

Review



Positive and negative aspects of psychological stress in clinical education in nursing: A scoping review

Agostinho Antônio Cruz Araújo^a, Simone de Godoy^a, Natália Maria Freitas e Silva Maia^b, Rodrigo Mota de Oliveira^a, Kelly Graziani Giacchero Vedana^a, Álvaro Francisco Lopes de Sousa^c, Thomas Kwok Shing Wong^d, Isabel Amélia Costa Mendes^{a,*}

^a Ribeirão Preto College of Nursing, University of São Paulo, Ribeirão Preto, Brazil

^b Nursing Department, Federal University of Piauí, Teresina, Brazil

^c Global Health and Tropical Medicine, Institute of Hygiene and Tropical Medicine, NOVA University of Lisbon, Lisbon, Portugal

^d Hong Kong Nang Yan College of Higher Education, Hong Kong

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ABSTRACT

Background: Even though clinical practice is crucial for nursing students' personal and professional development, it is recurrently associated with stress. However, stressful situations may not only elicit negative responses, but positive responses as well, and such aspects should be further investigated.

Aim: To explore the literature addressing the positive and negative aspects of stress experienced by nursing students during clinical practicum.

Design: This scoping review followed the Joanna Briggs Institute (JBI) and PRISMA-ScR guidelines.

Data sources: CINAHL, MEDLINE/PubMed, PsycINFO, Web of Science, IBECs, LILACS, BDNF and two theses and dissertations repositories.

Review methods: Searches were conducted from June to August 2022. Studies addressing the positive and negative aspects of stress experienced by nursing students during clinical practice were included regardless of the method adopted.

Results: This review included 32 studies published between 1999 and 2022 in 25 countries across four continents: Africa, America, Asia, and Europe. Stress can positively influence academic performance, especially in mobilizing a search for learning and professional development and in integrating theoretical knowledge and improving clinical skills and competencies. Negatively, stress can cause biopsychosocial symptoms that compromise a student's academic performance and can cause doubts and uncertainties about the construction of their professional identity.

Conclusions: Although the negative aspects stand out over the positive ones, it is evident that both are present in the clinical practice environment. When considering stress of nursing students, educators should conduct the teaching-learning process in order to reduce the negative impact and promote the positive side of stressful situations.

1. Introduction

The American Psychological Association (APA) defines stress as “the physiological or psychological response to internal or external stressors” (American Psychological Association, 2022). Based on this concept,

stress is a natural response affecting all individuals at some point in their lives (Cleveland Clinic, 2021). It can be a risk factor for developing physical or mental pathological disorders, such as cardiovascular diseases (Stephoe and Kivimäki, 2012; Cohen et al., 2016) and depression (Cohen et al., 2016). Susceptibility to stress varies among individuals

* Corresponding author at: Ribeirão Preto College of Nursing, University of São Paulo, Avenida Bandeirantes, 3900, Monte Alegre, 14040902 Ribeirão Preto, São Paulo, Brazil.

E-mail addresses: agostinhocruz@usp.br (A.A.C. Araújo), sig@eerp.usp.br (S. Godoy), nataliamfmaia@gmail.com (N.M.F.S. Maia), rodrigoo@usp.br (R.M. Oliveira), kellygiacchero@eerp.usp.br (K.G.G. Vedana), sousa.alvaromd@gmail.com (Á.F.L. Sousa), thomaswong@ny.edu.hk (T.K.S. Wong), iamesdes@usp.br (I.A.C. Mendes).

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and is mainly influenced by subjectivity, genetics, and emotional and behavioral factors. Individuals adopt coping strategies to deal with different situations based on environmental circumstances and perceived social support (Salleh, 2008; Cleveland Clinic, 2021). Historically, stress is only linked to negative consequences. However, authors state that although negative aspects inherent to stressful situations are often more apparent, there are also positive aspects associated with stress (Folkman, 1997, 2008; Salleh, 2008; Cardon and Patel, 2013) which need to be investigated.

Considering the diversity of stressful situations and the diversity of coping strategies, investigating stress among health professionals is relevant (Ngoc et al., 2018; Villagran et al., 2023), especially among those in the nursing field, the largest healthcare profession and most frequently present in health services (World Health Organization, 2020). Nursing students are more likely to experience psychological stress during their education than other undergraduate students (Timmins et al., 2011; Cleary et al., 2012; Bartlett et al., 2016). Although clinical learning is fundamental to nurse education (Ahn and Choi, 2019), this period is associated with stressful experiences (Edwards et al., 2010; Chen and Hung, 2014), due to a gap between theory and clinical practice (Hatlevik, 2012; Kavanagh and Szveda, 2017; Ugwu et al., 2023), which results in some stressful situations related to punctuality and workload, the environment, the relationship with the faculty and nursing staff, and a lack of knowledge and professional skills (Shaban et al., 2012). The responses to these experiences may be either negative or positive.

Current scoping reviews on psychological stress focus on coping strategies to deal with stressful situations (Majrashi et al., 2021; Slemmon et al., 2021) or address the transition from academic to professional life (Kaihanen et al., 2018). The evidence on psychological stress of nursing students in the clinical learning environment focuses only one of the aspects, whether positive or negative. There is a gap in knowledge of both aspects which motivated the development of this review.

It is essential to know the positive and negative aspects of stress in clinical activities of nursing students, to demystify that stress has only negative implications in the context of nurse education. This evidence is important to support nursing educators, especially those working in clinical practice, to effectively manage stressful situations and promote nursing students' personal and professional development. The aim of this review was to explore the literature addressing the positive and negative aspects of stress experienced by nursing students during clinical practicum.

2. Methods

In order to map the evidence of the positive and negative aspects of stress experienced by nursing students during clinical practicum a scoping review was conducted. The recommendations from Joanna Briggs Institute (JBI) (Peters et al., 2020) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018) were followed.

Literature searches did not result in the identification of any review protocol focusing on the positive and negative aspects of stress in nursing students during clinical practice, addressed together or separately, and their implications in the teaching-learning process.

2.1. Protocol and registration

The protocol for the review is available in the Open Science Framework (OSF), registered with the following Digital Object Identifier (DOI): [10.17605/OSF.IO/MSKE4](https://doi.org/10.17605/OSF.IO/MSKE4) (Araújo et al., 2022).

2.2. Research question

The PCC acronym (Participants/Concept/Context) (Peters et al., 2020) was used to establish the guiding question. Thus, "P" refers to nursing students; "C" - psychological stress; and "C" - clinical activities.

Subjectivity is one of the fundamental aspects of stress management; however, it is important to assess other individual, relational, and contextual factors that might be involved in these experiences. The psychological dimension was attributed as Concept "C" of this review, considering it is a response of nursing students in the clinical activities. The following guiding question was established "What is the evidence about nursing students' experiencing psychological or physiological stress during clinical activities?" This was divided into two sub-questions:

- 1) What are the negative aspects of psychological or physiological stress experienced by nursing students?
- 2) What are the positive aspects of psychological or physiological stress experienced by nursing students?

2.3. Search strategy

An initial search was conducted in the Cumulative Index to Nursing and Allied Health (CINAHL) and Medical Literature Analysis and Retrieval System Online databases via the National Library of Medicine (MEDLINE/PubMed) from October 2021 to March 2022. This search was intended to identify the most recurrent descriptors adopted by authors addressing the topic. The search strategy was adjusted and standardized, considering the different databases consulted, with the support of a university librarian.

Two independent reviewers conducted the main search from June 28th to August 27th, 2022, in the following databases: Cumulative Index to Nursing and Allied Health (CINAHL), Medical Literature Analysis and Retrieval System Online via National Library of Medicine (MEDLINE/PubMed), PsycINFO (Psychology Information), Web of Science, Bibliographical Index Español en Ciencias de la Salud (IBECS), Latin American and Caribbean Literature in Health Sciences (LILACS), Nursing Database (BDNF). Additionally, a search was conducted in the Catalog of Theses and Dissertations made available by the Coordination for the Improvement of Higher Education Personnel and the Digital Library of Theses and Dissertations of Brazil, considering the open access availability in this country.

2.4. Selection criteria

Studies addressing the positive or negative aspects of stress experienced by nursing students during clinical practice were included, regardless of the method. Studies focusing only on identifying stressful situations or coping strategies were excluded. Note that there was no restriction in terms of timeframe or language.

2.5. Selection of sources of evidence

Identified studies were exported to the EndNote® Web software to identify and remove duplicates. Next, data were transferred to the Rayyan web application which allows the selection of studies to be simultaneous and independent among reviewers in order to improve reliability and methodological precision (Ouzzani et al., 2016). Finally, two reviewers assessed the studies' eligibility, and a third reviewer intervened in case of disagreement.

2.6. Data mapping and extraction

After determining included studies, data were extracted. Seeking to minimize bias and increase methodological rigor, two reviewers performed this step so that each extracted the data of the studies considering: title, country/year of publication, approach, sample, positive and negative aspects of stress experienced during clinical practice. Finally, the information collected was compared to identify the positive and negative aspects of stress nursing students experience during clinical activities.

2.7. Data analysis and presentation

The analysis of studies allowed the construction of two key categories: Positive aspects of psychological stress experienced by nursing students and Negative aspects of psychological stress experienced by nursing students. For each key category, the physical, behavioral and social implications manifested by nursing students in the selected studies were considered. The evidence from the selected studies allowed the construction of a figure, illustrated in a jigsaw puzzle format, in order to show that these factors constitute the teaching-learning process in a clinical environment, that is, each nursing student can experience positive aspects and/or negative, at the same time or not, depending on their subjectivity in coping with stressful situations.

3. Results

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018) guided reporting in this study. The review process is outlined in Fig. 1.

The studies included in this review were published between 1999 and 2022 and were conducted in 25 countries distributed across four continents: Africa (~9 %), America (25 %), Asia (~63 %), and Europe (25 %). Note that the sum of the percentages in the continental distribution exceeds 100 % because the sample includes multicenter studies, in addition to Turkey, which is currently located on two continents. Most studies were cross-sectional studies (~84 %). Studies with a quantitative approach (75 %) included samples ranging from 28 to 1324 participants, while the samples in studies with a qualitative approach (25 %) ranged from 6 to 33 participants. All studies included in this review exclusively addressed nursing students. The characteristics of the studies included in the sample are shown in Table 1.

The main limitation of the studies included in this review was the high percentage of studies that have a cross-sectional design (~84 %), as

they have a higher risk of selection bias and low replicability, which prevents the generalization of the results; however, when considering the diversity of aspects found, we believe we met the aim of this review. It is believed that conducting cohort studies can provide the monitoring of positive and negative aspects of psychological stress, especially when considering that some factor can be enhanced or reduced throughout the training process of nursing students.

The positive and negative aspects of stress experienced during clinical activities are presented in Fig. 2.

This scoping review identified the positive and negative aspects of stress experienced by nursing students in clinical practice. In addition, the analysis of 32 studies enabled us to explore the characteristics of responses and their impact in the clinical practice environment highlighted in two key categories: Positive aspects of psychological stress experienced by nursing students and Negative aspects of psychological stress experienced by nursing students.

3.1. Positive aspects of psychological stress experienced by nursing students

The findings show that clinical practice stress occurs in students during the process of integrating theoretical knowledge and improving clinical skills and competencies, when facing challenging situations (Burnard et al., 2007) and developing professional ethics (Hsu et al., 2018). Stress may coexist with clinical experiences linked to trust (Oermann and Sperling, 1999; Hsu et al., 2018), hope (Oermann and Sperling, 1999; Oermann and Lukomski, 2001), motivation (Oermann and Sperling, 1999; Burnard et al., 2007), satisfaction (Oermann and Sperling, 1999; Oermann and Lukomski, 2001), proactivity (Hsu et al., 2018), improving interaction with other professionals (Hsu et al., 2018). Stress may be related to mild levels of anxiety that mobilize assessment of needs in relation to self, other nurses and the environment; search for learning and professional development (Oermann and Sperling, 1999; Oermann and Lukomski, 2001; Hsu et al., 2018), in addition to

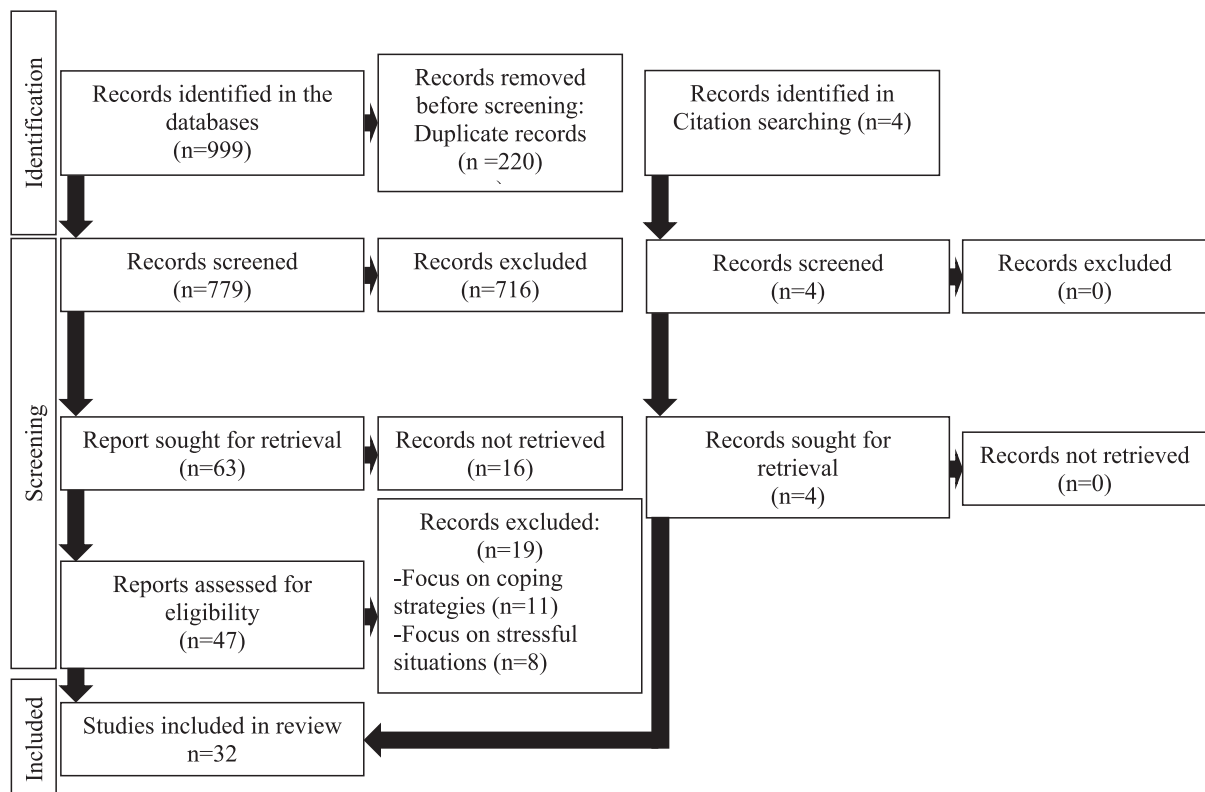


Fig. 1. PRISMA-ScR (Tricco et al., 2018).

Table 1

Studies' characteristics according to the authors, country, year of publication, approach/sample, positive and negative aspects of psychological stress experienced by nursing students.

Authors/ country/year of publication	Approach/sample	Positive aspects	Negative aspects
Ab Latif R., Nor M. Z. M./ Malaysia/ 2019	Cross-sectional study N: 346	–	It causes psychic suffering and behavioral problems. Some students consume substances as a stress coping strategy.
Adjei C. A., Sarpong C., Attafuah P. A., Armetil N. P., Akosah Y. A./ Ghana/2018	Descriptive phenomenological N: 33	–	It influences the lack of preparation for classes due to the schedule of clinical practice activities. It affects sleep, leading to drowsiness during school hours.
Admi H., Moshe-Eilon Y., Sharon D., Mann M./ Israel/2018	Cross-sectional study N: 339	–	Stress experienced in clinical practice results in lower satisfaction for the most stressed students.
Baluwa M. A., Lazaro M., Mhango L., Msiska G./ Malawi/2021	Cross-sectional study N: 102	–	Some students consume substances as a stress coping strategy.
Burnard P., Rahim H. T. B. P. D. P. D. D. P. H. A., Hayes D., Edwards D./Brunei/ 2007	Descriptive study, guided by grounded theory approach N: 20	The student can be motivated by stress, facing challenging situations.	Stress can manifest headache, changes in appetite, mood, develop depression and/or other mental illnesses, cause demotivation, discomfort, loneliness, anger and cause temporary abandonment of the course.
Chan C. K. L., So W. K. W., Fong D. Y. T./Hong Kong/2009	Cross-sectional study N: 205	–	Exceed physical and emotional capacity
Chikamura C., Iida T., Ishizaki F., Aoi S., Kobayashi T., Kataoka T./Japan/ 2008	Cross-sectional study N: 28	–	The number of students with irregular menstrual cycles increased and estrogen secretion was inhibited due to the stress experienced in clinical practice.
Findik U. Y., Ozbas A., Cavdar I., Topcu S. Y., Onler E./ Turkey/2015	Cross-sectional study N: 126	–	Higher stress levels are related to the adoption of passive stress coping behaviors.
Gorostidi X. Z., Egilegor X. H., Erice M. J. A., Iturriotz M. J. U., Garate I. E., Lasa M. B., Cascante X. S./Spain/2007	Cohort study N: 69	–	Stress can trigger insecurity and helplessness.
Hsu Pei-Lan., Wang Hsiu-Hung., Eng	Cross-sectional study N: 8	Stress resulted in the reassessment of	Anguish, sadness, depressive symptoms, lack of

Table 1 (continued)

Authors/ country/year of publication	Approach/sample	Positive aspects	Negative aspects
Cheng-Joo., Yang Mei-Sang./ Taiwan/2018		needs in relation to oneself, other nurses and the environment. Students adjusted their attitudes to become more proactive and improved their skills in assessing others' emotions to deal with complex interpersonal relationships in clinical practice.	sleep, nervousness, worry, fear, headaches, lapses in concentration, stomach aches, constipation or diarrhea were manifested in more stressed students.
Oermann M. H., Sperling S. L./ United States/ 1999	Cross-sectional study N: 476	Contributes to motivation, confidence, satisfaction, hope and willingness to learn.	–
Pereira F. G. F., Caldini L. N., Miranda M. D. C., Caetano J. A./Brazil/ 2014	Cross-sectional study N: 86	–	Stress can cause concern about the acquired knowledge and the impact on professional life.
Peng Shoa-Jen., Sung Huei-Chuan., Chen Chen-Jung., Lee Tzu-Ying./ Taiwan/2020	Cross-sectional study N: 814	–	Increased stress levels were associated with low interest in clinical practice.
Rafati F., Nouhi E., Sabzehvari S., Dehghan-Nayyeri N./ Iran/2017	Cross-sectional study N: 7	–	Stress can cause feelings of inadequacy, feelings of being ignored, ineffective communication, sadness and ambiguity.
Sheu S., Lin H. S., Hwang S. L./Taiwan/ 2002	Cross-sectional study N: 561	–	Manifestation of behavioral symptoms (difficulty making decisions, lack of optimism about the future, difficulties in thinking, low self-esteem, among others), emotional (nervousness, anxiety, worry, sadness, depression, among others) and physical (stomach pain and diarrhea, vertigo and dizziness, vulnerability to cold, difficulty breathing, nausea and vomiting, among others).
Suen W. Q., Lim S., Wang W., Kowitlawakul	Cross-sectional study N: 285	–	The higher the stress level, the lower the student's

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Table 1 (continued)

Authors/ country/year of publication	Approach/sample	Positive aspects	Negative aspects
Y./Singapore/ 2016			personalization, involvement and satisfaction.
Tessa R./ Uruguay/ 2015	Cross-sectional study N: 60	–	Stress causes low self-esteem, feelings of overload and reduced quality of sleep.
Wallace L., Bourke M. P., Tormoehlen L. J., Poe- Greskamp M. V./United States/2015	Cross-sectional study N: 65	–	Fear and concerns about the future in their careers were evidence found in students during their clinical practice activities.
Labrague L. J., McEnroe- Petitte D. M., Papathanasiou I. V., Edet O. B., Tsaras K., Leocadio M. C., Colet P., Kleisiaris C. F., Fradelos E. C., Rosales R. A., Santos-Lucas K. V., Velacaria P. I. T./Greece, Philippines, and Nigeria/ 2018	Comparative N: 547	–	The authors infer that stress will have repercussions in the future due to its impact on the nursing workforce.
Oermann M. H., Lukomski A. P./United States/2001	Exploratory N: 75/383 (Comparison group)	It awakens the desire to learn, in addition to emotions related to stimulation, hope, satisfaction and excitement.	It triggers fear, disappointment and affects motivation and confidence.
Yamashita K., Saito M., Takao T./ Japan/2012	Cross-sectional study N: 1324	–	Stress in clinical practice can contribute to poor academic performance, depression and, in the worst case scenario, suicide. Some students consume substances as a stress coping strategy.
Alhamidi S. A., Alyousef S. M./Saudi Arabia/2021	Cross-sectional study N: 20	–	Apprehension, fear and lack of motivation to work in mental health nursing.
Bodys-Cupak I., Ścisło L., Kózka M./ Poland/2022	Cross-sectional study N: 307	–	Perceived stress was associated with lower levels of self- efficacy, life satisfaction and orientation, and low self-esteem.
Freeburn M., Sinclair M./ Ireland/2009	Cross-sectional study with phenomenological approach N: 6	For all participants, the stressful incident meant changing the way they saw their lives, changing their	Stress has significant negative effects on health, well-being, and personal and professional development. It triggers feelings of despair,

Table 1 (continued)

Authors/ country/year of publication	Approach/sample	Positive aspects	Negative aspects
		expectations and goals.	indifference, mental exhaustion and depression, reduced performance and personal growth and development, low mood, depersonalization, withdrawal and physical effects such as lack of sleep. Some students consume substances, such as alcohol, to cope with stress.
Graham M. M., Lindo J., Bryan V. D., Weaver S./ Jamaica/2006	Cross-sectional study N: 106	–	Stress impaired socialization and sleep, in addition to causing fear, feelings of oppression, inferiority, hopelessness, loneliness and anger.
Gurková E., Zeleníková R./ Czechia and Slovakia/2018	Cross-sectional study N: 275	–	The physical, psychological and social health of students is strongly influenced by the stress of clinical practice
Öner Altioğ H., Üstun B./ Turkey/2013	Cross-sectional study N: 15	–	It reduces motivation and confidence and provokes fear.
Wang L., Lin C., Han C., Huang Y., Hsiao P., Chen L./ Taiwan/2021	Cross-sectional study N: 19	–	It reduces confidence and learning, causes indecisions about being in the right profession, so that there is the possibility of temporary or permanent abandonment of the career.
Fonseca J. R. F., Calache A. L. S. C., Santos M. R., Silva R. M., Moretto S. A./Brazil/ 2019	Cross-sectional study N: 155	Academic performance positively influenced	–
Ye Y., Hu R., Ni Z., Jiang N., Jiang X./ China/2018	Cross-sectional study N: 435	–	Clinic performance negatively influenced
Mendes S. S., Martino M. M. F./Brazil/ 2020	Cross-sectional study N: 55	–	There is a relationship between academic stress and poor quality sleep.
Sun L., Gao Y., Yang J., Zang Xiao-Ying., Wang Yao- Gang./China/ 2016	Cross-sectional study N: 474	–	The high stress level indicates a lower level of professional identity.

- Promotes a search for learning, a desire to grow in the profession, and to integrate theoretical knowledge, clinical skills, and competencies;
- Promotes the ability to face challenges; communication, trust, hope, motivation, and satisfaction; professional ethics; and improved academic performance.
- Triggers physical and psychological manifestations related to the gastrointestinal and nervous systems;
- Brings about depression, suicidal ideation, and suicide; partial abandonment of the program or dropout; doubts about professional prospects and, consequently, inhibits identity construction;
- Leads to disinterest, demotivation, dissatisfaction, and ineffective coping strategies to deal with stress;
- Negatively affects academic performance.

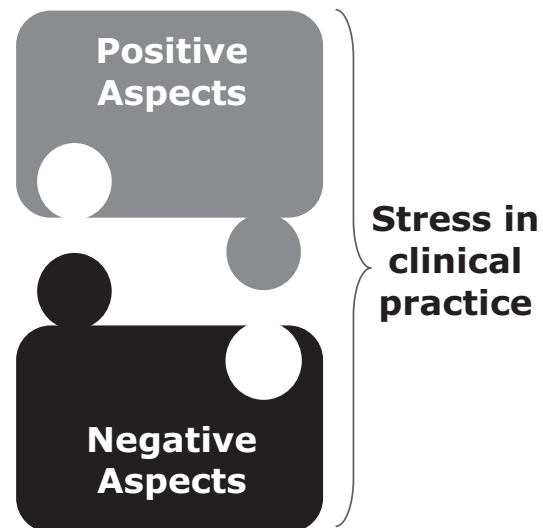


Fig. 2. Positive and negative aspects of stress experienced by nursing students during clinical activities according to the studies included in this scoping review.

positively influencing academic performance (Fonseca et al., 2019). Experiences lived in clinical practice allow students to mature in the face of stressful events (Freeburn and Sinclair, 2009; Hsu et al., 2018).

3.2. Negative aspects of psychological stress experienced by nursing students

Although the positive aspects of stress during clinical practice are occasionally reported in the literature, its negative impact still elicits greater attention from researchers worldwide. Physical and psychological manifestations are described (Sheu et al., 2002; Burnard et al., 2007; Chikamura et al., 2008; Chan et al., 2009; Freeburn and Sinclair, 2009; Tessa, 2015; Graham et al., 2016; Adjei et al., 2018; Gurková and Zeleníková, 2018; Hsu et al., 2018; Mendes and Martino, 2020), such as nausea (Sheu et al., 2002), vomiting (Sheu et al., 2002), headaches (Burnard et al., 2007; Hsu et al., 2018), vertigo (Sheu et al., 2002), sleep disturbances (Freeburn and Sinclair, 2009; Tessa, 2015; Graham et al., 2016; Adjei et al., 2018; Hsu et al., 2018; Mendes and Martino, 2020), appetite changes (Burnard et al., 2007), gastrointestinal disturbances (Sheu et al., 2002; Hsu et al., 2018) and impact on students' menstrual cycles (Chikamura et al., 2008).

Nursing students may experience stress associated with negative experiences and feelings (Oermann and Lukomski, 2001; Sheu et al., 2002; Burnard et al., 2007; Gorostidi et al., 2007; Chan et al., 2009; Öner Altıok and Üstun, 2013; Tessa, 2015; Wallace et al., 2015; Graham et al., 2016; Rafati et al., 2017; Gurková and Zeleníková, 2018; Hsu et al., 2018; Ab Latif and Nor, 2019; Alhamidi and Alyousef, 2021; Wang et al., 2021), such as anguish (Burnard et al., 2007; Hsu et al., 2018), anxiety (Sheu et al., 2002; Burnard et al., 2007; Gorostidi et al., 2007), insecurity or lower confidence (Oermann and Lukomski, 2001; Sheu et al., 2002; Gorostidi et al., 2007; Öner Altıok and Üstun, 2013; Rafati et al., 2017; Wang et al., 2021), nervousness (Sheu et al., 2002; Hsu et al., 2018), fear (Oermann and Lukomski, 2001; Öner Altıok and Üstun, 2013; Wallace et al., 2015; Graham et al., 2016; Hsu et al., 2018; Alhamidi and Alyousef, 2021), anger (Burnard et al., 2007; Graham et al., 2016), sadness (Sheu et al., 2002; Rafati et al., 2017; Hsu et al., 2018) and low self-esteem (Sheu et al., 2002; Tessa, 2015; Bodys-Cupak et al., 2022).

High-stress levels corroborate ineffective (Freeburn and Sinclair, 2009; Yamashita et al., 2012; Ab Latif and Nor, 2019; Baluwa et al., 2021) and passive (Findik et al., 2015) coping strategies. Depending on the frequency, duration, and coping strategies adopted, stress may be associated with short- and long-term mental health problems instead of

promoting the personal and professional growth of nursing students (Freeburn and Sinclair, 2009; Gurková and Zeleníková, 2018). Health problems may include depressive disorders (Burnard et al., 2007; Freeburn and Sinclair, 2009; Yamashita et al., 2012; Hsu et al., 2018), alcohol consumption and drug use, and suicidal behavior manifested by suicidal ideation, in addition to more severe conditions such as death by suicide, according to authors state (Yamashita et al., 2012).

The academic (Freeburn and Sinclair, 2009; Yamashita et al., 2012; Adjei et al., 2018; Hsu et al., 2018; Wang et al., 2021) and clinic performance (Ye et al., 2018) are negatively influenced by stress. Decreased interest (Suen et al., 2016; Perng et al., 2020), motivation (Oermann and Lukomski, 2001; Burnard et al., 2007; Öner Altıok and Üstun, 2013; Alhamidi and Alyousef, 2021; Bodys-Cupak et al., 2022), and satisfaction (Suen et al., 2016; Admi et al., 2018; Bodys-Cupak et al., 2022) may emerge in the clinical practice environment and, students may not have the motive to understand the importance of nursing as a profession.

In line with this statement, stress may negatively influence identity construction among nursing students (Suen et al., 2016; Sun et al., 2016; Alhamidi and Alyousef, 2021; Wang et al., 2021), causing doubts and concerns about their professional prospects (Sheu et al., 2002; Pereira et al., 2014; Wallace et al., 2015; Labrague et al., 2018; Wang et al., 2021). In this sense, students may temporarily suspend their studies (Burnard et al., 2007; Wang et al., 2021) or drop out of the program (Wang et al., 2021).

4. Discussion

Stress can positively influence academic performance, especially in mobilizing a search for learning and professional development and in integrating theoretical knowledge and improving clinical skills and competencies. Negatively, stress can cause biopsychosocial symptoms that compromise not only their academic performance, but that can cause doubts and uncertainties about the construction of their professional identity.

Thus, a stress response may be present in situations in which students reconcile theory and practice, an exercise that is vital in the learning and teaching process (Scully, 2011; Hatlevik, 2012). Considering the Theory of Human Motivation, developed by Abraham Harold Maslow (Maslow, 1954), which focused on the hierarchy of basic human needs, we believe that nursing students' satisfaction is potentially hampered by stress experienced during clinical practice, as it may be associated with manifestations that impact the students' physiological, safety, social, and self-esteem needs.

Thus, interventions focused on student retention, and academic development should include components related to stress relief and management linked to clinical practice experiences. Students' professional identity is supported by their experiences and interactions established throughout their lives, especially in the academic environment (Lima et al., 2020). In this sense, there is evidence that clinical activities and mentors are fundamental to building a nursing student's identity (Marañón and Pera, 2015). Furthermore, in clinical practice, nursing students approach and experience professional know-how, employing the profession's specific knowledge and developing skills and abilities to provide care, resulting in peer and social recognition.

Hence, educators must use training environments to encourage students to learn, providing conditions conducive to their growth, making an effort to facilitate their development, and enabling them to flourish as engaged and confident professionals. Educators should promote individual, relational and environmental interventions that seek to reduce situations of negative stress, trauma, rejection, bullying (Gillespie et al., 2017). The responsibility during the teaching and learning process is not restricted to the educator, but also needs to consider the personal student's will. Each student has different personal and academic motivations. Thus, their productivity in the clinical environment varies according to the interest area.

We are at a historical time in which there is a call for awareness that we must recruit and retain talents in the nursing profession. The mobilization for valuing nursing as a profession - and nurses as central and essential professionals in health systems - brings hopeful signs of change in the social and work contexts, demanding courageous attitudes from nurses (Salvage and Stilwell, 2018) and leadership investments (Mendes and Trevizan, 2020). These are challenging times for people's health worldwide, with 23 million nurses working in contexts permeated by threats and inequalities faced by the population in countries and regions. At the same time, as noted by the State of the World's Nursing Report (World Health Organization, 2020), a nurse shortage is expected (Salvage and White, 2020). Thus, all educators and teaching institutions must make an effort and invest in the positive aspects of stress in teaching environments. Only when such a concept is shared by faculty members or becomes an institutional policy the learning environment will be more welcoming and boost self-confidence among students, attractiveness of the profession and student retention in undergraduate nursing programs.

As a consequence of this process, nursing students will experience improved subject wellbeing in clinical learning environments that promote self-efficacy (Güleç and Güllirmak, 2022), in addition to the ability to cope with stressful situations.

5. Limitations

The search in the databases was carried out with precision and methodological rigor, however it is possible that it has not exhausted all gray literature available. Data extraction may have been influenced by the reviewers' subjectivity in identifying positive and negative aspects of psychological stress. In order to minimize this bias, it was performed by two people, independently, and subsequently compared. Despite this, the objective of this investigation was achieved and brought important contributions to the literature by contemplating physical, behavioral and social aspects (positive and negative) associated with psychological stress experienced by nursing students in a clinical practice environment.

6. Conclusions

The results of this review explore the positive and/or negative aspects of psychological stress by nursing students during their clinical activities from 25 countries. Although the negative aspects stand out over the positive ones, it is evident that both are present in the clinical practice environment. Thus, the educator, when considering the

subjectivity to stress of nursing students, will be able to conduct the teaching-learning process in order to reduce the negative impact and promote the positive side of stressful situations.

If the positive aspects can be enhanced, the student will be in a fertile teaching-learning environment, which will favor the development of skills for the exercise of the profession. On the other hand, if the negative aspects stand out, in addition to damage to physical and mental health, with risks to their physical integrity, the student may give up their career. There is much to advance in the scientific field to identify the favorable outcomes of stress experienced in clinical practice and interventions to mitigate the harmful effects of stress in the academic environment.

CRedit authorship contribution statement

Agostinho Antônio Cruz Araújo: Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. **Simone de Godoy:** Conceptualization, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing. **Natália Maria Freitas e Silva Maia:** Conceptualization, Data curation, Formal analysis, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. **Rodrigo Mota de Oliveira:** Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing. **Kelly Graziani Giaccherio Vedana:** Formal analysis, Methodology, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Álvaro Francisco Lopes de Sousa:** Formal analysis, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Thomas Kwok Shing Wong:** Formal analysis, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Isabel Amélia Costa Mendes:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Project administration, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Declaration of competing interest

None.

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