Factors related to readiness for practice among undergraduate nursing students: A systematic review

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ABSTRACT

Aim: This systematic review identifies the factors and effective strategies related to nursing students' readiness for practice.
Method: A search was conducted from 2012 to 2022 in PubMed, CINAHL, SCOPUS, PsycInfo and EMBASE databases, using a combination of predetermined keywords. Four authors made the selection independently and the methodological quality was assessed using the RoBANS, Analytical cross-sectional studies Critical Appraisal Tool and MMAT tools. Information was extracted using a matrix and analyzed through the thematic synthesis approach.
Result: Studies (14,000) were identified from the search and 11 met the predetermined inclusion criteria. The main identified themes were personal characteristics, education-related factors, cognitive factors, psychological characteristics and social factors influencing readiness to practice. Some barriers also affect readiness for practice among undergraduate nursing students.
Conclusion: Multiple personal, educational and community factors interact in diverse ways to influences nursing students readiness to practice.
Registration: The protocol for the conduct of this study was registered on the International Prospective Register of Systematic Reviews (PROSPERO) with the registration number CRD42020222337

1. Introduction

Technological and medical advances, pandemics and unknown disease trends have resulted in new challenges for health service provision globally. Healthcare providers have realized that patients benefit more from functional interprofessional teams that mutually respect one another, communicate effectively and have a nurse that coordinates patient care (Arulappan et al., 2021; Mertens et al., 2019). However, the number of nurses globally is increasingly inadequate to meet this demand. In 2020, the first State of the World's Nursing (SOWN) report estimated a global shortfall of 5.9 million nurses and 17.0 % are expected to retire within the next ten years, with 4.7 million additionally needed to maintain the current workforce (WHO, 2020). This shortage gap is heightened by the perceived perception that trained and student

nurses are limited in readiness to practice (Akram et al., 2018; Woods et al., 2015). This warranted the need for policy redirection to increase in quantity as well as the quality of trained nurses. Academia increased the number of student nurses' admissions, improved retention and prepared them to enter the increasingly complex healthcare arena (El Haddad et al., 2017). This is a departure from the historical perspective where nursing education programs provided student nurses with a "learn on the job" apprentice style of education (Woods et al., 2015). Before nursing was accepted as a profession and a scientific discipline, nurses hitherto learned under the guidance of their superiors in practical patient settings. However, the gap associated with poor readiness to practice cannot be attributed to only a specific training segment but must be considered multifactorial (Purling and King, 2012). The result has focused on the influence of readiness for practice among healthcare

teams. When student nurses are inadequately prepared for work, they can experience a shock based on real-world work requirements (Casey et al., 2011; Kaur and Kaur, 2020).

Nursing students experience delight on graduation but are challenged by experiencing reality shock as the responsibility of caring for multiple patients in a multifaceted healthcare team begins (Fink et al., 2008; Kirkman et al., 2018). Kramer defines "reality shock" as the emotions that a graduate nurse experiences when starting work in a new environment and occurs when sociocultural and educational norms differ from what is expected (Kramer et al., 2013). This reality shock ought to be addressed while students are in training institutions based on consciously developed curricula that prepare students for practice in clinical multi-dynamic teams (Hegney et al., 2013; Usher et al., 2015). The perception that graduate nurses are underprepared for clinical practice, known as the theory-practice gap, is influenced by a variety of factors, including the gap between educational institutions and the practice setting, the quality of training opportunities, inadequate support in undergraduate clinical placements and poor socialization into the nursing profession (Casey et al., 2011; Kaur and Kaur, 2020). The lack of readiness for the practice among nursing graduates notably demonstrates the concerns related to poor acculturation in training (Usher et al., 2015; Wardrop et al., 2019). Acculturation into the social context of nursing work is critical for students after graduation for a smooth transition into professional practice (Duchscher, 2009; Walker et al., 2015). Practice readiness requires clinical knowledge, technical skills, critical thinking, communication, professionalism and responsibility management (Wolsky, 2014). The term "readiness for practice" is used throughout this review to examine the concepts of practice readiness and work readiness from undergraduate nursing students.

However, there is still limited information regarding the factors contributing to graduate nurses' perceived readiness to practice (Watt and Pascoe, 2013). In a ten-year scoping review, graduate nurses' educational and personal characteristics were the two main factors influencing readiness for practice (Järvinen et al., 2018). The scoping review of Jarvenen et al., 2018 was limited to ten years prior to 2017 while this review assessed the factors up until 2021. Also, the transition to practice is affected by a wide range of intrapersonal, interpersonal and organizational factors, many of which are beyond the control of new graduate nurses (Järvinen et al., 2018; Masso et al., 2022). These multiple factors can be assessed using thematic analysis technique that stemmed out of primary data. In this review, we identified a wide variety of factors than those that were primarily reported earlier scooping reviews (Järvinen et al., 2018). This demonstrate the influence of time over the factors that are reported to be associated with students nurses readiness for practice. These attributes will likely be acquired in the workplace rather than taught in a classical classroom setting. However, other factors may be attributed to students nurses readiness to practice after these last reviews. This systematic review aims to identify the influencing factors of the readiness for the practice of undergraduate nursing students.

2. Method and materials

This systematic review incorporated the Patient/Population, Intervention, Comparison and Outcome (PICO) framework. The population was student nurses and intervention was the factor associated with or influencing; there was no comparison and the outcome was readiness for
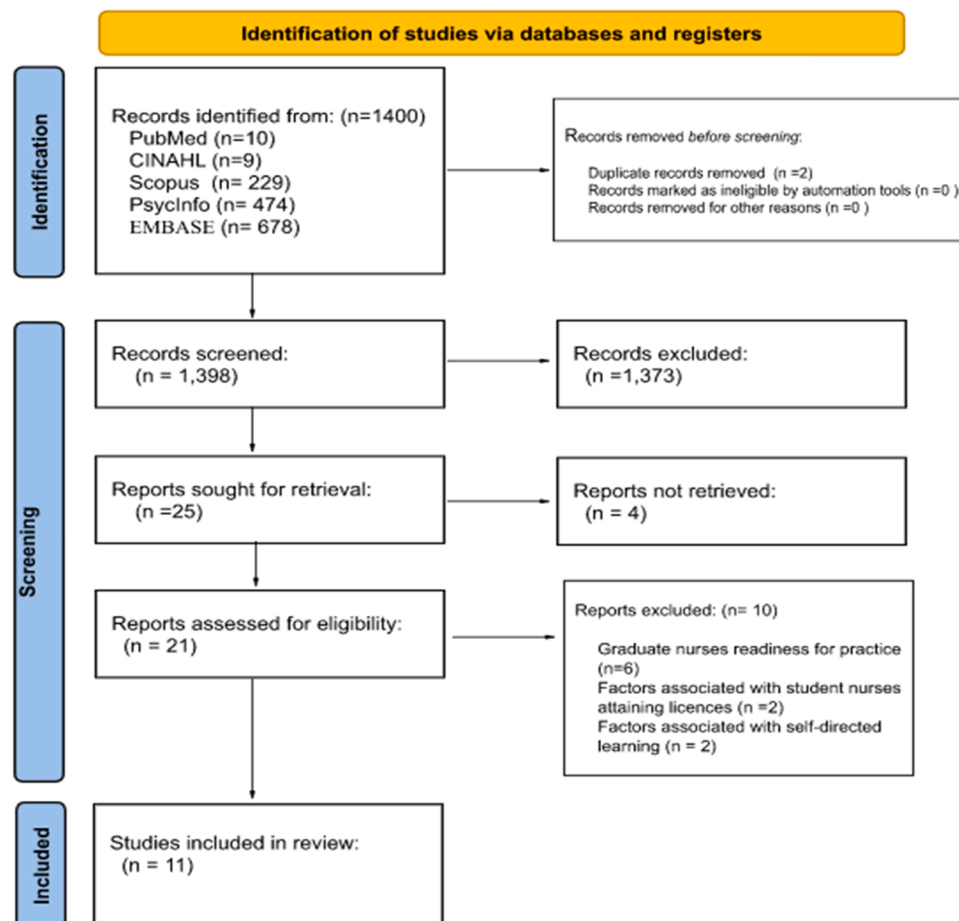

Fig. 1. Flow chart (PRISMA 2020) for the screening and selection of articles.

practice. Also, the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines guided the reporting of findings. In this study, the PRISMA flowchart was adopted (Fig. 1) as it provides transparency and clarity for reporting systematic reviews while allowing for easy replicability of the study (Page et al., 2021). The study process included the following phases: a) Identifying research questions, b) Identifying relevant studies, c) Selection of studies, d) Quality appraisal and e) data extraction, synthesis and integration.

2.1. Identification of research questions

The specific research question was to identify the factors related to readiness for practice among undergraduate nursing students. The readiness to practice remains an essential component for nurse trainers and policymakers to identify the challenges faced by student nurses and identify means to institute measures that will help improve work readiness. The conduct of this study was particularly influenced by the presence of limited information integrating the factors that influence undergraduate nursing students' readiness for practice.

2.2. Identification of relevant studies

PubMed, CINAHL, SCOPUS, PubMed, PsycInfo and EMBASE databases were searched for English language articles published between 2012 and 2022. This time limit for the search was influenced by a desire to look at the most contemporary literature. The search Outcome is detailed in Fig. 1. The search incorporated the appropriate Boolean operators with the designated keywords, related synonyms and the Medical Subject Headings (MeSH) terms using the Pubmed database as a prime to develop the MeSH terms. Truncation and wildcards were used where appropriate. The search terms like "Students" OR "Nursing" and "Professional practice" and keywords such as Student* or Train* and readiness OR preparedness OR work* OR clinic* OR role was used as single terms or with the appropriate derivatives.

2.3. Selection of studies

After the initial search, the titles and abstracts are developed from PubMed through individual scoping search. The second step entailed fine-tuning the second search phrases to match the various databases (6). Step three involved searching the reference lists of the identified papers for additional studies. The articles (25) were retrieved from the electronic databases and imported into Endnote X9 (version 1.19.6) reference management for filtering, duplicate removal and storage. The initial search in all the databases produced 1400 articles and 1398 after duplicates were removed. Twenty-one articles were included following title and abstract screening. These selected papers were then used for full-text evaluation. Finally, eleven studies written in English (Fig. 1) were chosen for the systematic review. The studies were chosen because they responded appropriately to the research questions and fulfilled the inclusion and exclusion criteria.

The initial screening in all the determined databases produced 1400 titles and 1398 after duplicates and inappropriate (e.g., concept analysis, systematic reviews etc.) studies were removed. After title and abstract screening, 21 studies were identified for full-text reading and only 11 were deemed appropriate based on predetermined inclusion and exclusion criteria. Fig. 1 demonstrates the PRISMA flow diagram for the selection of the studies.

2.4. Inclusion criteria

The relevant studies were selected using predetermined inclusion and exclusion criteria. The.

inclusion criteria were: 1) studies focused on readiness to practice for nursing students; 2) primary research publications written in English; and 3) the publication period between 2012 and 2022. The exclusion criteria included papers in which the participants in the study were not nursing students and papers not written in English.

2.5. Quality appraisal

Four reviewers (DD, YJ, YY and KK) conducted quality appraisal of each included study using three tools 1) Risk of Bias Assessment Tool for Non-Randomized Studies - RoBANS, 2) Analytical cross-sectional studies and 3) Critical Appraisal Tool and MMAT (Table 1). All four researchers who conducted the quality appraisal of each study had a minimum of a Master of Science degree in nursing or a public health-related discipline. These quality appraisal tools are used to ensure that each study was assessed appropriately based on the specific design used. Through discussion resulting from the disagreement between the three researchers, they consulted TWL and resolved it through consensus.

The RoBANS tool was used to evaluate the risk of bias in seven non-randomized studies. This tool is divided into six domains: participant selection, confounding variables, exposure measurement, blinding of outcomes, incomplete outcome data and selective outcome reporting. Based on the domains, the risk of bias in each domain was classified as low, high, or unclear (Kim et al., 2013).

The quality of the cross-sectional, descriptive studies was Analytical cross-sectional studies Critical Appraisal Tool (Munn et al., 2020). The following criteria were the eight key questions? and answers were classified Yes, No, Unclear, or Not/Applicable.

The MMAT includes methodological quality criteria for three mixed methods studies (Hong et al., 2018). The MMAT assesses the appropriateness of the study's aim, study design, methodology, participant recruitment, data collection, data analysis, data presentation, author discussion and conclusions. We did not assign an overall quality score because Hong et al. (2018) recommended not using the overall score.

2.6. Data extraction and analysis

Two authors extracted data using a predetermined self-developed extraction matrix. The factors that were extracted include the study characteristics that include author and country, study aim, design, sample, data collection method and analysis and key findings. These outcome data extracted from included studies were combined and presented as a narrative summary using the thematic synthesis approach (Braun and Clarke, 2006). Thematic analysis was used in this study and followed a six-phase. We generated 84 initial codes, reviewed 16 subthemes, identified main themes and wrote the final report. Related themes were merged into subthemes through discussion among the researchers. Subthemes that explain a specific aspect of readiness to practice for undergraduate students were also merged into the main themes. An audit trail for the generation of codes, coalescing into sub-themes a then the main themes were kept for replication. When there were discrepancies in collating these themes, it was discussed until a consensus through several meetings between the researchers.

3. Results

3.1. Study characteristics

After the search and screening, 11 studies were identified to be appropriate based on predetermined inclusion and exclusion criteria. Studies that assessed nursing students' readiness for practice were conducted in Australia (n = 3), the United States of America-USA (n = 2), India (n = 1), Turkey (n = 1), Nigeria (n = 1), Ireland (n = 1), Uganda (n = 1) and Egypt (n = 1). Table 2 describes the characteristics of the included studies. The study approaches adopted non randomized control studies (n = 4), descriptive quantitative descriptive and cross-sectional studies (n = 5) and mixed methods (n = 2). All these studies aimed to examine, explore, assess, compare and determine the factors associated with readiness for the practice among students'

Table 1

Methodological quality assessment of selected studies.

First Author (Publication Year)	Risk of Bias Assessment Tool for Non-Randomized Studies (RoBANS) Domain and Risk of Bias						
	Selection of Participants (Selection Bias)	Confounding Variables (Selection Bias)	Measurement of (Performance Bias)	Blinding of Outcome Assessment (Detection Bias)	Incomplete Outcome Data (Attrition Bias)		Selective Outcome Reporting (Reporting Bias)
(Usher et al., 2015)		L	L	H	L		L
(Dudley et al., 2020)	L	L	L	L	L		L
(Drasiku et al., 2021)	L	L	L	L	L		L
(Leufer and Cleary-Holdforth, 2020)	L	L	L	L	L		L
JBI critical appraisal checklist for analytical cross-sectional studies							
	Were the criteria for inclusion in the sample clearly defined?	Were the study subjects and the setting described in detail?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were confounding factors identified?	Was strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?
(Woods et al., 2015)	Y	Y	NA	Y	Y	Y	Y	Y
(Sharma et al., 2020)	Y	Y	NA	Y	Y	Y	Y	Y
(Schmitt and Lancaster, 2019)	Y	Y	Y	Y	Y	Y	Y	Y
(Adejumo et al., 2021)	Y	Y	Y	Y	Y	Y	Y	Y
(Salem, 2021)	Y	Y	Y	Y	Y	Y	Y	Y
Mixed-Method Appraisal Tool (MMAT) (Pluye et al., 2011)							
	Is there an adequate rationale for using a mixed-methods design to address the research question?	Are the different components of the study effectively integrated to answer the research question?	Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	Are divergences and inconsistencies between quantitative and qualitative results adequately addressed
(Güner, 2015)	Y	Y	Y	Y
(Kirkman et al., 2018)	Y	Y	Y	Y

Table 2
Distribution of study characteristics.

Author, country	Aims	Design	Sample	Data collection	Data analysis	The focus and significant findings
Dudley et al. (2020) Australia	Explored the relationship between undergraduate clinical learning environment and nurse perceptions of work readiness	Quantitative descriptive	n = 26 (Fellowship model) n = 18(Internal) n = 31(External)	Follow up Baseline survey	Chi-square Tests and Fisher's Exact Test	Several aspects of the clinical learning environment have a substantial impact on perceived job preparedness The factors that influence readiness to practice were a student-centered learning environment, individualized education, valuing nursing work and creative and flexible learning culture.
Güner (2015) Turkey	Determined the preparedness levels of final year nursing students starting careers as professional nurses	Mixed method	n = 1804 n = 57 focus group interview	Questionnaire and Interview	Chi-square Tests Fisher's Exact Test	Increasing clinical practice, the data supports the premise that feeling competent in clinical skills is related to a student's perspective of preparedness. Past work experience and age influenced students' readiness to practice.
Usher et al. (2015) Australia	Perceptions of confidence and preparedness for the practice of pre-registration nursing students.	Mixed method.	n = 113 (pre capstone cohort) n = 54 (post capstone cohort)	Questionnaire (Online based)	Chi-Square tests Mann–Whitney t-tests.	Training for nursing practice was unaffected by capstone subjects. The more students are exposed to the workplace, the more self-assured and worried they become. Patient care confidence differs depending on prior nursing experience.
Schmitt and Lancaster (2019) USA	Compare readiness to practice and anxiety and self-confidence during decision making	Mixed method	n = 46(senior nursing students)	Questionnaire	Descriptive statistics	Peo's immersive activities are no more beneficial than ordinary ones; the cohort requires interpersonal hands-on learning opportunities. On the other hand, is assigned to a single preceptor did not affect readiness, self-confidence, or concern.
Sharma et al. (2020) India	Self-reported clinical practice readiness of graduating nurses	Cross-sectional	n = 173(senior nursing students	Questionnaire	Descriptive and One-way ANOVA, or unpaired t-test	Lack of opportunities to practice advanced nursing skills, a lack of clinical learning materials, a poor student-to-patient ratio, a lack of tertiary care patient services and high-fidelity nursing skill labs Lack of opportunity to practice these advanced nursing skills.
Kirkman et al. (2018) USA	Effects of a multiple patient simulated clinical experience (SCE) on senior students' perception of readiness	Mixed method	n = 214(senior nursing students)	Questionnaire and written consent	Descriptive and One-way ANOVA, or unpaired t-test	Unscripted occurrences such as STAT orders, admissions, bad lab findings and emergency surgery were introduced into typical day-to-day multiple-patient scenarios, providing a chance for interprofessional communication and team building.
Woods et al. (2015) Australia	Explored nursing students' preparedness for practice	Descriptive	n = 113(nursing students)	Questionnaire (Online based)	Descriptive statistics and Spearman's Rank Order correlation,	Previous healthcare work experience, as well as confidence in caring for two patients, both decreased a period between simulation and clinical deployment the period between simulation and clinical deployment.
Adejumo et al. (2021) Nigeria	Evaluated university nursing students' knowledge of genomic concepts and readiness to practice genomic nursing	Cross-sectional	n = 136 (nursing students)	Questionnaire	Chi-square test, multivariate analysis	Their knowledge influenced their readiness Institution type was the most consistent predictor of knowledge Participants perceived poor funding, lack of trained personnel and social/environmental factors could affect their readiness to practice genetic nursing.
Clearly-hold forth 2020 Ireland	Described final-year students self-reported level of readiness for oral medication administration in advance of becoming licensed registered nurses.	A nonexperimental, descriptive pilot study	n = 87 (nursing students)	Questionnaire	Descriptive statistic	Knowledge acquisition, knowledge Clinical competence around administering oral medications is a significant stumbling block for final-year nursing students.
Drasiku et al. (2021) Uganda	Reported on the nurses' perceptions in practice regarding their readiness for the clinical teaching of	Qualitative	n = 33 (nurses)	Focus group discussion	thematic analysis.	Clinical teaching Perceived attributes of undergraduate students a lack of resources for clinical teaching Competence the perceived attributes

(continued on next page)

Table 2 (*continued*)

Author, country	Aims	Design	Sample	Data collection	Data analysis	The focus and significant findings
Salem et al. (2021) Egypt	undergraduate nursing students. Explored students' nurse's perception, preparedness and readiness to care for critically ill patients	Cross-sectional study	183 Senior baccalaureate nursing students	Questionnaire	Descriptive correlation analysis	of nursing students and The clinical practice environment The nurses' perceptions or attitudes toward The nurses' perceptions or attitudes Their preparedness and readiness to practice as a critical care nurses were generally positive and high. The students had good insight and high self–perception (confidence or trust) regarding their preparedness and readiness to care for critically ill patients. The high insight or confidence of the students' nurses; regarding their readiness was revealed by the result of the current study. Most student nurses worked in private hospitals during the education period and they were assigned to and worked independently with the patients; this gave them a feeling of trust, maturity, self–control and confidence. Those may influence their perception of readiness for practice. Students' preparedness and readiness to practice as critical care nurses were generally positive and high.

nurses. The data collection methods were focus group interviews (n = 2) and a questionnaire (n = 5). The Mixed method studies (n = 2) were collected with focus group interviews and open-ended questionnaires.

3.2. The main themes

The main themes generated and reported included personal, educational, cognitive, psychological, social and barriers to readiness for practice. The main themes identified from the synthesis of the data were: 1) Personal and individual characteristics that influence readiness to practice; 2) Education related factors that influence readiness to practice; 3) Cognitive factors that are related to readiness to practice; 4) Psychological characteristics that influence readiness to practice; 5) Social factors that influence readiness to practice; and 6) the barriers to readiness for practice.

3.2.1. Personal and individual characteristics that influence readiness to practice

Several personal factors, including age (higher), sex (female), school attended (graduate of university), work experience (having hospital work experience), access to scholarship, being professionally conscious, improved work/education satisfaction and level of confidence, were essential determinants of readiness to practice. Six studies focused on the student's characteristics that influenced readiness for practice. These individual personal characteristics of the students included age (Güner, 2015), prior working experiences (Usher et al., 2015.; Woods et al., 2015) and having a scholarship and other support (Adejumo et al., 2021; Dudley et al., 2020). There was a relationship between students' readiness for practice and age (older) (Güner, 2015; Usher et al., 2015), gender (female) and work experience as a nurse (Güner, 2015). With advancing age, students nurse appeared more prepared for practice. Also, those that were female (Güner, 2015). Nursing students who got on well with their peers, had student leaders' roles, received a scholarship, felt trust and mature, were more fulfilled, were more professionally minded and desired to be a nurse had higher clinical readiness (Güner, 2015; Salem, 2021). Also, age is especially related to an individual's ability to manage many patients concurrently (Usher et al., 2015), influencing their overall readiness to practice. This meant that as the age

of nurses increased, it was reported that they had increased ability to care for multiple patients simultaneously (Usher et al., 2015). The studies suggested that practice readiness was related to various levels of education and knowledge attained (Cleary-Holdforth and Leufer, 2020; Güner, 2015).

Other personal factors influencing students' readiness for practice are self-directed learning, insight or confidence of the nursing students, clinical competency and previous semester grades (Drasiku et al., 2021; Salem, 2021). Several individuals factors like, imagination skills, interpersonal skills, communication skills, emotional quotient and problem-solving skills influenced the readiness for the practice of nursing students (Güner, 2015; Kirkman et al., 2018).

3.2.2. Education-related factors that influenced readiness to practice

Some studies explored education-related factors like theory-practice integration (Adejumo et al., 2021; Cleary-Holdforth and Leufer, 2020; Drasiku et al., 2021; Dudley et al., 2020; Salem, 2021; Usher et al., 2015), clinical practice environments (Drasiku et al., 2021; Dudley et al., 2020; Usher et al., 2015) simulation-based Education and clinical teaching environment (Drasiku et al., 2021; Kirkman et al., 2018; Woods et al., 2015) and learning performance behavior (Dudley et al., 2020; Usher et al., 2015). Acquiring and consolidating skills, independent problem solving during clinical placement, nature of the clinical learning environment, student-centeredness education, placing value on nurses' work, incorporating an innovative and adaptive culture, having courage and discernment, understanding the role of the RN were important antecedent to the student's readiness to practice (Dudley et al., 2020; Güner, 2015; Kirkman et al., 2018; Salem, 2021). Immediately after graduation, student-centered and innovative teaching was linked to higher perceptions of work competence and more positive work characteristics (Dudley et al., 2020; Kirkman et al., 2018). The health institution-related factors that influence nursing students' readiness for practice are the nature of the academic curricula, students' personal intentions and educational goals,; the effort of nurse educators in educating students, teaching and planning educational curricula and school activities, prioritizing and supporting students education needs, increasing and changing healthcare demands (Salem, 2021; Sharma et al., 2020). Increasing undergraduate nursing students' readiness for

practice requires taking a broad view of the knowledge and skills required to transition from university to the healthcare field (Usher et al., 2015). Students who abandon clinical posting sites during training were poorly prepared to practice (Sharma et al., 2020). Other education-related factors that influence the readiness to practice are the available resources for training institutions, including the availability of libraries and technological and other social resources (Drasiku et al., 2021; Güner, 2015).

Having a prior work experience increased student nurse's readiness for practice. It was shown that those that had a prior work experience has higher readiness for practice compared with their counterparts (Güner, 2015). Also, other training related factors like the nature of the relationship with clinicians, clinical work experience also influence positively student nurses' readiness for practice (Güner, 2015; Kirkman et al., 2018). Students working with clinical nurses, working on in-patients, attaining some competencies during clinical years, trained in interpersonal skills, having good communication skills and attaining an improved emotional quotient through training influenced the readiness for practices (Güner, 2015). The opportunity to work from the perspective of a registered nurse increases students' confidence and readiness for practice (Salem, 2021).

3.2.3. Cognitive factors that are related to readiness to practice

Students identified mental preparedness by working with preceptors and clinical care professionals in the clinical units to contribute to readiness to practice significantly and placement (Kirkman et al., 2018; Sharma et al., 2020). Other cognitive factors influencing readiness to practice are students' confidence level and preparedness during pre-registration (Güner, 2015; Schmitt and Lancaster, 2019; Sharma et al., 2020; Usher et al., 2015; Woods et al., 2015). Other essential factors for practice readiness is the student's ability to have had good training in complex nursing procedures like gastrostomy feeding, pediatric venipuncture, collection of pap smear, gastric gavage, basic life support, neonatal resuscitation, pediatric basic life support, normal vaginal delivery, episiotomy, care of the patient with cardiac catheterization (Sharma et al., 2020). Having and improved knowledge on nurses' professional ethics increased student nurses readiness for practice (Güner, 2015; Usher et al., 2015). Therefore, increased knowledge of ethics was an essential factor that improved students readiness for practice.

3.2.4. Psychological characteristics that influence readiness to practice

Psychological factors that influence readiness for practice include a professionalism context that encompasses valuing nursing work, professional self-concept (Dudley et al., 2020; Usher et al., 2015), confidence in clinical practice (Salem, 2021; Woods et al., 2015) and fluidity with resiliency (Kirkman et al., 2018). Student Nurses indicated that the poor image of nursing was affirmed by observing the behavior of the staff nurses, which negatively affected students' perceptions of the nursing profession (Güner, 2015). Many students felt responsible for changing the nursing image and providing a more positive perception of nursing (Güner, 2015).

3.2.5. Social factors that influence readiness to practice

The main social factors like role modeling, decision-based on evidence, leadership, follow-up, team working ability and level of satisfaction influence students' readiness for practice (Güner, 2015; Usher et al., 2015). Role modeling, evidence-based decision-making, leadership, the ability to follow scientific breakthroughs in nursing and the ability to make changes were among the areas in which students felt least confident to begin working (70 % of students) (Güner, 2015). Nursing students expressed a high level of satisfaction with their decision to pursue a career in nursing and they believe they are prepared for the professional nursing position (Usher et al., 2015). Recognizing the necessity of intimate tertiary/workforce linkages in preparing work-ready graduates is a first step toward addressing future nursing

workforce demands and closing the theory-practice gap(Usher et al., 2015). Including positions such as physician, surgeon, radiology technician, social worker and admission clerk in the SCE allowed students to engage in interprofessional communication and team building, which is essential for nursing students' readiness or practice (Kirkman et al., 2018).

3.2.6. Barriers to readiness for practice

The lack of skill and ability to implement basic clinical procedures influenced graduate students' readiness to practice (Sharma et al., 2020). Graduating nurses (50 %) could not independently practice some of the basic nursing procedures such as pressure sore dressing, wound dressing (in burns), perioperative care, nasogastric tube insertion, NG tube feeding, insertion of suppositories, enema administration, bowel wash, urinary catheterization, removal of sutures, pin site care, fogging, recording electrocardiogram and use of a defibrillator and this affected their readiness to practice (Sharma et al., 2020). A few of the participants independently practised advanced nursing skills in medical-surgical nursing, midwifery and child health nursing advanced nursing skills (Sharma et al., 2020). A serious gap exists between preparedness levels in theory and practice as students were not prepared in all areas and expressed serious concerns regarding the lack of preparedness in skills, the quality of clinical placement sites and the quality of clinical instructors (Güner, 2015).

4. Discussion

This systematic review identified the factors associated with readiness to practice among student nurses. Adopting the integrative synthesis method, the main themes related to readiness for practice for nursing students were grouped as personal, educational, cognitive, psychological, social factors/ characteristics and some barriers. It was identified that some nursing students have positive perceptions regarding the profession, while negative perception from others hinders their readiness for practice. The predominant themes recently determined to be related to nursing students' readiness to enter working life (Järvinen et al., 2018) were similar. This suggests that nursing students face similar issues (personal and educational factors) as they transition into the workforce. The it important that this study just as previous ones (Järvinen et al., 2018) identified multiple factors that interact iteratively to influence the readiness of student nurse for practice.

The important personal characteristics of undergraduate nursing students' readiness for nursing practice are age, sex, school attended and work experience. It was important to note that gender (female) played a critical role in students nurses readiness for practice. It is important to note that nursing is a female dominated profession and, in most cultures, the role played by nurses as apart of the clinical team is usually regarded as feminine. Even though men have higher responsibilities in some cultures and hence will need to start work early to build a family than their female counterparts. As the role of nurses are like that of the woman or mother in the home, it is likely that as women mature and are trained as nurses, the tendency to accept this responsibility tend to increase. These personal factors, including age (higher), sex (female) and educational level (higher), were also reported in other studies to influence positively student nurses readiness for practice (Järvinen et al., 2018). The level of educational attainment is critical to determining students' readiness to practice. It is generally believed that as nurses can attain higher education their ability to understand the theoretical framework that encompasses the nurses' professional as well increase. This particular supposed they may have a higher readiness for practice compared with their counterparts (AlMekkawi and El Khalil, 2020; El Haddad et al., 2013).

The level of educational attainment must appear to be associated with self-directed learning, learners' behavior as enthusiastic and previous semester grades students (Khodaei et al., 2022; Hwang and Oh, 2021; Yang and Jiang, 2014). Further educational attributes identified

regarding nursing students' readiness to practice in this review are closely related to the student's preparedness, such as students with clinical nurses, working on inpatient wards and competence attained during clinical years imagination and emotional quotient. This form of training prepares the students to work comfortably on graduation and allows them to experience real-world situations beforehand. Having to experience real-world problems is critical for the student's level of preparedness to face these challenges (Järvinen et al., 2018). Further, incorporating innovation and technology in training and supporting nursing students during training is critical to their overall readiness to practice (Edward et al., 2017; Järvinen et al., 2018). The previous review reported that a low-fidelity simulation-based program was more effective than self-learning and deductive education in developing knowledge and skill for nursing students (Edward et al., 2017). Therefore, nurse educators must develop robust and comprehensive nursing curricula incorporating innovative and technological teaching methods (Edward et al., 2017; Järvinen et al., 2018). The difficulties surrounding the creation of undergraduate nursing curricula are broad, with variations in associated needs. Three unrelated themes were identified in the previous review: academic curricula, the content of the nursing curriculum, the new curriculum and capstone projects influence readiness to practice (Järvinen et al., 2018).

Students' mental preparedness through preceptors and health care workers in the clinical units contribute to their preparedness. Training factors that affect preparedness are the student's ability to have good complex nursing-specific procedures, confidence level, preparedness to work in multifactorial health care systems and communication skills related to working within the multidisciplinary team. This will improve the nursing students' enjoyment and growth, which requires greater preparation to enter the workforce (Järvinen et al., 2018). Well-organized schemes such as preceptorship and mentorship will have an impact on several organizational outcomes and individual outcomes for newly qualified nurses (Edward et al., 2017). Therefore, the professional image of nursing must be kept high, especially among students, which will improve and increase their confidence and readiness to practice. It is reported that a low professional image, aside from decreasing the level of confidence of nursing students, also negatively influences their readiness to practice. The role change from student to professional nurse, for example, creates anxiety, dread, weakness and dissatisfaction. The so-called impostor syndrome, which refers to self-doubt about competence, has been identified in final-year nursing students (Järvinen et al., 2018). Furthermore, nursing students' critical thinking and decision-making abilities boost their confidence to provide nursing care to multiple patients in unforeseen settings.

There are some social factors from three studies of this review related to readiness for practice for nursing students: role modeling, leadership, follow-up, ethical knowledge, team working ability, ability to ensure patient safety, interprofessional communication skills and team building. Similar factors were identified as social factors that influence nursing students' readiness for practice (AlMekkawi and El Khalil, 2020). It was strongly argued in a concept analysis that to improve nursing students ability to improve their knowledge and strongly prepared for job market, trainers must considered the social aspect of the training as well (Tsimane and Downing, 2020) Nursing education institutions are critical in improving academic and clinical advice and social context support to guarantee that nursing students are prepared to enter the workforce.

4.1. Strengths and limitations

One critical strength of this study is that it highlighted and designated the factors that influence student nurses readiness to practice. It explicitly and systematically collated multiple factors and described the factor that influence students nurse readiness for practice. It is important to note that this study is not without some challenges. It can be noted that the terminologies used to describe readiness to practice, work readiness of nurses and work preparedness are varied all over the globe. This might have posed a challenge to the comprehensiveness of the search, as some important studies could have been missed. Also, the search was limited to English, with the likelihood that essential studies could have been missed.

5. Conclusions

Nursing students' readiness to practice continues to be a multifactorial issue that raises the interest of nursing educators and nursing administrators all over the globe. In this study, we identified the factors that influence readiness to practice among nursing students by making thematic integrative of these factors by grouping these factors into personal, educational, cognitive, psychological and social factors characteristics and some barriers. Therefore, Multiple personal, educational and community factors interact in diverse ways to influences nursing students' readiness to practice.

Students must establish a good clinical experience while under training by facilitating good relationships with properly trained clinical preceptors. Identifying, standardizing and publishing the clinical roles of clinical preceptors of the students' nurse preparedness to practice using appropriate intervention studies is crucial. It is also vital that extensive studies are commissioned in various geographical areas to identify the factors associated with nurses' readiness to practice. It is also essential that these future studies using comparative and experimental studies are used to evaluate the efficacy of various nursing curricula and support the readiness of newly qualified nurses to practice.

CRediT authorship contribution statement

Conceptualization (**TWL**), study design and manuscript writing (**KDK, DD**), literature search (**YJJ, YSY, HJ, KK**), article evaluation (**DD, YJJ, YSY**), study supervision (**TWL**), critical revision for important intellectual content (**DD, TWL, KDK**). All authors agreed to submit this manuscript.

Conflict of interest

No conflict of interest has been declared by the authors.

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