





## Article

# Factors Associated with Resilience among Thai Nursing Students in the Context of Clinical Education: A Cross-Sectional Study

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**Abstract:** Resilience aids nursing students in dealing with adversities during their nursing education. This study examined the relationship between nursing students' resilience and relevant variables in the context of clinical education. Methods: A cross-sectional study was conducted to collect data from 319 undergraduate nursing students in Northeast Thailand. The Connor–Davidson Resilience Scale, the Multidimensional Scale of Perceived Social Support, the Learning Experience Scale or the Personal Responsibility Orientation to Self-Direction in Learning Scale, and the Stressors in Nursing Students scale were administered. A multiple regression analysis was performed for factors presumed to be associated with resilience. Results reported that Thai nursing students' average resilience score was  $71.79 \pm 16.33$ . Multiple regression analysis indicated factors associated with resilience, in which social support ( $\beta = 0.354$ ,  $p < 0.001$ , 95%CI: 0.240 to 0.469) and self-directed learning ( $\beta = 0.787$ ,  $p < 0.001$ , 95%CI: 0.606 to 0.968) showed a positive association, while stress ( $\beta = -0.083$ ,  $p = 0.025$ , 95%CI:  $-0.083$  to  $-0.006$ ) had a negative association. The final model accounted for 43.4% of the variance in the resilience score. In conclusion, self-directed learning, social support, and perceived stress among nursing students during clinical education are associated with their resilience.



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**Keywords:** clinical education; nursing students; nursing education; resilience; social support; self-directed learning; stressors

## 1. Introduction

Resilience is broadly recognized as a vital aspect of positive health [1,2]. In nursing education, resilience has been defined as the ability to cope with stressors [3–7]. Furthermore, resilience among nursing students has recently been defined as a process of personal development associated with protective factors that help them handle stress and adversities [8]. Several challenges may arise for students during transition periods, such as from adolescence to adulthood and from academic learning to clinical training. The need to adapt to changes during transition periods may put them under much pressure, which can jeopardize their health, particularly their mental health [1,2]. Having a high level of resilience is advantageous for adolescents facing the challenges and responsibilities of adulthood, especially when experiencing adverse circumstances [2,9]. Furthermore, resilience is essential for undergraduate and graduate nursing students [10].

Most studies on nursing students' resilience worldwide have focused on the relationship between resilience and mental health and well-being [9,11,12]. During clinical practice, nursing students face new challenges, such as having to adapt to the academic culture of higher education, taking care of patients for the first time, dealing with high expectations of academic achievement, and managing assignments under deadlines [6,12–14]. Therefore, understanding how resilience in nursing students is conceptualized within the context

of academic learning and, more specifically, in clinical training would be valuable to the development of nursing education. Therefore, research on resilience in clinical education needs to be deepened [15,16].

The nursing student resilience model [17] highlights several factors, such as social support, self-directed learning, and efficient coping with stress, as protective factors that enhance their resilience and improve their adaptive skills when encountering challenges and adversities [17]. The concept of resilience based on the nursing student resilience model focuses on a personalized development process that uses individual protective factors to handle adversities. Thus, cumulative success in adversity management develops excellent coping skills, adaptive abilities, and well-being in nursing students.

Numerous studies have emphasized that social support is associated with resilience, as nursing students with good social support are reported to have higher resilience [18–23]. Social support is critical in enhancing nursing students' resilience while navigating challenging clinical education [24]. The demanding nature of nursing education, encompassing theoretical coursework and hands-on clinical experiences, often subjects nursing students to high stress levels and emotional weariness [25]. In this context, social support from family members, peers, and nursing instructors can aid nursing students as a protection against the adverse effects of stressors and foster emotional stability [26–28]. Additionally, interactive networks provide a platform for sharing experiences, venting negative feelings, exchanging coping strategies, and establishing a sense of belonging within social connections [29,30]. As nursing students encounter challenging situations, such as exposure to patients' suffering and ethical dilemmas, prosocial support resources become vital in cultivating resilience and facilitating the progress of their nursing education [24,25].

In addition, recent studies on nursing students' resilience have highlighted a strong association between self-directed learning and resilience [31,32]. Self-directed learning is crucial in nurturing resilience among nursing students, as it empowers them to take control of their educational journey and adapt to challenges during their nursing education [33,34]. Additionally, self-directed learning equips nursing students with a deeper understanding of nursing concepts and implants a sense of autonomy in navigating the complexities of patient care [31]. Furthermore, self-directed learning simplifies constant professional development, empowering nursing students to stay up-to-date on healthcare trends and evidence-based practices [34]. Thus, the cultivation of self-directed learning skills significantly contributes to nursing students' resilience, preparing them with the adaptive capacity to handle several challenges in clinical education [31,32].

Moreover, high academic stress has been linked to low resilience [35,36]. The impact of stressors during clinical practice on nursing students' resilience is critical to their professional development and well-being [12,37]. Clinical practice exposes nursing students to many stressors, including high-pressure situations, emotionally charged interactions with patients and their families, and rapid decision-making needs [38]. The ability of nursing students to effectively navigate and cope with these stressors is integral to developing resilience [39]. Stressors in clinical practice serve as crucibles for refining coping mechanisms, emotional regulation, and adaptive strategies among nursing students [12]. The experience gained through handling stressors during clinical practice contributes meaningfully to cultivating resilience, aiding nursing students to tolerate the challenging demands of their clinical education [39]. Recognizing and addressing the impact of stressors on nursing students' resilience is crucial for nursing institutions, instructors, and clinical preceptors, as it notifies strategies that can enhance nursing students' resilience [12,40].

Several studies have addressed the association between resilience and the demographic characteristics of nursing students. Age is positively associated with resilience, as older nursing students have been reported to have higher resilience than younger ones [20,41,42]. Gender is another significant characteristic associated with resilience, as it has been reported that male nursing students have lower resilience than female nursing students [41,43]. In addition, inadequate income is associated with low resilience in nurs-

ing students [20,23,44]. A high grade point average has also been associated with higher resilience among nursing students [45].

Nursing education in Thailand has been developing in line with changes in the economy, society, environment, technology, politics, and global affairs [46–48]. Nursing colleges under the Faculty of Nursing Praboromarajchanok Institute, are higher education institutions specializing in health sciences. Their campuses are located across all regions throughout Thailand. The principal mission is to produce skilled and knowledgeable nursing graduates using the standard criteria for desirable graduate characteristics based on the Thailand Qualification Framework for Higher Education [49]. The institute provides holistic nursing care based on humanized care across all aspects, including health promotion, treatment, prevention, health protection, disease control, and rehabilitation at all levels, whether for individuals, families, or communities across the country [47]. For more than 80 years, all nursing colleges under the Faculty of Nursing Praboromarajchanok Institute, have produced professional nurses to meet the needs of the national health system, with more than 50% of all nursing students in Thailand who graduate each year [49].

Nursing research in Thailand has indicated that high resilience among nursing students is associated with a low prevalence of depression [50] and other mental health problems [51]. Correspondingly, some studies have addressed the strong association between resilience and nursing students' well-being in several countries, such as Canada [40], China [52], the Philippines [53], and the United Kingdom [42]. In addition, several studies have reported a significant association between a high level of resilience and a low stress level among nursing students in Thailand [54,55]. Similarly, numerous studies in other countries have designated an essential association between resilience and stress. For example, a study of nursing students' resilience in the face of the COVID-19 outbreak in Israel [56] and a study of stress and resilience among nursing students in India [57] found a correlation between resilience and stress.

Some studies have highlighted that the development of resilience is related to clinical education [20,42,58]. Resilience critically influences nursing students during their clinical practice. For example, perceived stress among nursing students can be affected by resilience [22,56,57,59,60]. Moreover, resilient nursing students have no intention of quitting their nursing studies [36,61] and have higher satisfaction and achievement in clinical education [62]. Therefore, the knowledge of factors associated with nursing students' resilience during clinical education needs to be enhanced. Consequently, the current study examines the relationship between resilience and relevant variables in the context of clinical education. This study explored factors associated with Thai nursing students' resilience in clinical education.

## 2. Materials and Methods

### 2.1. Study Design

A correlational cross-sectional design was used for the study.

### 2.2. Participants and Settings

Participant recruitment employed a convenience sampling method. This involved soliciting volunteers from three nursing colleges within the Faculty of Nursing Praboromarajchanok Institute, Thailand. Potential participants were identified as full-time students enrolled in a Bachelor of Nursing Studies program who had recently completed their clinical practice. To facilitate participation, web links to the online survey hosted on Google Forms were distributed through a designated contact person (a nursing educator) at each research setting. Ultimately, 319 nursing students completed the digital survey. Based on an a priori power calculation carried out using R software (power.chisq.test function in R library DescTools) (<https://www.R-project.org/> (accessed on 30 December 2023)) [63], the sample size needed with  $\alpha = 0.05$  and power = 0.8 was 298.

### 2.3. Measures

The survey encompassed four instruments alongside demographic inquiries. The initial segment captured participants' demographic details, encompassing age, gender, income, grade point average (GPA), and most recent clinical practice outcomes. Subsequently, the second segment integrated standardized scales to assess resilience, social support, self-directed learning, and stressors in nursing students. Specifically, the scales employed were the Connor–Davidson Resilience Scale (CD-RISC) [64], the Multidimensional Scale of Perceived Social Support (MSPSS) [65], a Learning Experience Scale (PRO-SDLS) [66], and Stressors in Nursing Students (SINS) scale [67]. To ensure linguistic fidelity, three experts translated the MSPSS, PRO-SDLS, and SINS scales from English to Thai, utilizing a back-translation methodology. Regarding copyright and scholarly integrity, due acknowledgement and respect were accorded to the original authors of the scales. The Thai version of the CD-RISC was acquired directly from the creators, ensuring compliance with copyright regulations. Similarly, concerning the MSPSS, PRO-SDLS, and SINS scales, full credibility and attribution were duly granted to the original authors.

#### 2.3.1. Resilience

The CD-RISC was developed in 2003 by Connor and Davidson and was initially used with post-traumatic stress disorder (PTSD) patients [64]. The original CD-RISC demonstrates good internal and test–retest reliability and construct validity. It encompasses 25 self-reported statements for measuring resilience, each rated on a 5-point Likert-type scale (not true at all, rarely true, sometimes true, often true, and true nearly all the time). Higher scores indicate greater resilience. The Cronbach's alpha for the sample in this study was 0.97.

#### 2.3.2. Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS) was initially developed in 1988 by Zimet et al. to measure and differentiate sources of perceived social support among university students [65]. The original MSPSS has good internal and test–retest reliability and moderate construct validity. The scale consists of 12 self-reported statements to measure perceived social support from family, friends, and significant others. Each item is rated on a 7-point Likert-type scale (very strongly disagree, strongly disagree, mildly disagree, neutral, mildly agree, strongly agree, and very strongly agree). The higher the mean score of these 12 items, the more social support one perceives. The Cronbach's alpha for the sample in this study was 0.97.

#### 2.3.3. Self-Directed Learning

The PRO-SDLS or Learning Experience Scale was developed in 2003 by Stockdale to measure self-directedness in learning among college students [66]. The original PRO-SDLS has good internal and test–retest reliability and construct validity. It comprises 25 self-reported statements for measuring self-directed learning regarding initiative, control, self-efficacy, and motivation. Each item is rated on a 5-point Likert-type scale (strongly disagree, disagree, sometimes, agree, and strongly agree). The total scores for initiative and control form the teaching–learning transaction component. The total scores for self-efficacy and motivation comprise the learning characteristics component. The Cronbach's alpha for the sample in this study was 0.83.

#### 2.3.4. Stress

The SINS scale was developed in 2003 by Deary et al. to measure the stress associated with being a nursing student in Scotland [67]. The original SINS scale has good internal and test–retest reliability and construct validity. It consists of 43 self-reported statements for measuring stressors related to nursing students' experiences under various dimensions, including clinical work, confidence, education, and finance. Each item is rated on a 5-point Likert-type (not at all stressful, mildly stressful, moderately stressful, very stressful, and

extremely stressful). The higher the mean score for these 43 items, the more stress one perceives. The Cronbach's alpha for the sample in this study was 0.98.

#### 2.4. Data Collection

After obtaining ethical approval following ethical research guidelines, Declaration of Helsinki [68], the data collection was conducted at three nursing colleges in Northeast Thailand from the autumn semester of 2021 to the spring semester of 2022. The research instruments were pilot-tested ( $n = 30$ ) before the data collection process began to evaluate the scale's interpretation and suitability among Thai nursing students. The pilot was carried out using a Thai version of the questionnaire among 30 nursing students from different nursing colleges of research settings in Northeast Thailand. Participants in the pilot test were excluded from the study's final sample.

Regarding the COVID-19 safety protocols, the plan for face-to-face data collection was changed in favor of digital means using Google Forms. The researcher sent an official letter (request for permission to conduct the research) to the directors of all three nursing colleges constituting the research settings. After receiving official approval from all three research settings, the researcher had a digital meeting with three contact persons (nursing instructors) from each research setting to inform them about the recruitment and data collection processes. Then, the contact persons promoted the research project and distributed the advertising materials for recruitment, along with the information sheet and the consent forms associated with the survey, to all nursing students who had completed their first clinical practice across the three research settings. Nursing students interested in participating in the study informed the contact person at their respective nursing colleges.

The digital survey link was provided to all three contact persons and was forwarded to nursing students via email and social media platforms (e.g., LINE, Messenger, and WhatsApp). The participants who volunteered could access the digital survey link distributed by a contact person. Participants could withdraw from the study at any time. The digital survey took approximately 25–30 min to complete. After completing the digital survey, participants clicked the submit button in the digital survey form, and the data were saved in the researcher's Google Drive repository, which was password-protected and accessible only to the researcher.

#### 2.5. Data Management and Analysis

Descriptive statistics were used to present the participants' characteristics and study variables. Frequency analysis was performed for all items of the instruments to investigate the variables and identify missing data. Multiple regression analysis was used to explore the impact of the independent variables on resilience. The Kolmogorov–Smirnov test was used to determine the normality of the data. The independent variables' variance inflation factor (VIF) was  $< 10$ , indicating no collinearity issue. IBM SPSS Statistics for Windows, version 29.0 (IBM Corp., Armonk, NY, USA), was used for the data analysis.

#### 2.6. Ethical Considerations

This study followed the ethical research guidelines of the Declaration of Helsinki (2013). Ethical approval for this study was obtained from the Ethics Review Authority, Sweden (approval number 2021-03754) and Srimasarakham Nursing College as a representative of the Faculty of Nursing Praboromarajchanok Institute, Thailand (approval number 021-2021). Data were collected after all ethical permissions were obtained. Moreover, the participants were assured that their participation was anonymous and that data confidentiality would be upheld throughout the study.

### 3. Results

The study comprised 319 participating nursing students, all completing the digital survey. Notably, the entire cohort consisted of second-year nursing students. A predominant majority of the participants identified as female ( $n = 287$ , 90.0%), with males constituting



8.2% of the study population ( $n = 26$ ) and a small fraction ( $n = 6$ , 1.9%) choosing not to specify their gender. The age range of the participants ranged from 19 to 37 years. Unfortunately, income information was not reported due to data ambiguity. Varied responses were received, with some participants citing a monthly salary from employers and others referring to a monthly allowance provided by parents or guardians. Furthermore, details regarding the grade point average (GPA) and the outcomes of the last clinical practice should have been included in the findings, as a substantial number of participants expressed a reluctance to answer, and several indicated a lack of knowledge on these aspects.

In this study, the mean scores and standard deviations for the four questionnaires are presented in Table 1. The scores were normally distributed.

**Table 1.** Means and standard deviations of the questionnaires.

Variables	Mean	SD
CD-RISC	96.24	16.03
MSPSS	69.11	13.78
PRO-SDLS	88.54	15.28
SINS Scale	119.21	37.20

CD-RISC = Connor-Davidson Resilience Scale; MSPSS = Multidimensional Scale of Perceived Social Support; PRO-SDLS = Personal Responsibility Orientation to Self-Direction in Learning Scale/Learning Experience Scale; SINS Scale = Stressors in Nursing Students Scale.

In the multiple regression model, age, gender, perceived social support, self-directed learning, and nursing students’ stress were included as independent variables and resilience as the dependent variable. The results of the multiple linear regression analysis are presented in Table 2. Perceived social support and self-directed learning were positively associated with resilience, whereas nursing students’ stress was negatively associated with resilience. Age and gender did not have a significant association with resilience. The final model accounted for 43.4% of the variance in the resilience score.

**Table 2.** Multiple regression analysis of factors associated with resilience ( $n = 319$ ).

Independent Variables	Model 1				Model 2			
	$\beta$	95%CI		$p$	$\beta$	95%CI		$p$
		Lower	Upper			Lower	Upper	
Age	0.083	−0.532	0.698	0.791				
Gender	0.140	−4.432	4.712	0.952				
Perceived social support	0.353	0.238	0.469	<0.001	0.354	0.240	0.469	<0.001
Self-directed learning	0.789	0.607	0.971	<0.001	0.787	0.606	0.968	<0.001
Nursing students’ stress	−0.044	−0.083	−0.005	0.027	−0.044	−0.083	−0.006	0.025

Dependent Variable: Resilience;  $\beta$  is the unstandardized coefficient; CI is the confidence interval.

**4. Discussion**

*4.1. Factors Associated with Nursing Students’ Resilience*

The results confirm the nursing student resilience model. Social support, self-directed learning, and perceived stress were significantly associated with resilience among the participating undergraduate nursing students who had just completed clinical education. The challenging demands of nursing education, woven with academic rigor, clinical complexities, and emotional challenges, require nursing students to have a strong foundation of resilience. A recent study highlighted the mediating role of resilience in strengthening nursing students’ well-being and academic success [69]. A comprehensive integrative review found a robust positive relationship between social support and resilience among nursing students worldwide [70]. This global embroidery discovered the significant influence of supportive resources in fostering adaptability and emotional well-being in academic and clinical stressors. Several studies intertwine a strong narrative through cross-referential

findings by identifying a statistically significant association between social support and resilience [71,72].

Further strengthening this foundation, a subsequent study demonstrated that a sound social support system strengthens nursing students' resilience, paving the way for enhanced academic performance [73]. Another recent study pinpointed the specific threads of family and peer support as significant contributors to resilience, highlighting the intricate network of care that nourishes nursing students' well-being [74]. Our findings significantly emphasize the interconnectedness between social support and resilience, particularly within the challenging crucible of clinical practice. We found that robust social support networks enhance student resilience within the clinical setting, enabling them to navigate adversities with greater confidence and emotional stability. Moreover, the significance of this interwoven tapestry extends beyond the immediate benefits of fostering resilience during nursing education. Both resilience and social support emerge as potent predictors of graduating to become a registered nurse and establish a critical role in preventing burnout among professional nurses, demonstrating the enduring influence of resilience on professional well-being and career longevity [55].

The multifaceted nature of nursing education demands a shift in focus towards fostering students' resilience. This discussion explores the critical role of self-directed learning as a keystone of nursing students' resilience, particularly within clinical education. Contemporary nursing education faces numerous challenges, including transitioning from traditional on-campus pedagogy to virtual and distance learning environments and the logistical complexities of organizing clinical rotations [75]. These shifts demand a greater emphasis on nursing students' ability to adapt and thrive in dynamic learning environments. This aligns impeccably with the tenets of self-directed learning, which empowers nursing students to take ownership of their learning journeys, navigate various learning resources, and handle their time efficiently. Recent research has shed light on the crucial link between self-directed learning and resilience among nursing students. For instance, self-directed learning skills were reported to mediate between optimism, emotional intelligence, and academic resilience [76]. This suggests that fostering self-directed learning skills can equip nursing students with the essential tools to navigate academic adversities and maintain emotional well-being, ultimately contributing to their overall resilience.

Additionally, a positive association exists between motivation to learn in clinical placements and resilience [77,78]. This connection highlights the importance of self-directed learning in promoting intrinsic motivation and engagement in clinical placement, a crucial factor for building resilience in response to clinical practice's demanding and emotionally stimulating situations. Resilient nursing students are more likely to engage in independent learning behaviors. Emerging research suggests that resilience is a crucial factor influencing the development and evolution of self-directed learning in nursing students [79]. This research underscores the value of fostering resilience as a personal quality and a cornerstone of practical nursing education. Notably, in our model, self-directed learning explained the largest proportion of resilience. This suggests that resilience in nursing students may be fostered through external support systems and internal capacities that enable them to take ownership of their learning and effectively navigate challenging encounters during clinical practice. This underlines the importance of empowering nursing students with the ability to initiate their learning processes to enhance their overall resilience. Providing academic strategies that promote resilience and self-directed learning could prepare future nurses with the adaptability and lifelong learning skills crucial for handling the adversities encountered in healthcare practice.

The relationship between stressors in clinical practice and nursing students' resilience is critical to understanding the dynamics of clinical education and its impact on nursing students' well-being. Resilience helps nursing students deal with adversities inherent in their clinical practice. Our study discovered that perceived stress explained only a small proportion of resilience among participants, which does not disprove the indisputable connection between the impact of stressors and nursing students' resilience. It is crucial

to note that the discrepancy in our findings may be attributed to the nuanced nature of stressors encountered in clinical practice. Negative challenges, such as complex patient cases, demanding workloads, and ethical dilemmas, have been identified as significant stressors impacting nursing students [80]. Additionally, recent studies have established a significant association between perceived stress and resilience in nursing students [81,82]. In addition, nursing students with higher resilience reported more successful recovery from negative or traumatizing experiences, affecting their holistic health [83]. This underscores the importance of promoting nursing students' resilience as a protective factor against the potentially negative impacts of stressors encountered during their clinical practice.

Regarding the relationship between demographics and resilience, age and gender have emerged as key areas of exploration in recent research, yet findings remain elusive and often contradictory. While previous investigations have linked older age to higher resilience among nursing students [41,42,70], our findings did not reveal a significant association. This discrepancy could be attributed to the relative homogeneity of our sample, predominantly comprising students aged 20–21. Within this specific age range, differences in life experiences and individual traits overshadow the potential influence of age on their resilience. Similarly, the role of gender in shaping resilience presents a multifaceted picture. A recent study reports higher resilience levels in male university students than their female counterparts [84]. However, contrasting findings within the nursing context reveal lower resilience among male nursing students during clinical practice [85]. Our study's limited number of male participants could have helped our ability to explore this relationship thoroughly. The contradictory findings address the need for further research with a more significant number of participants and more diverse samples to disentangle the intricate interplay between demographics and nursing students' resilience in the context of clinical education.

#### *4.2. Limitations and Recommendations*

This study acknowledges several limitations that warrant further consideration. Firstly, reliance on self-reported data through a digital survey introduces the potential for social desirability bias and unintentional response errors influencing the results. Secondly, the convenience sampling of nursing students due to the COVID-19 pandemic, despite enrolling participants across multiple colleges, limits the generalizability of findings. Recruiting students from other regions of Thailand using a more robust sampling method, such as cluster sampling, would have yielded a more representative sample. Therefore, the current findings may only reflect a specific segment of the northeastern nursing student population and require cautious interpretation when drawing broader conclusions. Furthermore, the cross-sectional design only establishes statistical associations between independent variables and resilience. Longitudinal studies are necessary to confirm these associations and examine the dynamics of influencing factors over time. In light of these limitations, future research on nursing student resilience should be considered. For instance, potential future research includes expanding the participant pool, including nursing colleges from other regions of Thailand to enhance generalizability, integrating qualitative methods to explore lived experiences to understand how nursing students perceive and build resilience within clinical education contexts, and examining policy and stakeholder perspectives focusing on investigating the integration of resilience concepts into nursing education policy and stakeholder engagement strategies.

#### *4.3. Implications for Nursing Education*

This study emphasizes the crucial influence of social support, self-directed learning, and perceived stress in shaping resilience among nursing students within the context of clinical education. These insights pave the way for a paradigm shift in nursing education, urging policymakers to prioritize resilience-enhancing initiatives. Integrating the topic of resilience into the curriculum is vital, equipping students with the tools to navigate adversities inherent during clinical practice. Nursing educators and preceptors can extend



their role beyond traditional instruction by encompassing robust social support systems and providing individual counseling sessions for nursing students to process challenges while fostering a caring, collaborative environment in both classrooms and clinical placements. This supportive tenet can be nurtured by promoting self-directed learning through innovative models like flipped classrooms. By inspiring students to take ownership of their learning and equipping them with the confidence to tackle obstacles, educators empower them to become resilient practitioners not just in textbooks but in the face of real-world complexities. Ultimately, cultivating resilience in future nurses demands a collaborative effort. Nursing schools, educators, and students must collectively embrace a proactive approach, ensuring that the journey to becoming a nurse is paved with knowledge and the unwavering strength to face any challenge with unwavering resolve.

## 5. Conclusions

This study has contributed significantly to our understanding of the multifaceted aspects that influence nursing students' resilience during clinical education. The results provided a model explaining the relationship between social support, self-directed learning, perceived stress, and resilience in nursing students. Social support and self-directed learning strongly influence resilience, whereas perceived stress negatively affects resilience. Notably, encouraging self-directed learning, providing social support, and reducing stress during clinical practice could strengthen resilience among nursing students. Nursing administrators and instructors should develop activities or programs that stimulate self-directed learning, enhance social support, and improve perceived stress within clinical education. The findings emphasize the pivotal roles of social support and self-directed learning as positive influencers on resilience, highlighting some critical information that can be beneficial for providing resilience enhancement programs or interventions, such as Clinical Scenario Resilience Simulations, in which nursing instructors can provide simulations, mimic high-stress clinical scenarios where nursing students have to identify challenges, make decisions, and apply self-directed learning techniques to promote their resilience during clinical practice. Future research on the factors influencing resilience among nursing students may contribute to nursing education and the caring sciences.

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**Informed Consent Statement:** Informed consent was obtained from all participants involved in the study.

**Data Availability Statement:** The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

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