

SCOPING REVIEW ARTICLE

Factors causing stress among nursing students in clinical practice: A scoping review

Fatores indutores de stress nos estudantes de enfermagem em ensino clínico: Scoping review

Factores inductores de estrés en estudiantes de enfermería en la enseñanza clínica: Scoping review

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Abstract

Background: Nursing students report factors associated with high levels of stress in clinical practice, which are frequently experienced in this teaching-learning process.

Objective: To map the scientific evidence available on factors causing stress among nursing students in clinical practice.

Methodology: Scoping review based on the Joanna Briggs Institute methodology. The PCC (population, concept, and context) mnemonic was used. Two independent reviewers were involved in the process of selection, extraction, and analysis of articles.

Results: Seventeen studies were included. The analysis revealed factors related to personal and professional aspects, to the clinical practice environment/structure and organization, as well as to support systems, namely the supervisory model used in this process.

Conclusion: Stress-inducing factors influence the teaching-learning process of students in clinical practice. Therefore, teaching strategies should be designed to ensure the development of students' skills during clinical practice.

Keywords: stress; factors; nursing students; clinical internship; nursing education

Resumo

Enquadramento: Os estudantes de Enfermagem relatam fatores associados a elevados níveis de *stress* em ensino clínico (EC) e que são comumente experienciados neste processo de ensino aprendizagem.

Objetivo: Mapear a evidência científica sobre os fatores indutores de *stress* nos estudantes de enfermagem em ensino clínico.

Metodologia: *Scoping review* baseada no método de *Joanna Briggs Institute* (JBI). Utilizada a mnemónica *PCC* para dimensionar a população, conceito e contexto. No processo de seleção, extração e análise dos artigos, estiveram envolvidos dois revisores independentes.

Resultados: Da pesquisa efetuada foram incluídos 17 estudos. Foram identificados fatores que integram aspetos pessoais e profissionais, fatores relacionados com o ambiente/estrutura do EC e a sua organização, bem como fatores associados aos sistemas de apoio, nomeadamente ao modelo de supervisão que acompanha este processo.

Conclusão: Os fatores de *stress* influenciam o processo de ensino aprendizagem dos estudantes em EC, por isso, devem ser desenvolvidas estratégias de ensino que permitam assegurar a efetividade no desenvolvimento de competências dos estudantes em EC.

Palavras-chave: stress; fatores; estudantes de enfermagem; estágio clínico; educação em enfermagem

Resumen

Marco contextual: Los estudiantes de enfermería informan de factores asociados a altos niveles de estrés en la enseñanza clínica (EC) y que se experimentan habitualmente en este proceso de enseñanza-aprendizaje.

Objetivo: Mapear la evidencia científica sobre factores inductores de estrés en estudiantes de enfermería en la enseñanza clínica.

Metodología: *Scoping review* basada en el método del Instituto Joanna Briggs (JBI). Se utilizó la nomenclatura *PCC* para dimensionar la población, el concepto y el contexto. Dos revisores independientes participaron en el proceso de selección, extracción y análisis de los artículos.

Resultados: De la búsqueda se incluyeron 17 estudios. Se identificaron factores que incluyen aspectos personales y profesionales, factores relacionados con el entorno/estructura de la EC y su organización, así como factores asociados a los sistemas de apoyo, concretamente al modelo de supervisión que acompaña a este proceso.

Conclusión: Los factores de estrés influyen en el proceso de enseñanza-aprendizaje de los estudiantes de EC, por lo que deben desarrollarse estrategias docentes que garanticen el desarrollo eficaz de las competencias de los estudiantes de EC.

Palabras clave: estrés; factores; estudiantes de enfermería; prácticas clínicas; enseñanza de enfermería

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Introduction

The concept of stress has been extensively studied and reflected upon since the 20th century. Despite the diversity of its meanings, which are nevertheless interrelated and mutually reinforcing, stress is perceived as a non-specific response of the body when faced with factors that threaten or alter its equilibrium (Bodys-Cupak et al., 2022; Leal & Ribeiro, 2021).

The mediation observed between everyday events, personal characteristics, and the external environment can lead to physiological, biochemical, psychological, and even behavioral changes (Serra, 2011). Serra (2011) emphasizes that the presence of stress on a daily basis requires a wide range of human responses and reactions, which in many scenarios can be perceived as a thin boundary between a normal and a pathological state. The experience of this phenomenon associated with a positive response through adaptive strategies is considered positive stress (eustress), resulting in energizing experiences and personal fulfillment (Leal & Ribeiro, 2021). On the contrary, if the experience results in psychological, physical, or even social harm, with a negative and distressing connotation, the experience is considered negative stress (distress; Leal & Ribeiro, 2021).

The response to stress is determined by the interaction between the individual's characteristics, their responses (biological, psychological, and/or social), and the perceived demands from the environment. This process reveals the complexity of the impact and repercussions of the phenomenon, which is often experienced in a distressing and harmful manner, with a significant impact on well-being (Leal & Ribeiro, 2021).

The Bachelor of Science in Nursing program (*Curso de Licenciatura em Enfermagem*, CLE) is designed to equip students with the skills necessary to meet the new demands in the field of health. The program embodies the logic of reciprocity and interaction between what is learned in school settings and what is applied in clinical settings (Vieira, 2017). During clinical practice in the CLE, students are provided with learning opportunities to provide patient care and develop interpersonal, systemic, and instrumental skills through a process of knowledge transfer, awareness, and interaction (Rabaias & Amendoeira, 2013; Vieira, 2017).

During clinical practice, CLE nursing students engage in knowledge mobilization processes that are characterized by the demands of the settings and the development of competencies and skills in significant moments. In addition, students experience moments of transition, which involve interacting with others in complex and diverse situations that can cause stress and require teaching strategies. The goal is to create an alliance in the training and educational process to ensure the well-being of students as they develop their skills in clinical practice. Clinical practice provides access to learning in clinical settings, but there are risk factors for stress in this learning context (Sequeira et al., 2020; Wielewska et al., 2022).

In light of these assumptions, it became necessary to conduct a scoping review based on the Joanna Briggs Institute

(JBI; Peters, 2020) guidelines. A preliminary search of the Cochrane Database of Systematic Reviews, the JBI Database of Systematic Reviews and Implementation Reports, and MEDLINE did not identify any recent literature reviews on this topic. Therefore, this scoping review aims to map the scientific evidence available on the factors causing stress among nursing students in clinical practice.

In order to know the scientific evidence related to this topic and based on JBI guidelines (Peters et al., 2020), this study aims to map the research carried out, since it is not clear what has been studied in recent years on the factors causing stress among undergraduate nursing students in clinical practice.

The following research question was defined: What factors cause stress among nursing students in clinical practice?

Methodology

The PCC (population, concept, and context) mnemonic was used. The study selection criteria were based on JBI guidelines (Peters et al., 2020).

Inclusion criteria

This review included studies conducted during the clinical practice of CLE students and studies that evaluated stress-inducing factors.

This review considered quantitative, qualitative, and mixed-methods studies, primary studies, and gray literature published between 2018 and 2023. This time limit was chosen to limit the search to the last five years, thus selecting the most recent studies.

The scoping review is a research method that identifies and maps the scientific evidence available on a given area of study, as well as clarify definitions and/or concepts and identify factors and their characteristics (Peters et al., 2020; Pollock et al., 2022). This method provides an overview of what has been evaluated or of the research conducted, delimiting the topic and allowing the researcher to identify any knowledge gaps in the same topic (Pollock et al., 2022).

Search strategy and Identification of information sources

A search strategy was developed to identify the studies on the topic under analysis (Table 1).

A search was conducted using MEDLINE, CINAHL, and EMBASE (Elsevier) databases via EBSCO and PUBMED. Searches were also carried out on Google Scholar, LILACS (Latin American and Caribbean Health Sciences Literature/BVS - Virtual Health Library), B-on, and ScIELO databases, where the sensitivity of some key terms was initially observed. A search of RCAAP (Portuguese Open Access Scientific Repository) was also included.

Through a second analysis using the same search engines, a Boolean search was performed in the title, abstract, and keyword fields using the following terms: (((stress) AND (factor*) AND ("Nursing Student*") AND ("Nursing education" OR "clinical practice")))).



Table 1*Example of the database search strategy via EBSCOhost on April 25th, 2024*

Query	Results
AB stress AND AB factor* AND AB “nursing student” AND AB (“nursing education” OR “clinical practice”)	34
TI stress AND TI factor* AND TI “nursing student” AND TI (“nursing education” OR “clinical practice”)	0

Selection of information sources

All studies published between 2018 and 2023 were analyzed to map the scientific evidence published in recent years. This review included studies written in Portuguese, English, Spanish, and French. The sources were selected by two independent reviewers based on the inclusion criteria mentioned above. Any disagreement between the two reviewers was resolved by consensus or even by the decision of another reviewer. A flowchart was created based on the type of population, concept, and context and following the PRISMA-ScR guidelines (Figure 1). The flowchart detailed the review process, which included the selection of studies, the removal of duplicates, and any evidence that resulted from the third stage of the search.

Data extraction

In the third stage, the reference lists of the selected studies were analyzed to identify relevant information, as well as the sources of these publications. A table was created to describe the strategy used to identify the studies in the search engines, the Boolean terms, the search fields, and the number of articles identified.

The Mendeley® software used to manage the search results. Of the studies exported to the Mendeley® software, 294 duplicates were removed, leaving 136 studies for title and abstract analysis.

The reviewers read the titles and abstracts of the 136 studies. Studies that met the pre-established inclusion criteria were eligible. Subsequently, the full text of the selected studies was read and those that did not meet the inclusion criteria were excluded. The reason for exclusion was reported.

Two independent reviewers extracted the data and identified the relevance of the selected studies for this scoping review in a systematic and descriptive way. To this end, a data extraction tool was created and updated based on the readings carried out throughout the review. This tool de-

tailed the following characteristics of the studies: author(s); year of publication; origin/country of origin (where the study was published or conducted); objectives/purpose; population and sample size (if applicable); methodology/methods; type of intervention, comparator, and details (e.g., duration of intervention; if applicable); duration of intervention (if applicable); outcomes and details (e.g., how it is measured; if applicable); main findings related to the scoping review question(s).

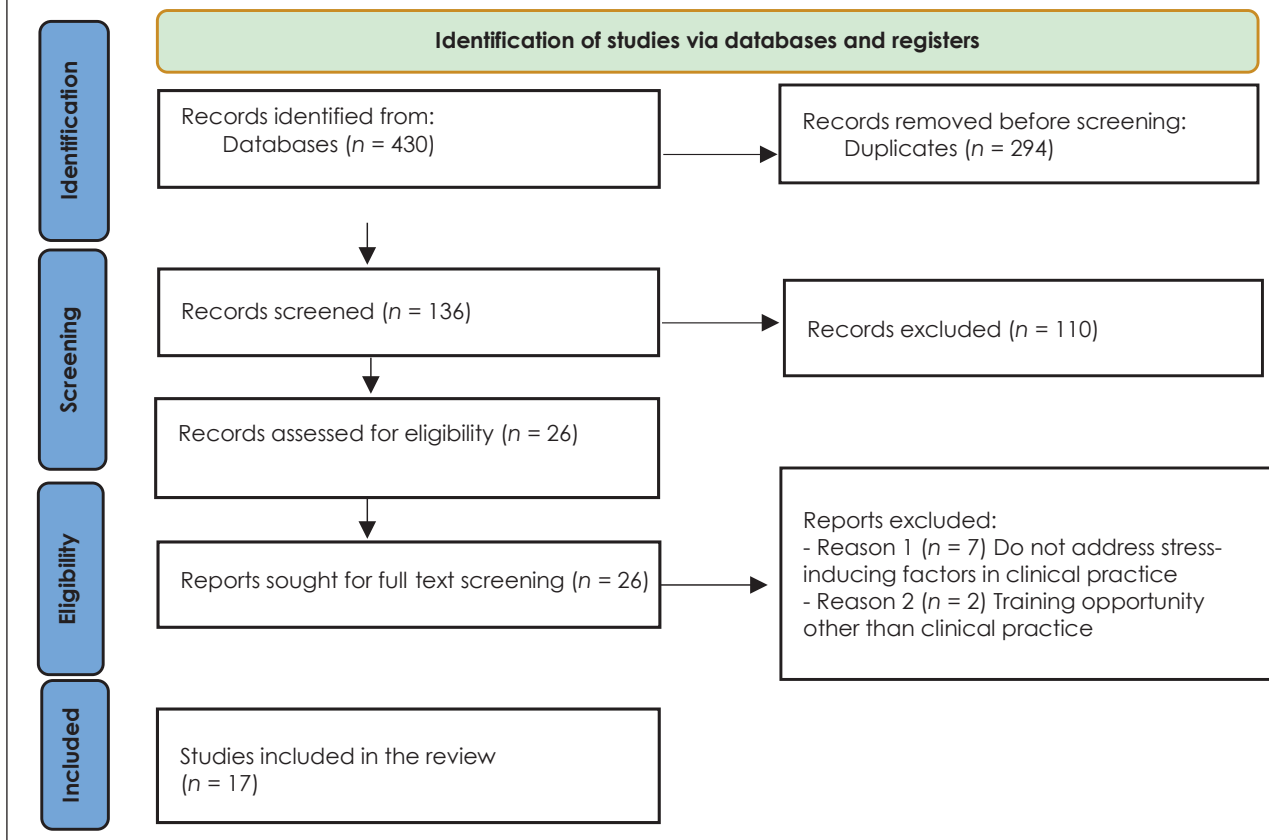
Data synthesis

After a clear and transparent search strategy, the characteristics of each study were thoroughly identified. A narrative summary was prepared to accompany the flowchart and the data collection tool, which made it possible to relate the findings to the review’s research question and objectives.

The mapping of factors causing stress among CLE nursing students in clinical practice synthesized the evidence available on the topic since 2018.

Results

The results were presented in a table that was regularly updated. The mapping of the factors causing stress among nursing students in clinical practice synthesized the evidence available on the topic over the last five years. A total of 430 studies were identified, of which 294 were duplicates. The PRISMA flowchart shows that, of the 136 studies, 110 were excluded after title and abstract reading, leaving a total of 26 eligible studies. After full-text reading, nine studies were excluded because they did not meet the inclusion criteria. Seventeen studies on stress-inducing factors among nursing students in clinical practice were included in this review (Figure 1).

Figure 1*PRISMA flowchart of the study selection process*

The 17 included studies were published between 2018 and 2023. Seven studies were carried out in Europe: two in Spain (Bernedo-García et al., 2022; Suarez-Garcia et al., 2018), two in Turkey (Gürdil Yilmaz et al., 2022; Aslan et al., 2018), one in Finland (Bhurtun et al., 2021), one in the Czech Republic (Mazalová et al., 2022), and one in Poland (Lewandowska et al., 2018); two studies were conducted in South America, namely Colombia (Arias

Mosquera et al., 2018) and Brazil (Ribeiro et al., 2020); and eight studies were conducted in Asia, namely three in Iran (Aghaei et al., 2021; Ahmadi et al., 2018; Rezaei et al., 2020), one in India (Dasgupta et al., 2020), one in Saudi Arabia (Ahmed & Mohammed, 2019), one in Macao (Liu, 2019), one in China (Xiong & Zhu, 2023), and one in Taiwan (Wu et al., 2021).

Table 2*Characteristics of included studies*

Author	Title	Year	Setting	Methodology	Participants (NS)
Xiong, W., & Zhu, A.	Psychological experience among internship nurses at different internship stages: A qualitative study.	2023	China	Qualitative	43
Bernedo-García, M. C., Márquez-álvarez, L., Quiroga-Sánchez, E., Liébana-Presa, C., Arias-Ramos, N., & Fernández-Martínez, E.	Stressor factors, Emotional Intelligence and Engagement during clinical practice in nursing students.	2022	Spain	Quantitative	73
Gürdil Yilmaz, S., Yıldız Karadeniz, E., & dem Lafçi, D.	Clinical-practice stress levels and factors affecting these on first-year nursing students.	2022	Turkey	Quantitative	94
Mazalová, L., Gurková, E., & Štureková, L.	Changes in nursing educational stress and coping strategies: a longitudinal study in the Czech Republic.	2022	Czech Republic	Quantitative	123
Aghaei, N., Babamohamadi, H., Asgari, M. R., & Dehghan-Nayeri, N.	Barriers to and facilitators of nursing students' adjustment to internship: A qualitative content analysis.	2021	Iran	Qualitative	17
Bhurtun, H. D., Turunen, H., Estola, M., & Saaranen, T.	Changes in stress levels and coping strategies among Finnish nursing students.	2021	Finland	Quantitative	253
Wu, C.-S., Huang, M.-Z., & Rong, J.-R.	Factors associated with perceived stress of clinical practice among associate degree nursing students in Taiwan.	2021	Taiwan	Quantitative	758
Rezaei, B., Falahati, J., & Beheshti-zadeh, R.	Stress, stressors and related factors in clinical learning of midwifery students in Iran: A cross sectional study.	2020	Iran	Quantitative	88
Dasgupta, A., Podder, D., Paul, B., Bandyopadhyay, L., Mandal, S., Pal, A., & Mandal, M.	Perceived stress and coping behavior among future nurses: A cross-sectional study in West Bengal, India.	2020	India	Quantitative	182
E Silva Ribeiro, F. M. S., Mussi, F. C., Pires, C. G. D. S., da Silva, R. M., de Macedo, T. T. S., & Santos, C. A. S. T. (2020).	Stress level among undergraduate nursing students related to the training phase and sociodemographic factors.	2020	Brazil	Quantitative	286
Ahmed, W. A. M., & Mohammed, B. M. A.	Nursing students' stress and coping strategies during clinical training in KSA.	2019	Saudi Arabia	Quantitative	125
Liu, M., Chan, Y. M., Tee, S., Gu, K., Luo, Z. M., & Wong, T. K. S.	An iterative approach to enhance the clinical learning experience in Macao nursing education.	2019	Macao	Quantitative	214
Ahmadi, G., Shahriari, M., Keyvanara, M., & Kohan, S.	Midwifery students' experiences of learning clinical skills in Iran: a qualitative study.	2018	Iran	Qualitative	18
Arias Mosquera, L. Y., Montoya Gallo, L. I., Villegas Henao, A. F., & Rodríguez Gázquez, M. de los Á.	Estresores en las prácticas clínicas de los estudiantes de enfermería de una universidad pública en Colombia.	2018	Colombia	Quantitative	156
Aslan, H., & Akturk, U.	Nursing education stress levels of nursing students and the associated factors.	2018	Turkey	Quantitative	479
Lewandowska, A., Lewandowski, T., & Laskowska, B.	Education system and exposure to stress and the sense of satisfaction of nursing students.	2018	Poland	Quantitative	200
Suarez-Garcia, J.-M., Maestro-Gonzalez, A., Zuazua-Rico, D., Sánchez-Zaballos, M., & Mosteiro-Diaz, M.-P.	Stressors for Spanish nursing students in clinical practice.	2018	Spain	Quantitative	450

Note. NS = Nursing students.



Stress-inducing factors influence students' learning process during their clinical practice, manifesting their effects over a continuum. These factors are considered facilitators or barriers to the development of skills. They include support systems (supervision; type of collaboration from the patient; trustworthiness of supervising nurses/hospital team); personal and professional factors; (students' personal characteristics); coping strategies; difficulty in applying knowledge and technical capacity and ability; and the structure of and organization of the internship (planning and organization of the internship; high workload in clinical practice; physical conditions of clinical settings; human resources in the institutions; Aghaei et al., 2021).

Student characteristics may also play an important role in this process. According to Aslan and Akturk (2018), younger nursing students had higher stress levels than older students. These students showed more emotionally oriented responses in coping with stress than older students, which may be related to the fact that students' knowledge and clinical experiences increase with age. Students acquire necessary preventive strategies and more appropriate ways of coping with stress. In this study, female nursing students had higher stress levels than male students. It should also be noted that low socioeconomic status among women is associated with higher levels of stress during clinical practice (Ribeiro et al., 2020).

Ahmadi et al. (2018) emphasize that one of the factors influencing stress levels in clinical practice is the limited number of opportunities for students to experience skills. They also add that the high number of students in the clinical placement makes it difficult to apply technical skills and competencies.

Other factors causing stress include gaps in the theoretical component; the existence of different supervisors throughout the supervision process (conditioning it); unclear learning objectives; expectations about clinical practice vs. reality in the clinical setting; fear of adapting care to the patient/fear of causing harm; and the characteristics of the physical environment during their clinical placement, which are often poor (Ahmadi et al., 2018).

The fear of harming the patient was the most important stress factor for first-year nursing students during their clinical practice. This phenomenon is complex and persistent and encompasses personal (internal), interpersonal, social, environmental, and educational variables (Gürdil et al., 2022; Suarez-Garcia et al., 2018).

Other sources of stress include caring for patients and the lack of professional knowledge and skills (Bhurtun et al., 2021; Ahmed & Mohammed, 2019; Suarez-Garcia et al., 2018). Assignments and work capacity in clinical practice (considering they are not familiar with hospital protocols), the environment (considered to be intimidating), their peers, their daily life events, the hospital staff and instructors (the impact of the supervision process and the evaluation pressure) were also reported as factors causing stress in clinical practice (Ahmed & Mohammed, 2019; Mazalová et al., 2022).

Students also mentioned lack of skills, work overload, contact with suffering, and when the patient expects a

closer relationship as stress factors (Arias et al., 2018). In addition to these factors, the nursing students who participated in the study by Bernedo-García et al. (2022) also added powerlessness and uncertainty, not being in control of the relationship with the patient, fear of damaging the relationship with the patient, and the relationship with tutors and companions.

In a recent study (Wu et al., 2021), students attending the fourth or fifth year of the program known as the clinical placement phase, where they spend a full or half year in clinical practice, added the following stress factors: taking care of patients; the assignments and workload; the teachers and nursing personnel; the lack of experience and ability in providing nursing care and in making judgments; the inability to reach one's expectations dealing with challenges arising from the gap between clinical performance and self-expectation; inability to provide appropriate responses to doctors', teachers', and patients' questions; and worrying about grades (evaluation).

In this learning process, stress from assignments and workload and worrying about bad grades were the most reported factors in students' experiences (Dasgupta et al., 2020).

Another stress factor is the confrontation with the patient's death, which reflects the importance of responsibility for human life. Students also reported helplessness in the situations in question (Lewandowska et al., 2018).

Students engaging in clinical practice experience various stress factors throughout the four-year program. In the study by Liu et al. (2019), the following factors were common throughout the program: fear of making a mistake/causing harm to the patient, fear of clinical responsibility, responsibility for the patient, and final evaluation. After the first year, students reported the fear of caring for patients' emotional needs. At the end of the program, students also reported the lack of free time and the criticism from peers or senior nurses. In a study carried out by Rezaei et al. (2020), nursing students in clinical practice mentioned unpleasant emotions, humiliating experiences, feeling suffering due to seeing for patients with critical situation, instructor's admonition in the presence of clinical staff, and communication with the instructor as stress factors. They also added that their interest in the field of study had a negative impact on the perception of stress factors in the following dimensions: Clinical practices and Interpersonal communication.

The experience of the first clinical placement is also a source of pressure, mainly involving communication with the patients. During the last clinical placement, the pressure is associated with finding a job (Xiong & Zhu, 2023).

An analysis of these results reveals the influence of stress on the well-being of nursing students in clinical practice, with a direct impact on the teaching-learning process. Based on these results, the faculty of the undergraduate nursing program can reflect on interventions to minimize the factors that hinder this process. It is important to raise awareness of the scale and impact of stress on various areas and then build bridges to design strategies capable of overcoming these barriers and increase the well-being

of nursing students during their clinical practice. One of the limitations of this scoping review is the fact that the search was restricted to the last five years, which may limit the results. Despite this, this time limit allowed for a current and relevant review of the evidence on this topic. Although the selected studies have identified the factors causing stress among nursing students in clinical practice, they were conducted in different countries and may not be representative of the reality experienced by nursing students in Portugal.

Conclusion

This scoping review identified the factors causing stress among nursing students in clinical practice by providing an overview of what has been researched and published in this area since 2018. A total of 430 studies were identified and 17 studies from various continents were selected for inclusion. Seven studies were conducted in Europe, two in South America, and eight in Asia. This review reveals the need to conduct a research study in Portugal to understand the (current) factors causing stress among nursing students in clinical practice.

The factors identified in this review can act as either facilitators or barriers to the development of skills in this teaching-learning process. The analysis revealed factors related to personal and professional aspects, to the clinical practice environment/structure and its organization, as well as to support systems, namely the supervisory model that integrates this process. Nursing research contributes to the development of an evidence-based profession. These findings call for reflection in nursing schools, given the impact of stressors on nursing students during their clinical practice. Nursing education should adopt multi-faceted strategies to help nursing students to cope better with stress, increase their stability, and improve their level of satisfaction.

Author contributions

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