Chrisantus Abila Achanyi and Mohamed Musa Abdullahi

Learning Clinical Skills in Nursing Education - Nursing Students´ Perspectives

A Descriptive Literature Review

Metropolia University of Applied Sciences

Bachelor of Health Care

Degree Programme in Nursing

Bachelor's Thesis

15 May 2022

Authors	Chrisantus Abila Achanyi and Mohamed Musa Abdullahi
Title	Learning Clinical Skills in Clinical Laboratory and Simulations - Nursing Students´ Perspective
Number of Pages	25 pages + 1 appendices
Date	15 May 2022
Degree	Bachelor of Health Care
Degree Programme	Degree Programme in Nursing
Instructors	Anna-Kaisa Partanen MNsc, PhD-student (UEF), RN, Senior Lecturer

Learning clinical skills in clinical laboratory and simulation remained a key component in nursing education. The rapid development and used of technology in healthcare has increased the pressure on education institution to train all rounded nurses who can work in the current complex healthcare system. This has led to an increased in research on learning clinical skills laboratory and simulation, its importance and nursing students´ perspective. Over the last few years nursing education has evolved and, the use of technology in nursing education had taken a centre stage. Its common nowadays, education institutions to use simulators, game play, role play and virtual simulations in nursing education.

The purpose of this literature review is to describe learning clinical skills laboratories and simulations and nursing students' perspective. The aim is to produce knowledge to further develop the education of learning clinical laboratory skills and simulations.

The reviewed articles were obtained from CINAHL and Medline which are reliable database, using keywords such as clinical skills, simulations, nursing, or students´ perspective. Thirteen (n=13) articles met the eligibility criteria and therefore included in the review.

The results from the studies were analysed using inductive content analysis. The findings from these studies have overwhelmingly shown that clinical skills and simulation had a positive impact on student knowledge and skill, self-efficacy levels, and affective learning outcomes. The studies have also shown some challenges such as lack of experienced teacher, inadequate equipment, and insufficient space.

Keywords	Clinical Laboratory Skills, Clinical Laboratory, Simulations, Nursing Students, Perspective.

Tekijä	Chrisantus Abila Achanyi and Mohamed Musa Abdullahi
Otsikko	Kliinisten Taitojen Oppiminen Kliinisissä Laboratorioissa ja Simulaatioissa - Hoitotyön Opiskelijoiden Näkökulmasta
Sivumäärä	25 sivua + 1 liitettä
Aika	15 toukokuuta 2022
Tutkinto	Sairaanhoitaja (AMK)
Tutkinto-ohjelma	Sairaanhoitotyön tutkinto-ohjelma
Ohjaajat	Anna-Kaisa Partanen TtM, TtT-opiskelija (UEF), SH (amk), Hoitotyön lehtori

Kliinisten taitojen oppiminen kliinisessä laboratoriossa ja simulaatiossa säilyivät keskeisenä osana hoitotyön koulutusta. Teknologian nopea kehitys ja käyttö terveydenhuollossa on lisännyt oppilaitosten painetta kouluttaa sairaanhoitajia, jotka kykenevät työskentelemään nykyisessä monimutkaisessa terveydenhuoltojärjestelmässä. Tämä oli lisännyt kliinisten taitojen oppimisen laboratorio- ja simulaatiotutkimusta, sen merkitystä hoitotyön opiskelijoiden näkökulmaa. Viime vuosien aikana sairaanhoitajakoulutus on kehittynyt ja teknologian käyttö sairaanhoitajakoulutuksessa on noussut keskipisteeseen. Oppilaitoksissa on nykyään yleistä käyttää hoitotyössä simulaattoreita, pelejä ja virtuaalisia simulaatioita sairaanhoitajan koulutuksessa.

Tämän kirjallisuuskatsauksen tarkoituksena on kuvata kliinisten taitojen oppimista laboratorioiden ja simulaatioiden avulla sekä hoitoyön opiskelijoiden näkökulmasta. Tavoitteena on tuottaa tietoa, jotta kehitettäisiin kliinisen laboratoriotaidon ja simulaatioiden oppimisen koulutusta.
Arvioidut artikkelit on hankittu CINAHL:ltä ja Medlineltä, jotka ovat luotettavia tietokantoja. Avainsanoina on käytetty muun muassa kliiniset taidot, simulaatiot, hoitotyö opiskelijoiden näkökulmasta. Kolmetoista (n=13) artikkelia täytti kelpoisuuskriteerit ja sisällytettiin siksi arvosteluun.
Tutkimustulokset analysoitiin induktiivisella sisältöanalyysillä. Näiden tutkimusten tulokset ovat osoittaneet ylivoimaisesti, että kliiniset taidot ja simulaatiot vaikuttivat myönteisesti opiskelijoiden tietoihin, taitoihin, itsetehokkuuteen ja affektiivisiin oppimistuloksiin. Tutkimuksissa on havaittu haasteita, kuten puute kokeneista opettajista, riittämättömät varusteet ja riittämätön tila.

Avainsanat	Kliiniset Laboratoriotaidot, Kliininen Laboratorio, Simulaatiot, Sairaanhoitajaopiskelijat, Näkökulma

Contents

1 Introduction

Clinical skills in clinical laboratories and simulations are prerequisite for nurses to provide healthcare based on their knowledge, thinking, reasoning and experience (Kumiko, Yuko & Keiko Ma 2021:20). The teaching and learning of clinical skills among nursing students had long been under focus. Training efficiency can be enhanced further if the results of teamwork, cross-sectoral, participatory, and inter-professional goals in learning clinical skills in laboratories and simulations are similar or better to those attained through individual learning (Tolsgaard et al. 2016: 70). In recent years, nursing education had undergone numerous changes, aimed at improving learning techniques.

Students are a key pillar in the education system. Earlier the emphasis was on students learning rather than teaching them (West, Usher & Delaney 2012:576). Students being the cornerstone of the education system has increased the needs to include students' perceptions and expectation when the evaluation of nursing educational program are realized, hence complementing the knowledge base used to improve the nursing studies curriculum (Papathanasiou, Tsaras & Sarafis 2013:57).

The importance of developing confidence and competence in nursing skills is a vital component of nurses´ job (Jeffries 2007:7). Acquiring such skills is a challenging process for nursing students who are mostly afraid of making mistakes (DeBourgh & Prion 2011:55).

Learning clinical skills in laboratory and simulation allows nursing students to acquire necessary clinical skills. Teaching and learning methods act as an opportunity to practice and to study in a way that is both theoretical and practical. Nursing students are provided with feedback to gain confidence. Nursing students are scared to make mistakes in hospital settings during their on-the-job learning but feel confident to make mistakes while learning clinical skills in clinical laboratories and simulations. Good workshops incorporate a lot of knowledge, ease anxiety

when learning clinical skills in clinical laboratories and simulations. Sharing experiences with more experienced students is a bonus, and in addition having students and mentors who are helpful and willing to help answer questions. (Bowen et al. 2020:44-46.)

This Bachelor Thesis is conducted using qualitative methodology and the data is collected using descriptive research method. The purpose of the Bachelor Thesis is to describe what is known about nursing students´ perception on learning clinical skills in clinical laboratories and simulations. The aim is to produce knowledge to further develop how nursing students learn clinical skills.

2 Background

According to EU directives 2013/55/EU, the learning of clinical skills in clinical laboratories and simulations are defined by the European Parliament and the council, on the acceptance and recognition of professional qualifications in Nursing. The directives also define the amount of input required from students in learning clinical skills in clinical laboratories and simulations for them to be qualified as Nurses (EUR-Lex 2005/36/EY). To practice and work as a registered nurse in Finland, a nursing degree is needed in addition to approved license by Valvira, the Finnish National Supervisory Authority for Welfare and Health. (Valvira 2022). Nursing students need at least 90 ECTs out of 210 ECTs in clinical skills laboratories and simulations. Nursing is studied at a university of applied sciences, and it takes approximately 3,5 years before the degree can be completed, Finnish Ministry of Education (2021).

2.1 Nursing education

Nursing education consist of theorical and practical training that is provided to prepare students as care givers. In Finland, universities of applied sciences offer nursing education in Finnish, Swedish and English. Students are trained to render comfort, provide care, and come up with solutions regarding to the needs of patients and relatives, applying agreeable health care measures through communication, counselling, educative and preventive approaches. (Roth et al. 2022: 7.)

Laboratory clinical skills practices and simulations remains an important component in nursing education curriculum for decades. Students practiced what they learnt in class in laboratories. This can be enhanced further where the students can practice real life scenarios in simulation class. Often simulations and laboratory classes had been used alongside other learning techniques to upgrade and augment learning encounters. Combinations of different approaches reinforced theory, thus allowing students to invigorate above their clinical skills, clinical knowledge and clinical laboratories and simulations experiences with patients in clinical environment (Kapucu 2017: 1072).

Healthcare had evolved rapidly due to technology. New technological advancement has had huge impact on healthcare work and interaction with patients. Complex tools are available for healthcare worker which had a tremendous impact on their daily activities. There is increasing pressure for universities to produce highly competitive nurses who can work on today´s complex healthcare systems. This had led universities to adopt several strategies to train future nurses. To prepare nurses to be critical thinkers and be able to work in complex healthcare systems. Universities are incorporating simulations to their pedagogical methodologies. Simulations provided examples on how nurses can be prepared for clinical encounters and experiences, where students can learn in an immersed manner. Simulations enlist the participation of students, resulting in active learning. Teachers could help nursing students learn by designing an engaging events and activities that reflected reality and allow them to practice, acquired enough expertise, and advance nursing students' skills in a more guarded, nonthreatening environment. concurrently, either involved in simulations, gaming together, or supplementary developing technologies, students became energic contributors and custodians of their acknowledgement in learning clinical skills. (Bauman 2013: 483.)

2.2 Learning approaches and teaching method used in nursing education

Learning clinical skills in clinical laboratory and simulations had its own history. There were plenty of sociological, demographic, technological and policy trends that drove the change within the nursing profession, which included the significant

increase in the aging population, the evolvement of new technologies, renewed focused that came into play in the nursing profession with limited doctors and nurses working hours. It was evident that there was huge need for experts and to attain the objective, new method of learning nursing skills had to be implemented in which learning clinical skills in clinical laboratories and simulations had to be employed. Intuitive, incidental, retrospective, and prospective approaches were used in teaching and learning. The quality of the methods to learn clinical skills in clinical laboratory and simulations used varies widely, but nowadays modern high fidelity, human patient clinical laboratory and simulations offer a sophisticated picture of reality (Harper et al. 2011: 12).

The long history came with benefits. Learning clinical skills in clinical laboratory and simulations enjoyed recognition as tools for teaching and learning. Students were then able to give their perception about its effectiveness and in their opinions, they thought it was not only the modalities or tools they admired in the process but also admitted they enjoyed the fact that learning clinical skills in clinical laboratory and simulations linked and integrated them into the hospital wards. They felt more self-confident, emotionally stable, improved skills in learning, communication, safeness, support of clinical learning areas, practical application of knowledge, comprehensive experience, deliberate repeated practice, experiential learning, reflective practice, and they could enjoy a working environment with minimal risk (Jansen 2015: 35).

2.3 Nursing students' views on learning clinical skills

Nursing students encountered several new experiences and situations during their studies, particularly learning clinical skills in clinical laboratories and simulations. The students got the pictures on how hope is fostered in healthcare practice at this stage of their learning. There was broader consensus among the students on how the perceive this learning process, providing emotional supports to each other and at the same time fostered the hope they need. The students viewed trustworthiness as essential, credibility, emotional support, transferability, dependability, relationship, information, individualised hope, acknowledgement, responsibility to be all integral part in learning clinical skills in clinical laboratories and simulations (Zolkefli 2022:164).

Learning clinical skills has to do with influences that shape self-set of goals and self-regulated learning strategies. Students who perceived learning positively got involve in the feelings of relevance, interest, efficacy, and supportive structure that are likely to shape self-goals that move towards cognitive, metacognitive, and motivational strategies in mastery of learning clinical skills in clinical laboratories and simulations. This is in contrary to set ego goals over learning goals during learning clinical education. The perspective of self-regulated goal can be explained in three different levels which includes the selection of effective strategy, the employment of metacognitively of the planning, monitoring, and the evaluation of learning process. Students had the perception that their self-regulated learning skills was well developed in the environment that successfully implemented and evaluated the right strategies. The right landscape provides room for realization of goals in clinical skills laboratories and simulations (Cortny et al. 2022: 85–87).

2.4 Terminology

Defining learning means updating or having new knowledge. Nursing students are being taught skills through the devotion of their time and attention to gaining new experiences in the common subjects and environment (Tal 2017: 59).

Students' perspective: Perspective means towards something, point of view. Nursing students´ perspective is reviewed on how nursing students perceive laboratories and simulations as a method of learning. The understanding of perception which uses active learning methods about their insertion in the learning of clinical skills laboratories and simulations. There are advances and challenges marked by contradictions in the way Nursing students act and think on learning clinical skills laboratories and simulations, which is an inherent condition that processed change, from the perspective of complex thinking, education, nursing, outcome assessment, problem-based learning, and the practicality in the working life as nurses. There are many challenges, since the necessary changes involve new ways of learning clinical skills laboratories and simulations, as a result one could ascertain that the context impose in the field of health, the need to reformulate clinical skills in clinical laboratories and simulations implementation (Guiherme et al. 2021: 2–5).

3 Study purpose, aims, and study questions

The purpose of this literature review is to describe learning clinical skills through laboratories and simulations from nursing students' perspective. The aim is to produce knowledge to further develop the education of learning clinical laboratory skills and simulations.

The study question is how do nursing students perceive learning clinical skills in clinical laboratories and simulation?

4 Methodology and methods

4.1 Methodology

Qualitative research methodology is based on the understanding and collecting in-depth experiences of research participants (Maltby, Williams, McGarry and Day 2010: 47-48). Qualitative research methodology takes the semblance of group study with a focal point on the way research participants view their occurrences and the society that inhabits them (Holloway & Galvin 2016:68). There are different types of qualitative research. These includes, ethnography, phenomenology, case studies, grounded theory, and narratives. Qualitative research methodology aim is understanding participants´ experiences. Analysing data in qualitative research methodology is rigours process and it requires require time and the researcher to fully immerse herself/himself with the data and keep revisiting it throughout the research process. (Burns & Grove 2009: 508.) According to (Maltby et al. 2010: 22), qualitative research methodology focus is on the quality of the data collected rather than the quantity of the data.

4.2 Data collection method

There are different ways in which data can be collected and analyzed in qualitative research methodology (Maltby et al. 2010: 48). In this Bachelor Thesis, literature review method is utilised. Literature review is a method where secondary analysis of past research is done to evaluate abstract knowledge. The knowledge is critically assessed and then organized to highlight what is known (Jesson, Matheson & Lacey 2011: 45.) The literature review provides an analytical discussion of the topic in question while showing what is similar and what is different in the studies. The intention is to guide the reader with contemporary writings or literature on the subject matter, form and structure that provides the basis for future targets such as, rationale for subsequent research in studies. (Cronin, Ryan & Coughlan 2008:39).

Literature review is a broad term that encompasses a variety of approaches for collecting, analysing, and reporting data (Cronin et al. 2008:40). The Bachelor Thesis literature review took the form of a descriptive literature review. Descriptive literature reviews that is well-done are an essential element of any specialties. Descriptive literature review had been used because the purpose and aims of the Bachelor Thesis is to produce knowledge that explain and describe learning clinical skills in nursing education.

Many types of literature reviews do exist, such as narrative or traditional literature reviews which involved critique and summary of an article. The literature is reviewed from a relevant database and is selective in the material used. Scoping or systematic literature review is another method which is different since it does not have restriction on the resource. Integrative literature review is another method available to choose from, which involves investigating the prevalence of the literature. The idea is to review all materials on the said topic of research when undertaking scoping literature review. Before using the descriptive literature review approach in the Bachelor Thesis, the research question is formed and the answer to the question starts to outline the proposal, through brainstorming and discussions (Katreena 2014: 525).

Descriptive literature review was the reviewed method of the literature based on common data bases as references from the articles showed different opinions and concepts unsolved about the nursing students' perceptions. One of the most basic decisions of using descriptive literature review was because of the eased in selecting unit of the analysis. In descriptive literature review, unit of analysis are referred to a vast variety of objects of the study. Part of the text that is abstracted and coded has also been considered unit of the analysis. Abstraction and coding are used because it emphasized descriptions and interpretation on a higher logical level. Descriptive literature review helped in setting up trustworthiness that eased and helped transferability (Graneheim & Lundman 2004:109-111).

4.3 Data search and collection

In this Bachelor Thesis, database search was conducted to get the most relevant and latest scientific research on learning clinical skills laboratories and simulation, and nursing students 'perspective. Medline and CINAHL nursing database were utilized in the process.

CINALH (Cumulative Index to Nursing and Allied Health Literature) by EBSCO is a high-quality index of literature in different journals and publications in Nursing and other Allied healthcare sciences. It contained over 3,900 journals and over a million articles dating back to 1937 (CINAHL database). Medlin was the United States National Library of Medicine´s (NLM) premier bibliographic database which contained over 28 million to reference journal article (Medline fact sheet).

To get the most relevant articles, inclusion and exclusion criteria were utilized. The inclusion criteria were the focus used to review nursing students 'view in learning clinical skills. The Bachelor Thesis research articles must be scientific with emphasis on learning clinical skills through simulations or laboratories settings, the articles must be recently published from 2012 and answer the research questions.

The exclusion criteria are, if the article is an opinion paper, deemed too old (published before 2012), the journal in which the article is published is not found in publication forum, methodologies and methods are not clear and the articles does not answer the research questions.

Table 1. inclusion and exclusion criteria

Inclusion	**Exclusion**
Scientific research articles/ good quality studies	Opinion articles/ not good qualities
Emphasis on learning clinical skills laboratory	Not relevant to health care
Recently published 2012–2022	Published before 2012
Methodology and methods are clearly explained	Methodology and methods are not clearly explained.
Published in English	Published in any other languages
The article answers the research question	Do not answer the research question

The Boolean operation approached helped during the search. The Boolean operators `` AND´´ and ``OR´´ and ``NOT´´ function enabled the search of the studies and finding information in the search of database (Dillard 2013:94).

The examples of search terms and search sentences were ``Nursing students´ perspectives in clinical laboratories and simulations ´´ OR `` nursing students 'perceptions in learning clinical skills" AND ``nursing education´´ OR ``Laboratories and Simulation`` OR ``Simulations and laboratories``, `` clinical skills `` OR

`` clinical skills laboratory `` AND `` clinical simulation `` OR `` Clinical Skills Laboratories and simulations `` OR `` Clinical skills in clinical laboratories `` OR `` clinical skills in clinical simulations ``.

The search results included articles that carried the search terms and sentences, and the results were mostly in line with the topics. It was a good idea that the synonyms were used in the search to make the search more effective. Synonyms such as perceptions, perspectives, views, nursing students, student nurses, nursing education, nursing studies, nursing institutions, clinical skills, clinical skills laboratories, clinical skills laboratories, and simulations, were used in the search. If the search of the words were not carefully written, many or mostly inappropriate sources would have come up in the search results, since databases are not mind readers (Dillard 2013:96).

The database search was done using CINAHL and Medline. The search term with CINAHL was clinical skills laboratories and simulations. The limitations were set to get clinical skills and simulations. The first hit using CINAHL was 28194 hits. A selection was then made based on the title and 30 hits came from the search. Another selection was made based on abstract and 25 search results were realized. The final selection was made based on based on the whole text and 8 search results were selected. The same search methods from Medline were used with nursing students´ perspectives as the search term, the first hit resulted to 9727 search results. Selection based on based on title came up to 40 articles, selection-based on abstract came up to 20 articles, and the final selection which was based on the whole text came up to 5 articles. All total search results were 37921, the total of selected results based on title was 70, the total selected results based on abstract was 45, the total selected results based on whole text was 13. Therefore 13 articles were used to achieve the results.

Table 2. database search results.

Data-base	Search terms	Limita-tions	HITS	Selected based on tittle	Selected based on abstract	Selected based on whole text
CINAHL	Clinical skills la-borato-ries and simula-tions	Clinical skills * simula-tions	28194	30	25	8
MEDLIN	Nursing students' perspec-tives	Nursing *OR stu-dents Perspec-tives	9727	40	20	5
			Total Number= 37921	Total= 70	Total= 45	Total= 13

Julkaisufoorumi (JUFO) a publication forum was used to rate the journals in which the articles were published. JUFO is an innovative web page that classifies and rates scientific publication channels, it was created by the Finnish scientific community to support quality assessment of academic research. The evaluation was done based on domestic and international academic publication levels. All the thirteen articles that was selected had at least the level one, level two or level three criterion.

Articles that had the level 1 criteria included peer-reviewed articles that were specialised in the publication of scientific outcomes/results and had editorial board experts of the discipline. Majority of all the 13 articles reviewed were classified as level 1 which was the basic level of the rating and classification. JUFO Portal was used to search the criteria with the help of the search terms, panel, publication type, publishing language, country of publication boxes to enable the retrieval of best evaluation. Six out of the thirteen articles were either level 2 or 3, and had the award of academic journals, conferences, and book publishers at the highest level and impact judge by panels of experts. There were all mostly international publications around humanities and social sciences. Articles that did not meet level 1 evaluation criteria were all rejected and not included in the data selection and analysis. Whereas the quality of the research articles was ensured by utilizing JBI.

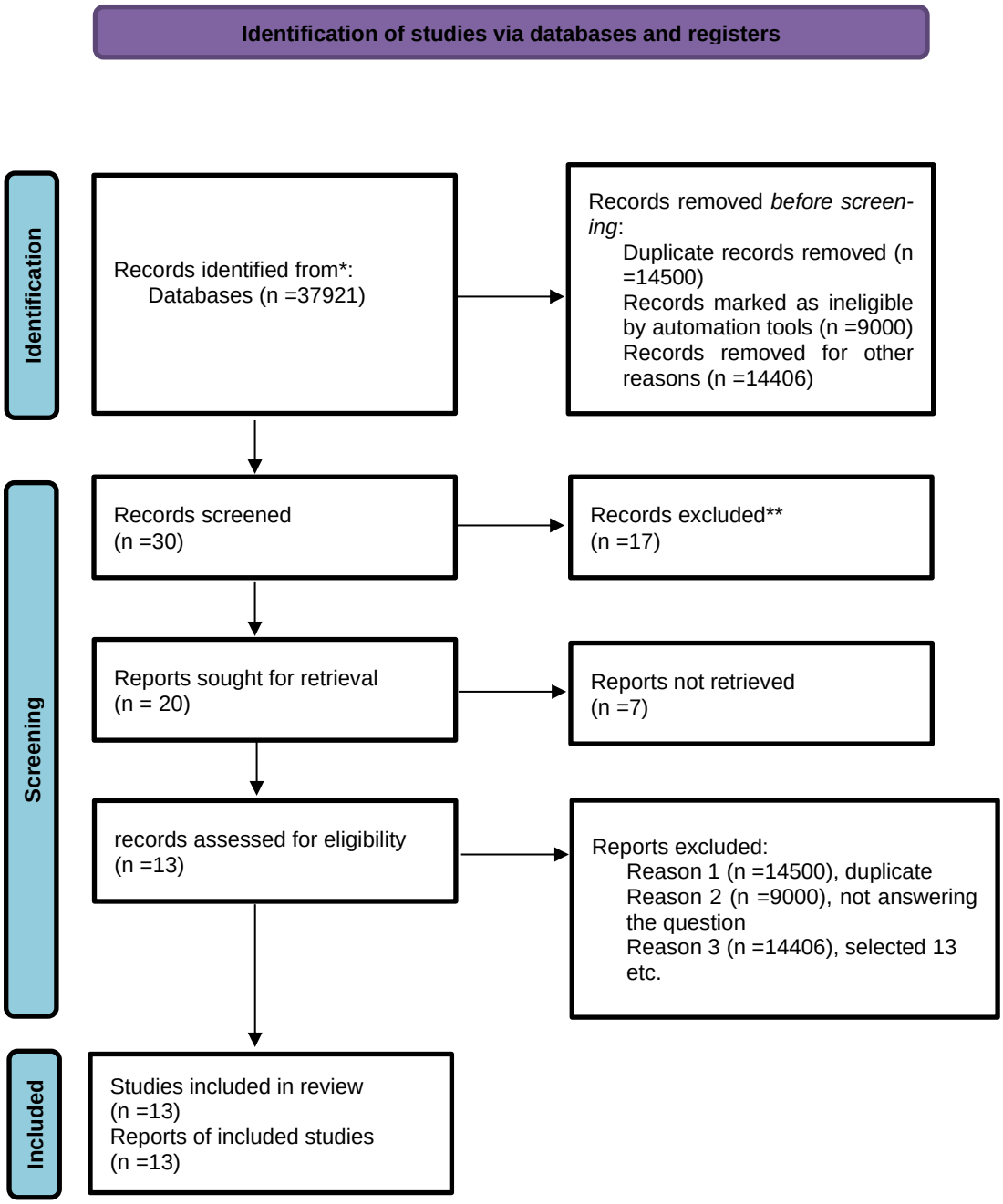

Figure 1. Prisma diagram, data selection process

4.4 Data analysis method

Data analysis in qualitative research methodology is challenging process and time consuming (Polit & Beck 2022: 257). Qualitative research methodology usually generates large of data. To analysis the data, coding scheme is created to organise and categorise the data to form meaningful results.

In this Bachelor Thesis inductive content analysis is utilized to analyse the data. Elo and Kyngäs, (2008), in their writings revealed that the basic inductive content analysis is realized by using the following phases: data reduction, data grouping and the formation of concepts that can be used to answer research questions.

Content analysis as a data analysis method is searching for patterns in the data. Content analysis is set of techniques that are used to recognize, evaluate, express, and make inferences about specified characteristics within or reflected by written or verbal text. In qualitative research, content analysis is used as an early step in recognizing the main themes that are existing in open narrative or textual data. The aim of content analysis is to produce broad description of learning clinical laboratory nursing skills and simulation. (Elo & Kyngäs 2008:109).

The objective is to determine the meaning in the description, so the results of a qualitative content analysis tend to be expressed as ideas instead of the numbers. Qualitative content analysis tends to be inductive, in the sense that category for describing the data changes during the analysis. Inductive approaches to content analysis are centred on developing the categories and interpretation as closely as possible to the research material that is being documented (Waltz, Strickland & Lenz 2010: 112).

The aim of inductive content analysis was to identify themes from the results that answers the research question. This was done first by categories results into main units which was then coded to create sub-categories and generic categories that answer the research questions (Aveyard 2010:127).

The opportunity to assess the feasibility and organization were all considered. The essence and reasons for the utilization of concepts, applications and interpretation associated to the inductive content analysis approach were all enacted with specific characteristics, fundamental theoretical process and presumptions that needed to be observed. (Graneheim & Lundman 2004:108).

Table 3. Example of the analysis

Main unit	**codes**	**Sub-categories**	**Generic categories**	**Themes**
Students stated that after learning clinical skills in clinical laboratories and simulations they encountered positive excitement and anxiety. The learning environment of studying nursing became realistic as if they were caring for a live patient. More so the students found out that learning clinical skills helped them to improve their skills which was applicable beyond their treatment of the mannequin. Article 5	Mixed emotions. Students were excited and anxiety. simulation scenario provided a realistic and safe learning environment, mimicking real life situation. Students found simulation-based learning provided useful skills and experience beyond the laboratory.	Safe and realistic environment for practice. Useful skills. Experience.	Safe. Useful skills and experience.	How do nursing students perceive learning clinical laboratories and simulation?

5 Outcomes

5.1 Summary of data

A total of 13 articles met the set inclusion criteria (n=13). See table 1. These studies were conducted in different countries: United States of America (n=4), Turkey (n=3), Sweden (n=2), Norway (n=1), Iran (n=1), Tanzania (n=1) and South Korea (n=1).

There were 11 reviewed articles conducted in qualitative methodology (The challenges of clinical education in nursing: A qualitative analysis of nursing students and clinical instructors' perspective, 2021. The Effect of High Reality Simulation on Nursing Students' Knowledge, Satisfaction, and Self-Confidence Levels in Learning, 2020. Investigating student satisfaction and perception in clinical reasoning skills with Simulated case-based learning as a level I fieldwork experience 2021. The effects of using simulation in nursing education: A thorax trauma case scenario 2017. Nursing students' perceptions and experiences of using virtual simulation during the COVID-19 pandemic 2021. Tensions in learning professional identities – nursing students' narratives and participation in practical skills during their clinical practice 2017. Nursing students' transfer of learning outcomes from simulation-based training to clinical practice, 2019. Walking the bridge, Nursing students` learning in clinical laboratories, 2015. Examining interprofessional learning perceptions among students in a simulation-based operating room team training experience, 2019. Effect of repeated simulation experience on perceived self-efficacy among undergraduate nursing students 2021. Perceptions of caring among baccalaureate nursing students during high-fidelity simulation, 2017).

One of the studies was conducted using quantitative methodology (Skills laboratory implementation readiness and associated students' clinical performance on neonatal resuscitation, 2020.) And the last article had utilised mixed methods that is both qualitative and quantitative methodology (The effects of using high-fidelity simulators and standardized patients on the thorax, lung, and cardiac examination skills of undergraduate nursing students, 2016.)

The participants of the mentioned articles were mostly nursing students. It was only in one study where the researchers investigated interprofessional learning perceptions among students from nursing, medicine, and nurse aesthesia (Examining interprofessional learning perceptions among students in a simulation-based operating room team training experience 2019).

Table 4. Overview of the themes, generic and sub-generic of nursing students´ perspective of learning clinical skills laboratories and simulation.

Sub-category	Generic -category	Main category
It's effective method for team training because it creates a realistic yet secure learning environment, enabling nursing students to participate and know the significance of their actions, decisions, and behaviours without putting the patient in uncomfortable situations.	Students learn better by doing clinical laboratories and simulation sessions. They developed professional and personal competence by performing and they benefited from feedback.	Learning clinical skills laboratories and simulation is effective method of learning
Participant find simulation experience had motivated them to acquire more skills in several domains of nursing practice.	Simulations enhanced students´ skills in many ways such as, problem solving, decision making and understanding the reasons for nursing interventions.	Benefits of learning in simulations and clinical laboratories
It was important that the instructors illustrate or reveal practical skills correctly and explain the theoretically knowledge clearly. There was room for uncertainty, confusion and misunderstanding if the lecturers were unclear.	According to the students, it's necessary the teacher explains clearly, sessions before they perform procedures in clinical laboratory and simulation. Unclear instructions created confusion.	barriers to learning clinical skills laboratories and simulation.

5.1 An effective method of Learning

Out of the thirteen research articles included in this Bachelor Thesis four articles assessed the effects of laboratories and simulations in nursing education, one of the article investigated the transition that occurs from learning clinical skills in clinical laboratories and simulations to on-the-job learning practice. Another research article investigated students´ satisfaction and views on how nursing students perceive clinical skills in laboratories and simulations scenario and one assessed nursing students learning clinical skills in laboratories. Kacupuci (2017:1071) revealed that nursing students found laboratories and simulations to be useful skills that are applicable beyond treating mannequin. Nursing students were positive and excited that the learning environment was realistic and safe. Nursing students rate their self-efficacy after learning clinical skills in clinical laboratories and simulations (Reyhan et al 2018: 240)

Learning clinical skills provides knowledge and safety. Kapucu, 2017 pointed out that students had gained more knowledge and they felt more experienced and safer after learning clinical skills in clinical laboratory and simulations. The research article revealed that learning clinical skills environment becomes more realistic, useful for improving nursing students' knowledge and skills, which is then applicable in clinical on-the-job learning and beyond (Kapucu 2017: 1070).

5.2 Professional development

All thirteen research articles highlighted nursing students' experiences either during or after learning clinical skills in clinical laboratories and simulations. Almost all the nursing students that participated in the interview agreed that learning clinical skills in clinical laboratories and simulations had enhanced their knowledge and skills in several aspects and made them able to solve problems, motivated their ability to make decisions and developed their intervention skills. Students revealed their experience in learning clinical skills as a connection between theories and their on-the-job learning. (Ahmari et al. 2021: 261–265).

The participants also improved the teams works skills. The participating students in the research studies shared the experience of teamwork and collaboration as a positive influence in learning clinical skills in clinical laboratories and simulations. They revealed that it was important and beneficial to their studies because it increases professionalism and competencies (Leithhead et al. 2019: 27). Teamwork and team spirit reduced students' tension and brings in the energy as students socialized themselves into practicalities in the nursing profession. This teamwork and team spirit underscore the significance of both instructors and the preceptor's part for integrating and interacting nursing students in learning clinical skills in clinical laboratories and simulations. (Ewertsson et al. 2017: 229).

Learning clinical skills enhances self-confidence: Out of the thirteen research articles in the Bachelor Thesis, seven articles revealed increased confidence in nursing students during and after learning clinical skills. The simulation-based training promoted their confidence, understanding, judgements and strengthen the students before their clinical placements. The students had role expectation and competencies; they realized the role changes as confidence created new team leaders (Ware & Schoenhofer 2017: 126). They felt totally more empowered and experienced knowing that many things are correct, knowing how to do things correctly without mistakes. The students as had the knowledge of tasked to reality hospital settings after learning clinical skills in clinical laboratory and simulations. (Hustad, et al. 2019: 18.)

Learning clinical skills improves leadership and responsibility: The participating nursing students in the research studies revealed that they experienced leadership and responsibility enhancement in them which facilitated their approached in professional ability with reduced anxiety and enabled the courage to do, carry, take, and accept responsibilities after learning clinical skills in clinical laboratories and simulations (Roth et al 2022:7). The repeated learning clinical skills in clinical laboratory and simulations provided students with the perceptions and impressions that they were well equipped for their clinical practice. The students also had the knowledge and perceptions of disparity provided them the opportunity to consider and analyse various methods of executing the different procedures that were tasked on them. (Ewertson, et al. 2015: 279.)

Learning clinical skills improve communication skills: Ten out of the thirteen research articles the nursing students expressed their views and perceptions in increased communication skills. Learning clinical skills in clinical laboratories and simulations enables students to use the language of studies and the terms and terminologies are used more often and practiced regularly. The communication ability and skills, professional approach facilitates and enhances the learning process, raising awareness which acts as motivational technique in improving the communication skills of the students and reduced their anxiety. (Roth et al. 2016: 9.)

5.3 Barriers to learning clinical skills

Two of the studies also pointed on some of the challenges and barriers faced by nursing students learning clinical skills laboratory and simulations. Lack of sufficient staff. It was said that lack of effective and sufficient clinical education staffs, and experts posed a problem to the students. The students perceived this as a barrier because it caused decreased in their learning skills quality. The nursing students also thought that the lack of effective clinical facilitators posed a problem which included the demand for diverse clinical learning methods in clinical laboratory and simulations with focused on autonomy-based education (Ahmari et al. 2021: 263).

The lack of sufficient furniture in clinical laboratories and simulations: The participating students in the research studies also saw lack of furniture, models and infection control requirements and a major setback in their learning clinical skills as institutions were unable to meet up with the tools and equipment needed. Nursing students revealed that many schools had inadequate required infrastructures, inadequate requirements for resuscitation, models, reproductive health, laboratory maintenance for implementing clinical skills in clinical laboratories and simulations. (Defrosa et al. 2020: 97.)

6 Discussion

6.1 Discussion of the results

All thirteen studies had shown that students had the opportunity and gained the experience in real learning clinical skills in clinical laboratory and simulations. Their perceptions brought out the importance of learning clinical skills clinical laboratory and simulations. The students felt that collaboration, teamwork, self-confidence, improvement, increased in skills, increased in knowledge, preparedness, integration of knowledge, achievement, responsibility, realization of competency, acquisition of new techniques, permanent effects, long lasting success, motivational, guidance, emotional stability, safety, decision making ability, opportunity, possibility, practicality, assession, relationships, communication skills, encouragement and balancing were positive outcomes. However, some students had negative feelings and perceptions with regards to lack of enough staffs and teachers, lack of enough educational facilitators, and the lack of enough furniture, equipment, and tool in learning clinical skills in clinical laboratory and simulations (Ahmari et al. 2021: 264).

It was very important to think about the importance of integrating theoretical knowledge and practice in learning clinical skills in clinical laboratory and simulation in the formation of nurses. There were significant relationships reciprocated. There were suggestions for health care professionals and educators to consider the perceptions that nursing students have revealed. The theories that formed caring were very important assets for students to better understand and gained valuable knowledge learning clinical skills in clinical laboratory and simulations. Therefore, there was need to prioritize importance of learning clinical skills in clinical laboratory and simulations.

As opposed to that, the lack of teaching staffs, furniture, tools equipment and skills provides room for confrontation of the complex real situation. Learning in such a situation revealed fragmented learning. There was confident that the positive outcomes overshadowed the challenges and barriers. The studies also indicated that different group of nursing students learn differently. (Leithhead et al. 2019: 29.)

The results shared similarities with the findings, That Students are trained to render comfort, responding patients and relatives needs by engaging in education talks, guidance, counselling, and precautionary measures during care (Roth et al. 2022: 10). Nursing students shared similarities with the same view that students felt collaboration, teamwork, self-confidence, improvement, increased in skills, increased in knowledge, preparedness, integration of knowledge, achievement, responsibility, realization of competency, acquisition of new techniques, permanent effects, long lasting success, motivational, guidance, emotional stability, safety, decision making ability, opportunity, possibility, practicality, assession, relationships, communication skills, encouragement and balancing were positive outcomes (Ahmari et al 2021:266). The similarities helped to strengthen the importance of clinical skills laboratories and simulations. On the other hand, Ahmari et al (2021), went further to point challenges such as lack of furniture in learning clinical skills in clinical laboratories and simulations faced, Catherina Roth et al did not mentioned these challenges.

Learning clinical skills in clinical laboratories and simulations prepare nurses to be critical thinkers and be able to work in complex healthcare systems. Universities were incorporating simulations to their pedagogical methodologies. Simulations provided examples on how nurses can be prepared for clinical encounters and experiences. where students can learn in an immersed manner. Simulations enlisted the participation of students, resulting in active learning. Teachers could help nursing students learn by designing engaging events and activities that reflected reality and allow them to practice, acquired necessary skills, and developed knowledge in a secure, nonthreatening environment. Altogether, whether the nursing students are engaging in simulations, gaming activities, or other advancing techniques, students become participants who are more involved and can take control of their own learning abilities. (Bauman 2013: 483.) The importance of staffs here paramount. Bauman highlighted this importance can be compared to Leithhead James, et al who pointed out the importance of staffs and personnel in learning clinical skills in clinical laboratories and simulations as well. the lack of teaching staffs, furniture, tools equipment and skills provide room for confrontation of the complex real situation. Learning in such a situation revealed

fragmented learning. Both are confident that the positive outcomes overshadowed the challenges and barriers. The studies also indicated that different group of nursing students learn differently (Leithhead, et al. 2019: 28)

6.2 Discussion of validity and ethics

Scientific research remained the pursuit of truth and elimination of errors. Validity and reliability aimed to ensure the credibility of the research (Murphy and Dingwall 2003:150). Validity means the scope which a tool or mechanism is used to find the attributes of a concept accurately, produced results that were reflection of real properties and characteristic (LeBiondo-Wood & Haber 2010:111). Validity can also mean that accuracy of the measure. If it finds what it was intended to measure, then the measure was valid. Validity was a way of proving, revealing, and communicating the rigor of the research process and the trustworthiness of the results, and the literature review will recognise the reflexibility, valuable and rigour. A search strategy had been developed and applied to identify the literature pertinent to the reflexibility and the value in qualitative research with full text (Darawsheh 2014: 260).

To ensure the validity of this literature review, two reliable and recommended database which were accessed via Metropolia university of applied sciences library were used. The two data sources allowed broader data search and more effective comparison of the search results, thus, enhancing results´ reliability and validity Burns & Grove 2007). The principle of trustworthiness and self-reflection were adhered during the whole process of conducting this literature review to ensure the interpretation was in accordance with researchers´ findings and are not based on the researchers´ own opinions (Polit & Beck 2004). Two students conducted this literature review, articles selection and analysis of the results were done independently based on the criteria, and any issue that arose were resolved by discussion. The researchers also attended thesis seminars, where fellow students and mentor gave feedback, thus contributing the validity of this review.

There were four ethical principles that underpinned the research in healthcare. Autonomy. All research participants had individual autonomy; therefore, it was required to obtain their consent, preferably written consent. Informed and ongoing

consent was informing the individuals of their rights to withdraw from the study anytime. To gain full consent, it was important that the instruction was clear and easy to understand. Beneficence. The research or the study had to be of benefit to the participant. Justice. This implied that the interest of the research participant was paramount to the objective of the study, it concerned fairness. Non-malfeasance. The research participants were to remain harmless in taking part of the study (Maltby, Williams, McGarry & Day 2010: 168).

This literature review was not aimed at causing harm to anyone, but rather doing good to the society thus adhering the ethical principles. The data selection process was done fairly and based solely on the inclusion and exclusion criteria set out. The Finnish advisory National Board on Research integrity guidelines were followed during the thesis process. To ensure all ethical principles, articles were read carefully, and bias were avoided in the selection process. Plagiarism was avoided and the articles were cited correctly. Authors´ work are acknowledged and respected and the references are shown.

6.3 Conclusions and recommendations

Strong clinical skills are valuable assets to nurses. It is argued that newly graduating nurses do not have strong grasp of the essential clinical skills. Due to the increased accountability in the nursing profession, it is important to ensure graduating nurses have the strong nursing skills. It is clear in the findings from this study, that learning clinical skills and simulations is a great way of ensuring nursing students develop the clinical skills, competence and confidence level that enables them to perform their tasks and meet the demand. However, it's important that more research is done as to why new nurses lack sufficient skills. From the results of this review, inexperience teachers and insufficient equipment were barriers to learning clinical skills laboratories and simulations. It is therefore important that this is investigated further. This review can be utilised to develop further the nursing education curriculum in Metropolia University of Applied science.

References

Ahmari, T., Mina G., Mahboubeh, R. and Ashraf K. (2021). The Challenges of Clinical Education in Nursing: A Qualitative Analysis of Nursing Student and Clinical Instructors' perspectives. *Journal of Nursing and Midwifery Sciences, 8(4): 260-267.*

Alteren J. and Bjørk T. (2006). Students' Learning of Practical Skills Laboratory and the Clinical Setting. *Nordic Journal Nursing Research, 26(4): 25–30.*

Aveyard, H. (2010). *Doing A Literature Review in Health and Social Care. A Practical Guide.London, McGraw-Hill Education 4th Ed*.

Bauman E. (2012). Game-based teaching and simulation in Nursing and Healthcare. *Springer Publishing Company, 8(9): 483.*

Bowen W, Zambas J, Shelaine M, Rachel C, Catherine N. (2020). Integration of High-Fidelity Simulation into Undergraduate Nursing Education in Aotearoa New Zealand and Australia. *Academic Nursing Journal, 36(3) 37–50.*

Burns, N., and Grove, S.K. (2007). Understanding Nursing Research- Building an evidence-based practice 5th Edition Elsevier Saunders.

CINAHL database webpage. (2022) https://www.ebsco.com/products/research-databases/cinahl-complete> read 19.03.2022.

Cortny W, Nordeen J, Browne C, Marshall B. (2022). Exploring Student Perceptions of their Learning Adaptions during COVID-19 Pandemic. *Journal of Chiropractic Education 36(1): 82-93*

Cronin P., Ryan F. and Coughlan M. (2008). Undertaking a literature review: a step-by-step approach. *British Journal of Nursing, 17(1), 38–43.*

Darawsheh, W. (2014), Reflexivity in Research: Promoting Rigour, Reliability and Validity in Qualitative Research. *International Journal of Therapy and Rehabilitation, 21(12):560.*

DeBourgh, G.A. and Prion, S.K., (2011). Using simulation to teach prelicensure nursing students to minimize patient risk and harm. *Clinical Simulation in Nursing 7(2):47-56.*

Defrosa H, Kibusi S, Kapalata S. (2020). Laboratory Implementation Readiness and Associated Students Clinical Performance on Neonatal Resuscitation: A Cross-Sectional Study among Diploma Nursing Students in Tanzania. *International Journal of Nursing, 12(1): 96-100.*

Dillard, D. (2013). The Science of Searching databases: Boolean Algebra as a tool to effectively find medical, legal, and other information. *Journal of Nurse Life Care Planning, 13(3): 93-99.*

Dincer,B. and Ataman,H. (2020). The Effect of High Reality Simulation on Nursing Students´ knowledge Satisfaction, and Self-Confidence Levels in Learning. *International Journal of Caring Sciences, 13(3) 1969–1975.*

Drisko J. W, and Maschi T. (2016). Content analysis. New York: Oxford University Press.

Elo, S. and Kyngäs, H. (2008). The Qualitative Content Analysis Process. *Journal of Advanced Nursing*, 62 (1), 107–115.

Ewertson,M., Alvin,R., Holmström and Blomberg. (2015). Walking the bridge, Nursing students` learning in clinical laboratories. *Journal of Nursing (15)277–283.*

Finnish National supervisory Authority for Welfare and Health. <https://www.valvira.fi> Read 10.03.2022.

Graneheim U.H, Lundman B. (2004). Qualitative Content Analysis in Nursing Research: concepts, procedures, and measures to achieve trustworthiness. *Nurse Education Today. 24,105 –112.*

Guiherme C. B, Lucas T. B, Elaine C, Marques A.C, Laiane M.R. (2021). Stress Level experienced by Participants in Realistic Simulation: A Sytematic Review. *Academic Journal of Nursing, 74(4): 1-10.*

Harper M. and Markham C. (2011) Clinical Simulation: Exploring its History and Evolution. *The Journal of Operating Department Practice, 2(2): 11-14.*

Haule, D.H., Kibusi S.M. and Ngéwisheme S.K. (2020). Skills Laboratory Implementation Readiness and Associated Students Clinical Performance on Neonatal Resuscitation: A Cross-Sectional Study among Diploma Nursing Students in Tanzania. *International Journal of Nursing, 12(1): 96–100*

Holloway, I. and Galvin K. (2016). *Qualitative research in nursing and healthcare 4th edition. John Wiley & Sons, 4(2) 68*

Hustad J, Johnnesen B, Fossum M, Hovland O.J. (2019). Nursing Students´ Transfer of Learning Outcomes from Simulation-based Training to Clinical Practice: A Focused Group Study. *BMC Nursing, 18(1).*

Jansen Leigha, (2015). The Benefits of Simulation-Based Education, Perspectives on Issues in High *Education, Journal Article,* 18(1):32–42.

Jeffries, P.R. (2007). Simulation in Nursing Education: from Conceptualization to Evaluation National League for Nursing.

Jesson, J.K., Matheson, L. and Lacey, F.M. (2011). Doing Your Literature Review: Traditional and Systematic Techniques. London: SAGE Publications, 19(4):45

Kapucu S. (2017). The Effects of Using Simulation in Nursing Education: A Thorax Trauma Case Scenario. *International Journal of Caring Sciences, 10(2), 1069–1074.*

Katreena Collette. (2014). Research for Advanced Practice Nurses: From Evidence to Practice, 2nd Edition, *Journal for Nurse Practitioners, 10(7): 524–524.*

Kido, K., Uemura,Y. and Matsumura K. (2021). The Proposal of an Instructional Design Model for maternity Nursing in Japan-Simulation-based Education for Improving Clinical Judgement. *International journal of nursing education, 13(4), 20–29.*

Kim M.J., Kang H.S, De Gagne J.C. (2021). Nursing Students' Perceptions and Experiences of Using Virtual Simulation During the COVID-19 Pandemic. *Clinical Simulation in Nursing, 60:11-17.*

Leithead J. Garbee, D.D., Yu Q., Rusnak V.V., Kiselov V.J., Zhu L. and Paige J.T. (2019). Examining interprofessional learning perceptions among students in a simulation-based operating room team training experience. *Journal of Interprofessional Care, 33(1): 26-31.*

LoBiondo-Wood, G & Haber, J (2010) Nursing Research. Methods and Critical Appraisal for Evidence-Based Practice. 8TH ED. St. Louis, Missouri: *Mosby Elsevier, 12(1):1–270.*

Makovski, T. (2017). Meaning in Learning: Contextual cueing relies on Objects´ Visual Features and not on Objects´ meaning, Learning Methods. *46(1): 58–67.*

Maltby, J., Williams, G., McGarry, J. and Day, L. (2010). *Research Methods for Nursing and Healthcare*. Harlow: Pearson Education. *52(2): 162–180.*

Mattila, A., Dwyer D. E., Martin, R. and Casile, E. 2021. Investigating Student Satisfaction and Perception in Clinical Reasoning Skills with Simulated Case-Based Learning as a Level I Fieldwork Experience. *American Journal of Occupational Therapy, 75(2): 1–1.*

Medline database webpage. (2022) https://www.nlm.nih.gov/medline/medline overview.html> read 19.02.2022

Moabi P. S. and Mtshali N.G. (2021). Nursing Education Institutions' Readiness to Fully Implement Simulation-Based Education in Lesotho. *African Journal of Nursing and Midwifery, 23(1) 1–17.*

Murphy E, Dingwall R (2006) 1st Ed. Qualitative Methods and Health Policy Research. Aldine De Gruyter. Routledge. 2(1): 1–276.

Papathanasiou L.V, Tsaras K, Sarafis P. (2014). Views and Perceptions of Nursing Students on their Clinical Learning Environment: Teaching and Learning. *Academic Journal of Nursing Education, 34(1): 57–60.*

Polit, D.F. and Beck C.T. (2004). Nursing research: principles and methods. 7th edition. Philadelphia. Lippincott Williams & Wilkins.

Polit, D.F. and Beck, C.T. (2022). 10th Ed. *Essentials of Nursing Research: Appraising Evidence for Nursing Practice*. Philadelphia: Wolters Kluwer.

Publication Forum. (2021b). *Publication Forum.* <https://www.julkaisufoorumi.fi/en> Read 17.02.2022.

Reyhan F, Mete A, Sayuner F.D, Celik N. (2018). Evaluating the Views of Midwifery Students about Simulation. *International Journal of Caring Sciences, 239–245.*

Roth C, Wensing M, Amanda B, Cornelia M, Katja K, Berger S. (2022). Keeping nurses in nursing: a qualitative study of German nurses' perceptions of push and pull factors to leave or stay in the profession. *BMC nursing, 21(1): 1–11.*

Ware S.M, Schoenhofer S.O. (2017). Perceptions of Caring Among Baccalaureate Nursing Students During High – Fidelity Simulation. *International Journal for Human Caring, 21(3): 120–133.*

Shinnick M. A., Woo M. A. and Mentes J. C. (2011). Human Patient Simulation: State of the Science in Prelicensure Nursing Education. *Journal of Nursing Education vol 50, 65-72.*

Tal M. (2017). Meaning in Learning: Contextual Cueing Relies on Objects' Visual Features and not on Objects' Meaning. *Academic Journal of Memory and Cognition, 46(1): 58-67.*

Tolarba J.E.L. (2021) Virtual Simulation in Nursing Education. *International Journal of Nursing Education, 13(3): 48–54.*

Tolsgaard M.G, Kulasegaram K.M, Ringsted C V. (2016). Collaborative Learning of Clinical Skills in health professions education: the why, how, when and for whom. *Academic Journal of Medical Education, 50(1): 69–78.*

Waltz, C., Strickland, L. and Lenz, E. (2010). Measurement in Nursing and Health Research: 4th Ed. *Springer Publishing Company 6(4): 102–119.*

Ware,S.M.and Schoenhofer, S.O. (2017). Perceptions of Caring Among Baccalaureate Nursing Students During High-Fidelity Simulation. *International Journal for Human Caring, 21(3): 120-133.*

West, C., Usher, K., and Delaney, L.J. (2012). Unfolding case studies in pre-registration nursing education: lessons learned*. Nurse Education Today 32 (5), 576–580.*

Zolkefli, Y. (2022). Nursing Students' Views Toward Fostering Hope in Healthcare Practice. *International Journal of Nursing, 14(1):162–171.*

Table 1. Reviewed articles

Author, year and country	Tittle	Methodology and data collection method	participants	Results
1 Hoda Ahmari et al, 2021, Iran	The challenges of clinical education in nursing: A qualitative analysis of nursing students and clinical instructors' perspectives. Journal of Nursing & Midwifery Sciences,	Qualitative approach. semi-structured interviews.	The study participants included 25 senior nursing students in 7th and 8th semesters and 8 nursing instructors	lack of effective clinical education facilitators" (demands for diverse clinical learning methods, setting professional values, and focus on autonomy-based education) and barriers to effective clinical education
2 Berna Dincer, Ataman, 2020, Turkey	The Effect of High Reality Simulation on Nursing Students' Knowledge, Satisfaction, and Self-Confidence Levels in Learning. International journal of caring sciences	Qualitative approach. Experimental approach and evaluation. Interviews.	61 Second year nursing students.	Satisfaction and self-confidence levels of those who received education with simulation were high.
3. Defrosa Herman, et al, 2020, Tanzania	Skills Laboratory Implementation Readiness and Associated Students Clinical Performance on Neonatal Resuscitation. International	Quantitative approach. Cross-sectional, proportional sampling and simple random	The sample size was 384 students. First, second, and third-year students.	55.6% of schools had inadequate equipment in terms of furniture, models, and infection control requirements. 60.9 %

	journal of Nursing education.	sampling, questionnaire, standardized checklist.		had positive perceptions towards the use of skills laboratory.
4. Amy Mattila et al, 2021, USA	Investigating Student Satisfaction and Perception in Clinical Reasoning Skills with Simulated Case-Based Learning as a Level I Fieldwork Experience, American Journal of Occupational Therapy.	Qualitative Approach. Questionnaires. Discussions. Descriptive statistics.	29 Nursing students, during their third semester.	Increase in debrief and reflection, clinical reasoning, clinical learning. Students develop in/depth learning, reasoning, and clinical abilities through simulated learning experience.
5 Sevgisun Kapucu, 2017, Turkey	The Effects of Using Simulation in Nursing Education: A Thorax Trauma Case Scenario. International journal of Caring sciences.	Qualitative approach, Interview, recordings.	7 third year nursing students.	simulated learning in a clinical skills laboratory increases students' confidence and prepares them for real clinical settings.
6 Kim MJ, Kang HS, De Gagne JC, 2021,	Nursing Students' Perceptions and Experiences of Using Virtual Simulation During the COVID-	Qualitative approach. Descriptive. Group interviews	A total of 20 students from a 4-year baccalaureate nursing program participated	Difficulties encountered in using virtual simulation. Benefits to student confidence and competence to provide patient-centered care.

South Korea	19 Pandemic. Clinical Simulation in Nursing.			
7 Ewertsson et al, 2017, Sweden	Tensions in learning professional identities – nursing students' narratives and participation in practical skills during their clinical practice. BMC Nursing	Qualitative approach. Observations, Informal Conversations, and Interviews	17 nursing students. Age 20-36, 3 men and 14 women.	Tensions in students' learning when they are socialized into practical skills in the nursing profession. This highlights the importance of both educators' and the preceptors' roles for socializing students in this process
8 Jørn Hustad, et al, 2019, Norway	Nursing students' transfer of learning outcomes from simulation-based training to clinical practice: a focus-group study. BMC Nursing	Qualitative approach. Interviews. Conversations.	285 second and third-year nursing students.	simulation-based training promoted self-confidence; second, understanding from simulation-based training improved clinical skills and judgements in clinical practice; and third, simulation-based training emphasized the importance of communication and team collaboration.

9 Mona Ewertson, et al Sweden, 2015	Walking the bridge, Nursing students` learning in clinical laboratories. Nursing Education in Practice	Qualitative approach. Interviews	Fourth semester nursing students, recently completed clinical practice	Repeated learning in the Clinical skill laboratory provided students with the impression that they were well equipped for clinical practice. The students' perceptions of disparities provided them with the opportunity to Consider and analyse various methods of executing procedures.
10 Leithhead James, et al, 2019, USA.	Examining interprofessional learning perceptions among students in a simulation-based operating room team training experience. Journal of Interprofessional Care.	Qualitative approach. Questionnaires, Opinions. Discussions.	Medical students, Senior nursing students.	The data reveal that simulation-based education is governed by Effective interprofessional teamwork and collaboration has multiple benefits, including improvement in patient outcomes.
11 Al Gharibi et el, USA 2021	Effect of Repeated simulation experience on perceived self-efficacy among	Qualitative approach. Interviews, Opinions	126, undergraduate nursing students	After the repeated simulation, the self-efficacy levels were rated higher in the posttest when compared to the pre-test

	undergraduate nursing students. Nurse Education Today			scores. Students gained more self-efficacy after repeating the same simulation scenario.
12 Sarah Ware et al, 2017, USA.	Perceptions of Caring Among Baccalaureate Nursing Students During High-Fidelity Simulation, International Journal for Human Caring.	Qualitative approach. Observations, Opinions.	11 Nursing students, third year.	Simulation is important is providing students with new role expectation and competencies, realize role changes., recognize evolving expectations. Simulations creates team leaders.
13 Hilal Tuzer et all, 2016, Turkey.	The effects of using high-fidelity simulators and standardized patients on the thorax, lung, and cardiac examination skills of undergraduate nursing students. Nurse Education Today	Qualitative and Quantitative approach. Interviews, Questionnaires.	52 nursing students who enrolled for physical examination elective course	The students who studied with the simulators and standardized patients expressed that simulation improved their communication skills, the professional approach facilitated the learning process, raised awareness by improving skills and reduced anxiety before clinical practice