kilpi & Puukka, 2004) Throughout their studies, nursing students must complete numerous exams on medication calculations based on the classes in mathematics included in the curriculum. These exams must all be completed flawlessly because in real life calculation errors can be very serious and even fatal. This is especially true in the case of intravenous medications, which affect immediately, making any side effects or allergies appear immediately. Correct calculations are especially crucial in

neo-natal and pediatric nursing, where the doses are very specific and the overdose risk is high (Veräjänkorva, Huupponen, Huupponen, Kaukkila & Torniainen 2006). The mathematical skills of the nursing student have to be tested before each practical placement (Opetusministeriö 2006).

Expertise in medical calculations requires knowledge of basic mathematical skills and the ability to use critical thinking skills. Nurses must carry out administering medications based on the prescription given by the doctor, but the prescription must only specify a medication, strength and frequency of administration. The amount of medication which must be given to equal the strength prescribed is not always obvious at first glance. This is especially true in the case of liquid medications, where the strength is reported per measurement unit and the nurse must calculate the amount to give. In the case of solid medications like tablets, the prescription may specify a strength different from what on tablet contains and the nurse must calculate how much to give (Pickar 1999).

The mathematical skills a nurse needs in order to be an expert in this area of pharmacotherapy include the ability to carry out medication calculations in the forms of fractions, equations, proportions and ratios. They must be able to understand the metric system and be able to convert from one form to another, for example from milligrams to micrograms. With medications that must be mixed with another substance such as natrium solution in order to be administered, the nurse must be able to calculate the amounts of the mixed substances in order to get the correct strength of medication (Pickar 1999).

Legal responsibilities concerning expertise in pharmacotherapy are overlooked by the Ministry of Social Affairs and Health that controls and supervises the dispensation of medication by releasing guidelines and laws. The laws in Finland regarding medication are a collection of decrees under different laws which define the rights and role of the patients and health care personnel and the responsibilities and obligations of health care personnel. The laws control the dispensing and maintenance of medications by pharmacies (Finlex 395/1987 2012). Nurses are legally responsible for giving medication, assessment of effects, patient education and documentation (Taam-Ukkonen & Saano 2010).

Nurses, opticians and oral hygienists gained the possibility to obtain a limited right to prescribe medicines in 2010 by law. Nurses can obtain this right upon completing an additional training program that's design is based on law (Finlex 1089/2010) and when possessing sufficient and appropriate work experience. The limited right includes certain prescription medications which are prescribed for preventive care, for the continued medication treatment of a diagnosis set by a doctor or the need for certain medication which can be assessed by the prescribing nurse. The requirement for the limited right is a written

assignment given by the health care center's supervising doctor, including the list of medicines the nurse is entitled to prescribe and the possible limitations (Finlex 433/2010, Valvira 2013).

Ethical skills are a part of the expertise in pharmacotherapy as it is a part of nursing. Just as with any field which entails great responsibility, nursing requires understanding of one's own ethics and how they relate to professional ethics. Graduating nurses must be knowledgeable in nursing ethics and how to deal with situations where their own morals are at odds with professional conduct. This can be helped through the chain of command, by asking a superior to give instructions on how to act. Nursing work is becoming increasingly independent and in a situation where a decision must be made quickly, a nurse must be able to rely on their own judgment (Thompson, Melia & Boyd 2000).

The nurse has a legal right and responsibility to participate in pharmacotherapy, but this brings ethical responsibility. The nurse has to understand the consequences of one's actions and decisions towards the patient. As an advocate for the patient, the nurse must make sure that they are honest with the patient and give the patient enough information so that the patient can make an informed decision about their care (International Council of Nurses 2012).

The nurse has to act ethically towards their own work community. The nurse is ethically responsible for maintaining their own adequate competence in the field of action. Another ethical responsibility is related to the open discussion and examination of medication errors and close calls of errors. All errors must be reported and documented, making the nurse ethically responsible to do so (International Council of Nurses 2012).

2.5   Learning in Pharmacotherapy

The curriculum of the degree programme for nursing at Laurea UAS Otaniemi includes five courses dedicated to pharmacotherapy and pharmacology, totaling six credits, which is calculated to equal 120 hours of learning. During these lessons, students focus on learning the basics of pharmacology, anesthesiology, pain management, medication calculations, administering medication, infusions and pediatric medications. Medication is discussed during various lessons devoted to certain illnesses, for example, common anti-depressants are discussed during lessons on psychiatry. Medication calculations are included in many other theoretical courses and are often added to the ends of other examinations (Opetussuunnitelma Degree Programme in Nursing).

During nursing education, the school has to test the student's skills and knowledge in pharmacotherapy prior to each practical placement. The student must be able to prove the width of their skills and knowledge in pharmacotherapy and their progress in studies and medication calculation exams. During the practical placements the students are able to practice and implement pharmacotherapy appropriate to the stage of studies under the supervision of a practical placement tutor. Students are occasionally able to practice more demanding pharmacotherapy, such as administering intravenous medication infusions or inserting a cannula for intravenous medication therapy. The goals for the pharmacotherapy skills achieved in each practical placement should be adjusted according to the level of competence shown by the student (Opetusministeriö 2006).

A nursing student has to obtain a wide range of knowledge and skills in implementing pharmacology at different levels. A graduating nurse has to master intravenous medication infusions, fluid therapy and blood transfusions and has to be able to prepare medications according to the instructions of the pharmacy. A nurse has to be able to monitor the status and symptoms of the patient and the side-effects and effects of the medication. In addition nurse has to master medication calculations and the central procedures of pharmacology like injections and other routes of administration. Patient guidance and supporting self-care in medication belongs to nursing skills (Sosiaali- ja terveysministeriö 2006).

2.6   Medication Passport

The medication passport was developed at the Turku UAS with the collaboration of other universities of applied sciences. The framework of the passport is based on the requirements of the medication expertise in the health care sector and the passport supports the learning, planning, implementation and evaluation of medication expertise (Lääkehoitopassi 2012).

The first version of the medication passport was taken into use by Turku UAS in 2006. During the research process for developing the medication passport, the Turku UAS identified a need for a more coherent national policy on the required medication skills a graduating nurse should have. In 2008, a project to define these medication skills and knowledge in more depth than the requirements of the Ministry of Social Affairs and Health was begun. The Turku UAS research team completed a draft of required medication skills and knowledge (sairaanhoitajan lääkehoito-osaamisen vaatimukset) in 2009 and presented it to a symposium made up of colleagues from universities of applied sciences throughout Finland. The following drafts were accepted by a national network of health care universities of applied sciences (Terveysalan kansallinen ammattikorkeakouluverkosto) in December 2009. The medication passport was accepted as a key portion of the project to intensify learning of medications,

and all universities of applied sciences in Finland added the medication passport as a part of the curriculum in learning of medications in 2010 (Sulosaari, Erkko, & Walta 2010).

The medication passport documents the skills and knowledge of the nursing student and is a learning tool between the student, teacher and practical placement tutors. It contains information on the level of competence reached in pharmacology, whether theoretical or practical, such as medication calculation exams passed and different routes of administration practiced during the placement. The learning process of medication expertise is documented in the passport during the studies. After graduation it is proof that the student has reached the level of required competence of a nurse (Veräjänkorva, Huupponen, Huupponen, Kaukkila, Torniainen 2006).

The student's progress through pharmacology and medical calculation lessons at school and their practical experiences are recorded in the passport. The goals for interventions in the passport are separated into nine sections with further subsections in order to clarify and specify what skills should be practiced during placements. On the paper version of the passport, they are organized into a grid with space for markings from eight placements (Lääkehoitopassi 2012).

Some of the sections focus on learning theoretical knowledge, such as becoming familiar with the medications used on that specific ward, storage of medications and ordering medications to the ward. The documentation of medication section includes co-operation with prescribing doctors, reporting pharmacotherapy both orally and in writing and the special documentation of narcotics. There is a section for assessing the patient after administering medication, which includes patient education about medications (Lääkehoitopassi 2012).

There are five sections for nursing interventions, ranging from dispensing medications to administering medication and blood transfusions. Dispensing medications should be practiced by distributing them to trays, patients and dispensers. Different kinds of injections, under the skin, into the skin, into the muscle and vaccinating make up another section. Intravenous medication and fluid therapy are one section, which focuses on treating the injection site, preparing the medications and the implementation of the therapy. The other routes of administration, including oral, inhaled, rectal and epidural are collected into a section in order to make sure all routes are practiced during the placements. The last section is for blood transfusions, and the documentation, observation, and implementation of them (Lääkehoitopassi 2012).

Turku UAS began a project in 2009 to develop an online version of the passport. The online version was completed and piloted in 2012 and the aim is to introduce it into use during 2012

and 2013. As of the writing of this thesis, it was not in use by the degree programme students at Laurea UAS Otaniemi. The benefit of the online version is that it is available anywhere where there is a computer with internet access. Students can register on the website, record the goals achieved and gain electronic signatures from their tutors, and print out a paper version if they wish. The online version includes the same goals and sections as the paper version, but it provides more detailed information on what is expected from each goal (Valtakunnallinen sähköinen lääkehoitopassi 2009).

The national guide for the safe implementation of pharmacotherapy in Finland has included the medication passport as an example of good practice (Sosiaali- ja terveysministeriö 2006). Some municipalities, such as Espoo, have updated their pharmacotherapy plans to include the medication passport specifically as mandatory for all nursing students to have and for their tutors to fill during the practical placements (Espoon kaupunki 2012).

2.7   Other Permits in Pharmacotherapy

Some hospitals, for example in HUS (Hospital District of Helsinki and Uusimaa) have their own permits for nurses to perform pharmacotherapy that can be obtained through proving practical skills and passing the theory exam. These permits are meant for practical nurses whose basic education does not qualify them to carry out pharmacotherapy and for registered nurse students who have not yet graduated. (Valvira 2009) The medication passport used in schools can be used by registered nurse students at some hospitals to obtain a temporary medication permit for fixed-term employment such as a summer job.

3   Purpose, Aim and Research Questions

The purpose of this thesis is to explore how degree programme nursing students in Laurea UAS Otaniemi perceive and use the medication passport as a tool in facilitating the learning of pharmacology and pharmacotherapy and their ideas on how it can be improved. The aim of the thesis is to suggest ideas for the future development the medication passport as a learning tool.

The research questions for this thesis are:
- How is the medication passport perceived by degree programme nursing students in facilitating learning of pharmacotherapy and pharmacology
- What is the degree of usage of medication passport by degree programme nursing students

4   Research Method

The thesis was implemented using ideas and theories related to phenomenographic research methods in order to collect in-depth information on student's current opinions on the medication passport. Phenomenography is a very broad and complicated research method. As an empirical and qualitative research method, it has been gaining popularity in nursing research from the 1980's (Paunonen & Vehviläinen-Julkunen 2006). Qualitative research allows the participants to express themselves freely and more detailed information can be gathered than through quantitative research (Streubert Speziale & Rinaldi Carpenter 2007). Past theses have focused on qualitative research on students' perspectives when the medication passport was first being implemented, this study attempts to create a more recent view on the same topic (Helminen & Larm 2009).

Qualitative research aims to explore phenomena by describing the experiences and opinions of individuals and groups. Quantitative research attempts to collect statistical data that can be generalized to a larger population, but qualitative research is tied to the particular group or individual it is focused on. In social sciences, quantitative research can give an idea as to how prevalent certain behavior or opinions are, but it cannot describe the reasons for it. The information gathered from qualitative research can give an idea as to why certain social phenomena exists or how individuals from a certain group view this phenomena, thus it is a more descriptive research method (Mack, Woodsong, MacQueen, Guest & Namey 2005).

The phenomenographic research method is used to form a comprehensive picture of the participants' conception on a certain matter. The phenomenographic method strives to describe, analyse, interpret and understand the human perception of the world. The world, or the phenomenon studied, exists as a whole, but it can be viewed from different perspectives by different people. Thus the phenomenon studied becomes a reflection of similar and differentiated meanings formed by the people experiencing it. The interest in this research method is not on why people think in a certain way but to describe different conceptions arising in a certain target group from a certain matter. These conceptions are the preliminary results of the research (Paunonen & Vehviläinen-Julkunen 2006).

In phenomenographic research it is important to clarify that the researcher always has conceptions in relation to the researched reality and conclusions can made from them. In this instance it is the presumption that a medical passport used in Laurea UAS Otaniemi is worth studying in regard to its usage and as a facilitator in learning. Secondly, the participants have conceptions from their surrounding reality, and conclusions can be made from them. In this case the degree programme students have conceptions of the medication passport they use and conclusions can be drawn from them (Paunonen & Vehviläinen-Julkunen 2006).

Unlike phenomenology, in which the meaning of phenomenon is interpreted through the participants, the phenomenographic method strives to understand the different conceptions of phenomenon through the certain group of individuals involved, in this instance, how the degree programme students experience the medication passport they use (Streubert Speziale & Rinaldi Carpenter 2007).

The phenomenographic research method provides empirical, in-depth data of the researched phenomenon. It allows the forming of a wide general opinion of the researched medication passport and allows students to express their opinions freely (Paunonen & Vehviläinen-Julkunen 2006). While this thesis is not a true phenomenographic study, the theories of the phenomenographic method were chosen as the best suited method for the gathering of data on how students perceived the medication passport. The medication passport as a topic has been studied already, but there were no clear preliminaries on the students' perspectives.

This study aimed to allow the participants freedom of expression to gain as descriptive information as possible and for new ideas and concepts to emerge from the answers. The ideas of the phenomenographic research and analysis method were applicable for this study, as it allows reflective data analysis of the phenomenon based on the responses. The participants are in a central position in phenomenographic research and the results are based on the pools of different views. The method allows the participants to interpret the phenomenon and the researchers are then left to arrange these interpretations under different themes (Paunonen & Vehviläinen-Julkunen 2006).

4.1   Questionnaire Design

Most qualitative research is unstructured, meaning that the questions are not predetermined, or semi-structured, meaning that the questions are predetermined, but that the interviewer can adapt the questions to suit their needs. This study was implemented through a questionnaire, which means that it was structured, as the participants were given a predetermined set of questions and the participants answered according to what described them best. The survey included a cover letter informing the participants of the why the survey was being conducted, ensuring them of their anonymity and of their right to refuse to answer, thus gaining informed consent (Mack, Woodsong, MacQueen, Guest & Namey 2005).

The majority of the questions were open-ended to provide the most descriptive answers about opinions and experiences instead of simply answering "yes" or "no". The open-ended questions attempted to gauge in what ways the participants felt that they had benefited from the passport and their rate of using it. The questions were designed to determine student

views and opinions related to the ideas about learning of pharmacotherapy suggested by the theoretical research (Paunonen & Vehviläinen-Julkunen 2006).

The questionnaire began with questions to confirm that the participant was within the target sampling range and in order to gauge their progress in studies and placements. This was through closed questions about the amount of years the participant had studied and amount of practical placements completed. They were asked how many of their placements they had used the passport at to compare the rate of usage. If the participant had not used the passport in all of their placements, they were asked to specify why with an open-ended question. They were asked how many of the goals in the passport they had achieved, but this was not clarified in-depth.

The purpose of the questionnaire was to gather information about how the passport facilitates learning and so the participants were asked how they felt the passport had helped them learn. The wording of the question attempted to remain neutral but still inspire the participant answer in-depth, even if they felt they had not benefited from the passport. The participants were asked how the passport motivates learning as it is one of the purposes of the passport as a learning tool. They were asked if their placement tutors opinions about the passport had affected their use of the passport since research by Helminen and Larm (2009) suggested that this can affect the students' passport use.

Based on the research, the main purpose of the passport is to help organize learning of pharmacotherapy, so the participants were asked how they felt this was achieved through using the passport. They were asked if they felt the passport was easy or difficult to use, since learning is best facilitated through learning tools which the student is comfortable using. A question about why they would continue to use the passport throughout their studies was asked to compare the answers with those to questions about benefits of the passport because a participant could describe the passport as useful in motivating and organizing learning but still not plan on using the passport. The participants' perspective on future benefits of the passport when looking for nursing work was explored since the passport can sometimes be used during temporary work while still studying.

The questionnaire ended with asking the students to numerically rate how helpful to learning of medication administration in general the passport is. The participants were given space for any other comments they may have.

4.2 Data Collection

The data collection ideas presented in phenomenographic research can be conducted through different methods. Typically an interview is the most commonly used method as it is for other qualitative research, but written data collection methods have been used, either in essay form or as questionnaires with open ended questions.

This study was conducted through an open-ended question survey during December 2012 and January 2013. Quota sampling was used to choose the participants since specific criteria for the participants were the main factor (Mack, Woodsong, MacQueen, Guest & Namey 2005). The criteria was for the participant to be a member of either the second or third year English language nursing degree programme group at Laurea UAS Otaniemi. The participants were chosen from the English degree programme to provide an international viewpoint. The participants were chosen so that the information is not limited to only one stage of studies to form more general opinion of the medication passport amongst degree programme students. The participants were all using the paper version of the medication passport, most of them an English translation version. The surveys were handed out at school during lessons with the permission of lecturers and the participants were given ample time to answer the questions.

4.3 Data Analysis

In phenomenographic research, the categories of description produced from the data analysis are the most prominent results of the study. These categories are formed by describing the structures and characters found from the data, the concepts formed by the participants. The categories describe different concepts of the study and their relation to each other. The process of phenomenographic data analysis consists of continuous rearranging of the data to find congruent and in congruent concepts under the theoretical framework. The criteria for the categories can be, for example the prevalence of a certain concept. The findings consist of categories derived from different perspectives of the participants (Paunonen & Vehviläinen-Julkunen 2006).

The categories in phenomenographic research are characterized by three criteria. The first criteria is that they must be logically related, the second criteria is that the categories must be limited to the least possible amount and third, all categories must have a distinctively different aspect in describing the experience of the phenomenon (Marton 1981).

Using ideas from phenomenographic data analysis, the collected research data was analyzed in January 2013. All the questionnaires were summarized and analyzed in relation to each other and as independent responses. The answers were arranged according to the most

common themes discussed by the participants. The question to which the answer belonged to was not the deciding factor in including an answer to a theme, but the opinions discussed in the answer in relation to the question. For example, information about a student's motivation to use the passport could be found in answers to questions about motivation and in why they would continue to use the passport. These themes were chosen according to the prevalence of experiences and perspectives from the group of participants and categories were formed on the basis of them. After the themes were chosen, the answers were analyzed in relation to each other (Paunonen & Vehviläinen-Julkunen 2006).

5   Findings

The research questions were designed to find out students' perspectives on how the medication passport facilitates learning and to what degree they use it. The following categories were derived from the most common themes related to the research questions discussed by the participants in their answers.

5.1   Usage of the Medication Passport by Degree Programme Students

The first group to be given the questionnaire yielded fourteen responses. About half of the group had been studying for two years, the other half for three. All but one had completed five to six practical placements. Seven of the participants had used the medication passport at three or four placements, only four participants had used it in all of their placements. Six participants said that they had not achieved many of the goals in the passport, two had achieved half of the goals and two had achieved most of the goals.

Twelve responses were collected from the second group. These participants were on their second year of studies and all but two had completed three to four placements. Almost all of the participants had used the passport at almost all of their placements. Two participants had not used it at all. The amount of goals achieved varied, about half of the participants reported a small completion rate, and the other half reported completing a large portion of the passport.

While the second group had used the passport more frequently than the first group, they had completed fewer placements. The average amount of placements where the passport was used of all the responses was three or four, even though half the group had completed more placements.

One of the reasons given for not using the passport at placements included not having the opportunity to practice pharmacotherapy at a placement since not all nursing settings include

large amounts of pharmacotherapy. One participant stated that they simply did not see the point of using the passport. There were four participants who reported that they did not use the passport because it was not required by teachers or practical tutors. It was apparently not mentioned or asked for during theoretical lessons or practical placements and was not a visible part of education. Five students mentioned that they would only continue to use the passport if it was obligatory. They felt that they would be more motivated to use it if it was mentioned more. One student's answer summarized these feelings well:

"The reason I have not used it in any other practical placements is simply because I forgot all about it. It was not mentioned or required in any other practical placements by the school or by the placement."

Four of the participants mentioned that tutors viewed the passport as unimportant and were reluctant to fill it. One stated that tutors will ask if the student has a medication passport but will not ask to see it. One mentioned that tutors will ask for the passport only at the very end of the placement, not while carrying out pharmacotherapy. Five participants reported that tutors simply saw the passport as a hassle, which caused students to become reluctant to use it. Only one student mentioned that tutors were "intrigued and saw it as positive thing".

"It was seen more as a disturbance. No one really reads it carefully you have to know medication and calculation, it does not matter whether you have the passport or not."

5.2   Medication Passport as a Facilitator in Learning

About half of the participants described that the medication passport has helped them follow their progress in learning about pharmacotherapy. Many of these participants said that the passport helps set milestones and motivates them to accomplish the goals. The list of concrete goals made it easier to notice what has and has not been practiced at placements and so organizes future learning. One participant stated that the passport has helped them reflect on what they have learned during pharmacology lessons. Participants mentioned that it helped them learn and understand what skills are required from a nurse. They saw it as an overview of what needs to be learned about pharmacotherapy.

"It gives more specific guidelines instead of just general, which one would tend to repeat the same; they get to remember what you could have easily overlooked."

Participants mentioned that instead of the passport, it was their own interest in pharmacotherapy which motivated them to learn about pharmacology. Other answers described that the most important thing towards learning pharmacotherapy is being active

and involved. Also, participants were more motivated and learned more through their tutors' experience and teaching.

One answer indicated that while they appreciated the overview of pharmacotherapy the passport provides the passport has no effect on their learning. Some participants felt that they were just filling in the empty spots with signatures without reflecting upon their learning. One stated that the goals were repetitive and thus not useful towards learning. Two participants described that felt the goals were shallow and that the passport could not actually display one's abilities with pharmacotherapy.

"We just fill it when I feel like I've done new things and then if the tutor feels the same she/he just signs it."

Nine participants felt that the medication passport could be used as a reference for learning of pharmacotherapy when applying for a job. They felt that it would be useful as a written document with details on the different aspects of pharmacotherapy that they have already practiced. One stated that they felt that when applying for a job, a completed medication passport could be an advantage over other applicants.

"It is a way of showing what you have done during your education but I do not think any conclusions about one's skills or ability can be drawn from it."

Ten participants felt that the passport would not benefit them in future working life. They mentioned that nursing jobs require separate qualifications for administering medication. One felt that the passport is very unofficial and thus would have no bearing on future work life. One stated that the hospital bound permit to administer intravenous medications and the separate permit to administer medication were the most important when applying for nursing work.

In general, out of the total of twenty six answers, fifteen participants felt that the passport is "not at all" or "not so" helpful in learning about medication administration. Four answered with the neutral response. Five considered the passport to be somewhat helpful in learning and only one participant felt the passport was very helpful in learning.

5.3   Design of the Medication Passport

Seventeen of the participants from both groups stated that the medication passport is difficult to use, mostly due to issues with design and language. About a quarter of the participants did describe the use of passport as easy, but did not specify why. Three answers

stated that the size is inconvenient, making it hard to keep the passport accessible at practical placements, which in turn caused it to be left in a locker while practicing skills. The layout of the passport was thought to be confusing and too complicated. The goals were thought to be organized in an incoherent way, and some participants reported that the tutors did not understand the layout. One complaint was that there are too many sections and goals and another mentioned that the goals are repetitive. According to one report, a tutor had described the passport as too complex and the goals hard to evaluate.

"It's quite difficult because it's hard to read and there are too many points. Even the tutors say that the points should be simpler and it's hard to evaluate now because they're too complex."

The language is described to be difficult to comprehend for users and many goals were left unclear and not concrete enough. Six participants said that the tutors find it too long and complicated to read or fill in. Tutors were reported to be discouraged by the language of the goals and were confused as to which goals they should sign. Three participants mentioned that their tutors did not have sufficient English skills to understand the wording of the goals. The tutors would apparently become discouraged once they saw the passport.

"Tutor never reads it because it is in English and going through it is time-consuming."

5.4   Views on Future Development of the Medication Passport

As reported in the previous section, many of the participants had problems with the design of the passport. Some made suggestions that to make it easier to use, the language and structure should be reorganized and simplified. This would in their opinion improve the usage rate of the passport. One student suggested that an online form of the passport, which could be accessed easily at the wards, would be more beneficial and more motivating.

Participants suggested that they would be use the passport if it was made obligatory. They also thought that the passport would be more beneficial towards learning if the tutors were more committed to using it. They thought that the tutors should have more information about it. As one student summarized it:

"If it would have been emphasized more and actually used in the practical placements it could be a good way to keep track of the "skills" one has achieved related to medication and the administration of medication."

6   Discussion

The answers to the questionnaire were somewhat contradictory. While many participants saw the medication passport as unimportant and could not see much benefit to it, they considered it useful in organizing the learning of practical skills in pharmacotherapy by setting concrete goals. Based on the results and past research, the following suggestions could be made as to how the medication passport could be developed and used more effectively.

Motivation to use the passport was quite low in the results, and many participants thought that they would only use the passport if it was compulsory. Studying at a university of applied sciences requires a high level of independence from students, making it the student's responsibility to assure the progress of their studies. However, the school provides the medication passport and organizes the theoretical lessons on pharmacotherapy and pharmacology. During the lessons, more stress could be placed on the importance of the medication passport and how it can be used. The passport includes all of the aspects of pharmacotherapy which a nursing student needs to learn during theoretical lessons, so perhaps the framework of the passport could be linked to the lessons.

The use could be made absolutely obligatory by the school, like in the case of the city of Espoo, to make sure that students use it. If other hospital districts made it an obligatory part of their pharmacotherapy plan, it could encourage the passport becoming a more visible part of the education and encourage cooperation between the schools and the practical placements. It could, for example, be reviewed with the clinical tutor and placement facilitator during the placement evaluation to see if progress has been made.

The results suggested that some practical placement tutors do not have sufficient information about the medication passport. By providing tutors with more knowledge about the use of the medication passport, they might be more inclined to actively ask for and make use of the passport. The medication passport has now been included into the Ministry of Social Affairs and Health's guidelines on safe pharmacology, which all nurses should be aware of and all hospital districts should include in their plans for pharmacotherapy (Sosiaali- ja terveysministeriö 2006). This means that wards should become more familiar with the passport and include it as an active part of their student tutoring programs. The student could for example include information about the medication passport and its use with the introduction letter they send before beginning their practical placements. This way, the student would ensure that their tutors are aware of the passport and its use before the student arrives for their placement.

The students could benefit from more information about the medication passport and its role in facilitating learning. The paper version of the passport has a short introduction about the purpose of the passport, as does the front page of the online version. These introductions are very broad and only mention that the passport aims to facilitate learning of safe pharmacotherapy. It can be difficult to find coherent information about the medication passport. The Turku UAS could perhaps provide more detailed information on the website for the online version, which could then be easily accessed online by all students. Information which students could benefit from could be how the medication passport aims to help with learning and what benefits can be achieved from completing the passport.

Participants mentioned the inconvenience of the paper version suggesting that there could be a benefit to extending the online version of the medication passport to all students. As stated earlier, the online version has additional information on the criteria for meeting each of the goals, which would help the participants who stated that it is difficult to understand what each goal requires. The online version could be more readily accessed on wards. As computer documentation of patient information is becoming standard, the passport could be electronically signed during documentation. The online version could help with the problem of forgetting about the passport.

6.1   Ethical Considerations and Trustworthiness

Ethics in qualitative research tend to be mainly concerned with "the relationship between the researcher and participant, researcher bias and the design of the survey" (Ramos 1989 in Orb, Eisenhauer & Wynaden 2000). The nature of qualitative research is to openly explore opinions and views, making it vulnerable to being skewed by the researcher. The participant may respond to questions in a certain way depending on their opinion of the researcher and they may distort their answers to fit questions better if the questions are not carefully worded. The researcher must remain neutral in order to achieve truthful data and must be careful not to let their own opinions on the research topic affect their work (Orb, Eisenhauer & Wynaden 2000).

The participants in the research were second and third year nursing students at Laurea UAS Otaniemi and the responses to the questionnaires were collected during two classes with permission from the lecturers. The questionnaire included an introduction letter to confirm informed consent from the participants and informing them of their right to refuse answering the questionnaire. The topic of the thesis and the reason for the study were explained to the participants and appreciation for the answers was expressed to the participants. The participants answered the questionnaire in a class room at the same time and the possibility to fill the questionnaire in privacy was not easily achieved. However, the topic of the study

was not personal in its nature and the time and place to answer the questionnaire was not restricted, only suggested. The anonymity of the participants was ensured by not asking any other detailed information of the participant than sex, year of studies or number of practical placements completed.

The analysis of the findings was limited by several factors. The questionnaires were distributed unscheduled during lessons and not all students from the chosen groups were present during the lessons. The groups for the degree programmes in nursing tend to be small and even if the full group had answered, the data gathered would have been insufficient for in-depth findings. The participants also did not answer all of the questions and some only with very short answers. The findings could have been improved by including another student group in the study to gather more responses. Another option which might have improved the findings would have been to use interviews as the research method instead of a questionnaire, since interviews tend to produce more detailed information. Semi-structured group interviews with the chosen groups could have yielded better information for analysis.

The questionnaire was not given to a pilot group to be tested before it was given to the chosen sample groups. Testing a questionnaire is important in evaluating the questions and whether they are all relevant and making sure nothing important is left out. After analyzing the results, it was found that some key questions were not asked. Some of the topics excluded included asking if the participant had used the paper or online version of the passport; if they had knowledge of the online version of the passport, and what language their passport was in. A question about the participant's language skills could have been included, to see if they affect the ability to use the passport in Finnish language dominated practical placements.

The form of the questionnaire was structured, including closed and open-ended questions. This form made the questionnaire easy to answer and fill out, and simplified the data collection. It made it possible to collect data in the most objective situation as possible. It however limited the scope of the content of the results compared to if the data had been collected by using essay answers with supportive words or semi-structured interviews (Streubert Speziale & Rinaldi Carpenter 2007).

The questionnaire design could have been improved. The wording of some of the questions does not reflect the intent or could be misunderstood. The question "in general, how would you rate the medication passport in helping learn about medication administration?" implies that it is only asking about the routes of administration portion of the medication passport, instead of the entire passport. It could have been improved by asking about pharmacotherapy

instead. The question about how many placements the participant had completed was too ambiguous as the answer options included two amounts.

6.2 Conclusion

The medication passport is still relatively new, having only been used by all universities of applied sciences since 2010. As such, it is being reviewed and improved by schools, especially its creator Turku UAS, as a learning tool. The results of this study suggest that students view it as a potentially useful tool, but that it could benefit from more development.

This, and past studies, have mostly focused on students' opinions on the medication passport. One previous study by Helminen and Larm (2009) included the views of the practical placement tutors. The use of the passport requires the cooperation of the tutors, and as the results of this study suggested, the tutors require more knowledge. A potentially beneficial study could focus on exploring the opinions of practical placement tutors and could include devising informative material for placement tutors about the passport.

The study sample was made up of students studying nursing in an English programme in Finland. The majority of students studying in universities of applied sciences in Finland are studying in the Finnish language. In 2012, only 3061 out of 21 278 students accepted into a university of applied sciences in Finland were studying in an English programme (Koulutusnetti 2012). Further study on students' opinions on the medication passport could be more beneficial if conducted with students from a Finnish programme, since the medication passport was designed in Finnish for use in Finland, and the English version is a translation.

The language of the English version of the passport was commented on by quite a few participants, suggesting that working with native English speakers in developing the English version could help improve it.

Future study ideas related to the medication passport could include reviewing student's opinions on the online version of the passport. During the implementation of this study, the online version was in the process of being taken into use by universities of applied science. If and when it is added to the Laurea UAS Otaniemi curriculum for degree programme students, an additional study on how it affects students' learning could be useful in weighing the benefits of the medication passport.

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APPENDICES

Appendix I: The cover letter of the questionnaire to participants of the study
Appendix 2: Survey to the participants
Appendix 3: Goals of the online version of the medication passport

Appendix I: The cover letter of the questionnaire to participants of the study

Dear students,

This questionnaire is a part of thesis in a project Facilitating Learning of Pharmacology of Laurea University of Applied Sciences. The thesis studies the role of the medication passport in facilitating learning of pharmacology in degree programme in nursing to provide data for further development of the medication passport. All the data gathered will be processed and analysed with absolute confidentiality.

Thank you for your time!

Laura Väkiparta
Katri Piispanen

Appendix 2: Survey to the participants

Gender

Male
Female

How many years have you been studying nursing at Laurea?

1
2
3
4
5+

How many practical placements have you completed?

1 - 2
3 - 4
5 - 6
7 - 8
9 - 10
11 - 12

How many practical placements have you used the medication passport at?

_____

If you have not used it at all of your placements, why?
_____

How many of the different goals have you been able to complete?

_____

In what ways do you think that the medication passport has helped you learn about medications?

_____

Have you thought that using the medication passport is easy or difficult? Why?

_____

In what ways do you think that the medication passport has motivated you to learn about medications?

_____

How has the medication passport helped you organize your learning about medications?

_____

Have your clinical tutors' opinions affected your use of the medication passport?

_____

What are some of the reasons you would continue to use the medication passport until the end of your studies?

_____

What kind of aid do you think that you'll get from the medication passport when looking for a job in nursing?

_____

In general, how would you rate the medication passport in helping learn about medication administration?

1 (not at all helpful)
2 (not so helpful)
3 (neither)
4 (somewhat helpful)
5 (very helpful)

Any other comments

_____

Thank you for your response!

Appendix 3: Goals of the online version of the Medication Passport

1 Medication studies at the University of applied sciences

2 Medication skills

2.1 Foundation of the nursing profession for medication management

Learning tasks
The student recognizes an ethical perspective in the delivery of medication care.
The student justifies the perspective of nursing practice when decisions about the patient's medication care are made.
While making decisions about medication care, the student systematically relies on verified information.
While implementing medication care, the student takes into consideration the student's competence level and the regulations governing medication management.

2.2 Multi-professional collaboration in medication management

Learning tasks
The student is familiar with the medication plan of the clinical practice organization and recognizes the student's own role and that of the nurse in a multi-professional team.
The student reports verbally and documents the vital information about implementing medication care for the purposes of the work of a multi-professional team.
The student collaborates with various other parties involved in medication care.
The student knows how to make use of the information other parties participating in medication care have reported and documented.

2.3 Medication management as nursing practice at different stages of medication process

2.3.1 Medicine maintenance

Learning tasks
For his/her part, the student is responsible for the availability of medicines necessary in outpatient care.
The student can correctly interpret a prescription.
The student uses the clinical practice unit's core medicine selection of the clinical practice.
The student determines the amount of medicines necessary to be ordered for the clinical practice unit.
The student orders and acquires pharmaceutical products through the unit's electronic ordering system.
The student orders and acquires pharmaceutical products by using the printed-on-paper ordering system.
The student knows how to order licensed pharmaceutical products.
The student orders pharmaceutical products with a special license.
The student orders medicines that contain alcohol.
The student orders narcotics and medicines that mainly affect the central nervous system.
The student orders patient-specific drug doses (for instance dose distribution and cytotoxic drugs).
The student orders blood products.
The student ensures the continuity of medication care and acquires, during on-call hours, the medicines the patient requires.
In outpatient care, the student ensures the correct transportation and storage of the patient's medicines.
The student stores medicines in correct places and required environments.
The student correctly stores narcotics and maintain their proper accounts.
The student correctly stores medicines in patient-specific doses.
The student knows the first aid medicines and their location in his/her clinical practice unit.

The student ensures the proper disposal of medicines without hazards to health or the environment.

Following the written instructions of the hospital dispensary/storage and care facility, the student ensures the correct handling of medicines that are in gaseous form or otherwise require specific skills or equipment because of their form or handling.

The student takes into consideration the principles of efficiency, safety, utility, and economy when acquiring, storing, handling, and disposing of medicines.

The student takes into consideration the economic aspects of acquiring medicines.

The student stores blood products correctly.

The student recognizes the tasks associated with the care and maintenance of a medicine cabinet and is responsible, for his/her part, for those activities in his/her clinical practice facility.

2.3.2 Planning of medication care

Learning tasks

The student clarifies the patient's current medication care (prescription medicines, self-care medicines, herbal care medicines).

The student assesses the medication needs of the patient.

When planning patients' medication care, the student takes into consideration their individual circumstances.

The student takes into consideration the instructions for care and testing regarding a patient's medication care.

The student receives various medication prescriptions.

The student appropriately and unambiguously documents prescriptions into patient documents and documents used in the delivery of medication in the clinical practice unit (for instance medication administration schedule and infusion schedule).

The student assesses risks associated with a patient's medication.

When planning a patient's medication care, the student takes into consideration the goals of medication care, its modes of implementation, and the qualities of the medicine in question.

The student knows the normal doses, essential effects, and maximum doses of the drugs prescribed to a patient.

The student designs the delivery plan of a patient's medication care.

The student knows the essential side effects and potential interactions of the drugs prescribed to a patient.

The student knows the interaction with alcohol of the drugs prescribed to a patient.

2.3.3 Delivery of medication care

Learning tasks

The student comprehends the appropriate handling of medicines.

The student masters the aseptic handling of medicines.

The student takes into consideration occupational safety when handling medicines.

The student verifies the usability of the medicine before administering it.

The student masters the correct portioning of drugs to patient-specific doses.

The student takes into consideration the specific instructions for administering narcotics.

The student prepares a medicine for intravenous administration.

The student prepares for and acts in situations that require immediate action (for instance anaphylaxis, resuscitation).

The student takes into consideration the patient's safety while delivering medication care.

The student verifies that the client/patient has taken the medicine.

The student knows how to act in situations where the patient has not received the prescribed medicine or has received incorrect medicines.

The student acts correctly in situations where the patient is given medicines against his/her will.

2.3.3.1 Medication administration via natural route

Learning tasks

The student administers medicines orally (tablets and oral liquids).

The student knows how to administer medicines through a nasogastric or PEG tube (percutaneous endoscopic gastrostomy).
The student administers medicines per rectum (enemas, suppositories, ointments).
The student administers medicines through the respiratory passages (inhalation liquid, powder, or aerosol).
The student administers medicines through the skin (transdermal pads, ointments).
The student administers medicines to the eye (eye drops, ointments, gels, and washes).
The student administers medicines through the nose (drops, aerosols, ointments).
The student administers medicines into the ear (drops, ointments).
The student administers medicines into the vagina (tablets, ointment, vaginal suppository, and ring).
The student masters medicinal administration of oxygen according to the physician's prescription.

2.3.3.2 Medication administration through injections

Learning tasks
The student administers a subcutaneous injection.
The student administers an intramuscular injection.
The student administers an intradermal injection.
The student knows the basics of vaccination and the national vaccination program.
The student knows the principles of medication administered to the epidural space.
The student knows the principles of medication administered to the central canal of the spinal cord.
The student knows the principles of medication administered into a joint.

2.3.3.3 Medication, fluid therapy and parenteral nutrition administration via intravenous route

Learning tasks
The student knows enough about the intravenously administered liquid or nutrient concentrate and medicine before its administration.
The student is aware of the restrictions applied to administering intravenous medication by students.
The student uses correctly the equipment associated with the administration of medicine, fluid therapy, and parenteral nutrition.
The student uses correctly the technology associated with the administration of medicine, fluid therapy, and parenteral nutrition.
The student defines the drip rate as per the medicine's prescription.
The student takes into consideration any special instructions associated with administering a medicine.
Under supervision, the student inserts a peripheral intravenous cannula and monitors the cannulation site.
The student uses a central venous catheter to administer a medicine.
The student implements intravenous fluid therapy.
The student observes and assesses the effects of intravenous medication care.
The student observes and assesses the effects of intravenous fluid and nutritional therapy.
The student ends fluid therapy.

2.3.3.4 Delivery of blood transfusion therapy

Learning task
The student is aware of the limitations regarding blood transfusion therapy that students are subjected to.
The student masters the preparatory actions before a blood transfusion.
The student starts and implements a blood transfusion according to instructions.
The student assesses the effect of a blood transfusion.

The student takes correct action after a blood transfusion has been completed.
The student has passed the net-based course on blood transfusion (administered by the Red Cross Finland).

2.3.3.5 Medication education of patients and promotion of client's adherence to medication care

Learning task
The student educates patients about their medication care in a planned and goal-oriented manner, taking into account the patients' individual needs.
The student educates a patient about safe and purposeful use of medicines.
The student uses a variety of methods to educate patients about their medication care.
The student instructs different target groups.
The student educates patients to take a medicine and about different techniques of taking he medicine.
The student informs a patient about special issues regarding medication care.
The student assesses patients' adherence to their medication care and the factors that can affect this adherence.
The student supports patients in their adherence to their medication care.
When the patient is unable to receive or utilize guidance, the student guides and educates the patient's caregivers in a planned and goal-oriented manner.

2.3.3.6 Documenting medication care and securing the flow of information

Learning tasks
The student documents a patient's medication and fluid therapy plan.
The student documents the delivery and effects of medication care.
The student documents the instructions associated with medication care.
When documenting and passing along information about medication, the student takes into consideration the associated regulations and privacy clauses.

2.3.4 Evaluation of medication care

Learning tasks
The student knows how to assess and evaluate the effects of medication care.
The student knows how to assess the goals set for medication care.
The student systematically evaluates the progress and outcome of a client's/patient's medication care.

2.4 Promotion of medication safety

Learning task
The student acknowledges his or her professional duty to promote and develop the quality of nursing practice and patient safety.
The student understands the importance of the culture of safety and of medication plans for the development of the safety of the medication process in a care facility.
The student understands the importance that monitoring and reporting adverse events in medication care has to improving patient safety.

3 Medication calculation skills

3.1 Medication calculations during clinical practice

3.2 Medication calculations in the University of Applied Sciences

4 Special skills in medication management