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Clinical stressors as perceived by first-year nursing students of their experience at Alexandria main university hospital during the COVID-19 pandemic

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ABSTRACT

Background: Clinical hospital stressors during the COVID-19 pandemic are one of the problems that affect the quality of education among first-year nursing students, particularly in the first 6 months of their practice.
Objective: Assess the types and severity of clinical hospital stressors among first-year nursing students and investigate the relationship between students' clinical stressors and their level of worry from COVID-19.
Design: A descriptive correlational research design. The study was conducted at the Faculty of Nursing, Alexandria's main university hospital. The study included a convenience sample of 200 first-year nursing students.
Tools: Socio-demographic and academic data of nursing students. The Perceived Stress Scale (PSS) is used to assess the degree and type of stressors.
Results: The highest reported types of stressors were stress from the clinical hospital (M = 13.54) and stress from a lack of professional knowledge and skills (M = 13). Concerning the overall stressors, all students experienced a severe degree of stress (M = 116.87). Furthermore, students' age, sex, number of study hours/week, number of assignments/week, and worry from COVID 19 were highly statistically significant with degrees of perceived stress as (p = 0.000, 0.030).
Conclusion: Clinical hospital stressors had a significant negative impact on the majority of students' education in the hospital. As well as worrying about COVID 19, positively increased the perceived stressors of nursing students.
Recommendations: Implement an educational program for the first-year nursing students about clinical hospital stressors during COVID-19 and trained them how they can cope with these stressors by using stress management.

Introduction

A viral epidemic known as Coronavirus (COVID-19) was discovered in Wuhan, Hubei Province, China, in December 2019 (Holshue et al., 2020) and it began to spread quickly throughout China (Wang et al., 2020). Consequently, it became a worldwide pandemic as declared by the World Health Organization (Roy et al., 2020). COVID-19 started in Egypt at the beginning of April 2020, and on the 3rd of May 2020, the number of announced cases climbed substantially in a month, reaching 6465 infected patients and around 430 fatalities. The tremendous increase in the infected population in this short period provoked concerns, panic, and distress among the public generally and medical staff specifically (Abdelhafiz et al., 2020; Egyptian statistics on COVID-19, 2020). Because of the COVID-19 restrictions, university students have new challenges they must adapt to and cope with, like new teaching strategies that are untraditional and unfamiliar for students in developing countries like Egypt. For medical staff like nursing students, worry and stress from getting infected by patients in their clinical settings or crossing infection to one of their families are other major stressors in the clinical hospital of medical staff.

University students frequently report high levels of perceived stress, particularly during stressful periods such as the transition from high school to university, when they must adapt to new learning methods or create a good identity as a university student (Denovan & Macaskill, 2017). Recently, another issue for university professors and students was the COVID-19 epidemic, which necessitated the establishment of new types of e-learning in a short period. Students' perceptions of stress are likely to have changed because of the requirement to adjust to these

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new modes of learning (Goppert & Pfost, 2021).

The present study focused on first-year nursing students who graduated from high school and chose to continue studying the nursing profession. Nursing students' competency is determined by the information and skills they have been taught (den Hertog & Boshuizen, 2022). Theoretical and practical training are considered the cornerstone components of nursing education that enables nursing students to gain the information, skills, and attitudes necessary to provide nursing care (Chaghari et al., 2017).

The process of nursing education is a multifaceted and includes both didactic and practical training. The clinical component of nursing education prepares students in real nursing practice by providing them with experience learning opportunities, while the didactic aspect provides facts, theory, and research. Clinical nursing education, unlike classroom education, takes place in a complicated clinical learning environment that is impacted by a variety of variables (Collier, 2018). The clinical nursing education atmosphere allows nursing students to learn by experimentation and to integrate theoretical concepts into a variety of mental, psychological, and psychomotor competencies that are important for patient care (Van Rooyen et al., 2018). So, one of the most critical elements determining the quality of clinical education is to prepare and expose nursing students to integration into the clinical setting.

The mental and physical strain created by our reaction to pressure from the outside environment is known as stress. It is the body's specific reaction to a stimulus that leads to malfunction. Stress is not synonymous with nervousness or worry; it also allows people to express their creativity, skills, and energy, yet it may also lead to tiredness and sickness, either physically or psychologically. Fear of failure, uncertainty about the future, loss of confidence, discomfort, uneasiness, unhappiness, despair, lethargy, lack of confidence, bad attitudes, low temper, exhaustion decreased sleep, and poor performance satisfaction was the most commonly identified factors of stress (Parveen & Inayat, 2017).

Nursing students are stressed in their clinical setting, and that leads to burnout, depression, and sleeping difficulties (Ma et al., 2022). Clinical settings expose students to several different degrees of stress, which are called “clinical stressors” (Al-Gamal et al., 2018; Al-Zayyat & Al-Gamal, 2014). Clinical stressors among nursing students can be caused by a variety of factors, including first-hand hospital experience, clinical assignments and coursework, nursing skills practices, evaluation and clinical tests, and relationships with patients, families, and other health professionals. In addition, fear of unknown events, working with equipment, staff and faculty incivility (Sun et al., 2016), as well as theory and practice gaps, fear of making a mistake, and communication with staff, peers, and patients (Delaney et al., 2016; Rezaei et al., 2018). Stress can lead to disease, changes in health, poor academic performance, and nursing students' withdrawal from the program and, subsequently, can ultimately affect the quality of patient care (Mousavi & Kamali, 2021; Zhao et al., 2015). In addition, when compared to students from other health-related disciplines, nursing students have been reported to experience higher levels of stress and more related physical and psychological symptoms (Kumar, 2018).

Because nursing students are not able to avoid these stressors and the presence of those stressors is obligatory, they must learn to cope with them. As a result, nursing students must be prepared to undertake such a difficult task as well as deal with the stress associated with training experience during clinical settings, which is a major problem for nursing students (Al-Gamal et al., 2018). Recently, in Egypt, the ministry of health and population declared increasing numbers of infected patients with the third wave of the COVID-19 pandemic during the data collection for this study. So, it was expected to find a high level of stressors among first-year nursing students who were trained in the hospital during this period, as well as fear, anxiety, and psychological distress from getting infected by COVID-19.

Nursing students' behaviors and performances change in the clinical context, according to the academics' experience in clinical nursing education. This adjustment may have a detrimental impact on their learning, patient care advancement, and professional performance (Joolaee et al., 2015). Therefore, identifying the problems and obstacles that these students have in the clinical learning setting can help stakeholders resolve these issues and contribute to their professional development and survival. Moreover, imagine the clinical hospital stressors of nursing students during the era of the COVID-19 pandemic.

Therefore, the aim of this study is to assess the clinical hospital stressors for the first year nursing students, assess the severity of clinical hospital stressors for first year nursing students, and investigate the relationship between students' clinical hospital stressors and their level of worry from COVID-19.

Research questions

What are the clinical hospital stressors for the first year nursing students?

What is the severity of clinical hospital stressors for the first year nursing students?

Is there a relationship between students' clinical hospital stressors and their level of worry from COVID-19?

Methodology

Research design

A descriptive correlational research design was used to accomplish the research's goal.

Settings.

This study was conducted at the medical department of Alexandria Main University Hospital. The hospital is affiliated to Alexandria University, Egypt.

Subjects

A convenience sample of 200 adult's students was included in the study.The Epi info 7 program was used to estimate sample size according to the following parameters:

- Population size = 400 students in 2019–2020
- Expected frequency = 50 %.
- Maximum margin of error = 10 %.
- Confidence coefficient = 95 %.
- Estimated sample size = 200 students.

Tools

Two tools were used to collect the necessary data in the current study:

1. Tool I: Socio-demographic and academic data of undergraduate student

It was developed by the researcher and includes students' age, sex, marital status, and study hours per week. As well as questions about the number of educational assignments per week, work preference, economic independence, and getting a workshop in a stress management-training program, an additional question was added to ask about the level of worry from COVID-19.

2. Tool II: The Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) was originally developed by Sheu et al. (1997) to assess the degree and type of stress perceived by nursing students at Taiwanese universities. The PSS consists of 29 items rated on a 5-point Likert scale, where (0 = never, 1 = rarely, 2 = sometimes, 3 =

fairly often, and 4 = very often). The total score ranges from 0 to 116. A higher score indicates a higher degree of stress. The items were clustered into six subscales that related to the source of stress as follows. The first subscale measures "stress from lack of professional knowledge and skills" and consists of 3 items. The second subscale measures "stress from taking care of patients" and consists of 8 items. The third subscale comprises measures "stress from assignments and workload" and consists of 5 items. As the fourth subscale consists of 6 items that measure "stress from teachers and nursing staff", the fifth subscale comprises 3 items that measure "stress from the clinical environment", and finally, the sixth subscale, which consists of 4 items, measures "stress from peers and daily life". Engelbrecht (2022) reported good internal consistency reliability of 0.93, and all subscales had a Cronbach's alpha of at least 0.7, whereas the one-week test-retest stability reliability coefficient was $r = 0.60$.

Method

Administrative steps

The approval of the Research Ethics Committee (REC), Faculty of Nursing, Alexandria University, was obtained for the study settings to gather the necessary data. As well, an official letter was issued from the Faculty of Nursing, Alexandria University, to Alexandria's main university hospital to obtain their permission to collect necessary data.

Preparation and planning phase

The researchers developed the socio-demographic structured interview schedule and the academic data. The perceived stress scale tool was tested for its content validity by five experts in the field of Medical-Surgical nursing at Alexandria University to assess the face and content validity, including comprehensiveness, clarity, relevance, and application. All the comments and suggestions were considered, and the tools were modified accordingly. A pilot study was carried out on 10 % of students ($N = 15$) before implementing the actual study to ascertain the clarity and applicability of the study tool and to estimate the time required to complete the study scale. Then, based on the findings of the pilot study, modifications were done accordingly. The reliability of the perceived stress scale (PSS) will be ascertained by measuring the internal consistency of its items using the Cronbach's alpha coefficient*t*-test, which found good internal consistency reliability of 0.83.

Implementation phase

During the data collection period, the researchers used general precautionary measures. Every student was interviewed individually once for 10–20 min, using the two tools to collect data related to socio-demographic and academic data as well as clinical environmental stress. After securing administrative approval, the data was collected over 4 months, from March 2021 to July.

Statistical analysis

After data was collected, it was revised, coded, and fed to the statistical software IBM SPSS version 25. The reliability of the tools was determined by Cronbach's alpha. Frequency tables and cross tabulation were used to illustrate the results. Quantitative data were summarized by the arithmetic mean, standard deviation, and mean score percent. All statistical analysis was done using two-tailed tests with an alpha error of 0.05. *P* value less than or equal to 0.05 was considered to be statistically significant.

A. Descriptive statistical analysis: included the mean with standard deviation, median, minimum, and maximum for the numeric data, while percent to describe the frequency of each category for categorical data.
B. Inferential statistical analysis

a) Independent sample *t*-test is a parametric statistical test that is used to compare the mean scores for numeric variables between two independent groups (male or female) if the variable follows the normal distribution.
b) The One-way ANOVA test is a parametric statistical test that is used to compare the mean scores for numeric variables between more than two independent groups if the variable follows the normal distribution.

Results

Table 1 illustrated that the highest percentage of studied students (71 %) were in the age group of 17–18 years. Concerning the student gender, the highest percentage of studied students (77 %) was female. As regards the number of educational assignments per week, more than half of the studied students (57 %) were assigned >3 assignments. The table showed that the majority of the studied students prefer to work in groups (95 %) while only 5 % prefer to work on an individual basis. Regarding economic independence, the table showed that the majority of the studied students were financially dependent on their families (73.5 %). According to getting any training about stress management, the majority of the studied students did not get any training or workshops about

Table 1
Distribution of socio demographic characteristics of the studied students and academic data of undergraduate student ($n = 200$).

Socio–demographic data	Total ($N = 200$)	
	Frequency	%
Age (years)		
▪ 17–18	142	71
▪ 19–20	58	29
Sex		
▪ Female	154	77
▪ Male	46	23
Number of study hours per week		
▪ Theoretical and practical study: 15 h/week	43	21.5
▪ Theoretical and practical study: 20 h/week	104	52
▪ Theoretical and practical study: 25 h/week	53	26.5
Number of educational assignments per week		
▪ 1–2 assignments	28	14
▪ 3 assignments	58	29
▪ >3 assignments	114	57
Work preference		
▪ Working in group	190	95
▪ Working in individual base	10	5
Economic independence		
▪ No	147	73.5
▪ Yes	53	26.5
Stress management previous training program		
▪ No	186	93
▪ Yes	14	7
Worry from COVID-19		
▪ Not at all worried	10	5
▪ Mild worried	13	6.5
▪ Moderate worried	64	32
▪ Severe worried	113	56.5

stress management (93 %). Regarding the worrying from COVID 19 infection, more than half of the studied students experienced a severe degree of worrying from infected coronavirus (56.5 %) and about 32 % experienced a moderate degree of worrying from COVID 19.

Table 2 showed that more than a third quarter of the studied students experienced a severe degree of stress related to clinical assignments and workload (77 %), with a mean score of 19.34. Regarding stress from clinical educators/instructors and ward staff, the table showed an equal percentage between moderate to severe degrees of stress with 49.5 and 50.5 %, respectively, with a mean score of 23.30. All students suffer from a severe degree of stress related to the clinical environment (100 %), with a mean score of 13.54. In addition, the table showed that around an equal percentage of moderate (48.5 %) to severe (51.5 %) degrees of stress related to peers and nursing students from other colleges, with a mean score of 16.43. Regarding stress from taking care of the patients, most of the studied students reported a severe degree of stress (74.5 %) with a mean score of 31.26. In addition, all the studied students reported a severe degree of stress related to a lack of professional knowledge and skills (100 %) with a mean score of 13. Concerning the overall stressors, all the studied students experienced a severe degree of stress with 100 % and a mean score of 116.87.

Table 3 showed that age and sex were almost highly statistically significant by using an independent sample *t*-test with all subtypes of environmental clinical stressors as $p = 0.000$. The table showed that there is a highly statistically significant relationship between the number of study hours per week and stress from clinical educators/instructors and ward staff (F = 13.99, $p = 0.000$), stress from the clinical environment (F = 30.57, p = 0.000), and stress from taking care of patients (F = 3.36, $p = 0.037$). In addition, there is a highly statistically significant relationship between the number of educational assignments per week and all subtypes of clinical environment stress at $p = 0.000$. The table showed that there is a high statistical significance found between work preference and stress from clinical assignments and workload ($t = -3.847$, p = 0.000) and stress from taking care of patients ($t = -3.269$, $p = 0.001$). Concerning economic dependence, there was a highly statistical significance found between economic dependence and stress from clinical assignments and workload ($t = -3.29$, $p = 0.001$) and stress from taking care of patients ($t = -5.46$, $p = 0.000$). The table showed that worrying about COVID 19 was found highly statistically significant with all subtypes of environmental clinical stressors by using a one-way ANOVA test ($p = 023$, $p = 0.000$).

Table 2
Description of the mean scores of clinical hospital stressors and its subtypes.

Clinical hospital stressors	Total ($N = 200$)				
	Frequency	%	M ± SD	Min.–Max.	Median
Stress from clinical assignments and workload					
■ Moderate stress	46	23	19.34 ± 1.34	16–21	19
■ Severe stress	154	77			
Stress from clinical educators/instructors and ward staff					
■ Moderate stress	99	49.5	23.31 ± 2.05	21–28	23
■ Severe stress	101	50.5			
Stress from the clinical environment					
■ Severe stress	200	100	13.54 ± 1.04	12–15	14
Stress from peers and nursing students from other colleges					
■ Moderate stress	97	48.5	16.43 ± 1.46	15–18	16
■ Severe stress	103	51.5			
Stress from taking care of patients					
■ Moderate stress	51	25.5	31.26 ± 2.10	28–37	31
■ Severe stress	149	74.5			
Stress from lack of professional knowledge and skills					
■ Severe stress	200	100	13.0 ± 0.00	13–13	13
Overall stressors					
■ Severe stress	200	100	116.87 ± 5.19	109–128	115

Table 4 shows the relationship between the studied students' total mean score of clinical hospital environmental stressors and their socio-demographic characteristics. It can be seen from the table that there is a highly significant relationship between the age of students and their overall clinical stressors, as the overall stressors mean score increased with age group ($t = -15.382$, $p = 0.000$). Also, there is a high statistical significance found between the sex of the studied students and overall clinical stressors as the mean score is higher in males than in females ($t = 2.190$, $p = 0.030$). Regarding the place of residence, low statistical significance was found with overall stressors of the clinical environment ($t = -1.94$, $p = 0.053$). Concerning the relation between time spent on transportation to the clinical area and overall stressors of the clinical environment, there is a statistical significance present as the overall stressors were increased with the number of hours taken in transportation (F = 3.063, $p = 0.049$).

The table also showed that there is a high statistical significance between the number of study hours per week and the overall stressors of the clinical environment, as the more hours students studied, the more stressors they reported (F = 10.280, $p = 0.000$). Also between the number of educational assignments per week and the overall stressors of the clinical environment (F = 11.330, p = 0.000). In addition, the relationship between the work preference of the studied students and overall stressors was highly statistically significant ($t = -2.713$, $p = 0.007$).

Finally, the relationship between the worry of the nursing students about COVID-19 and overall clinical stressors showed highly statistical significance (F = 18.077, $p = 0.000$). As more students got worried about COVID-19, the more they perceived clinical stressors. The mean scores started by 115.06, then it begin to increase to 122.80 when the worry from COVID-19 level becomes moderate and to 123.615 when it becomes severe.

Discussion

First-year nursing students usually experience unnecessary stress that can influence their academic, emotional, and health outcomes negatively. There are many sources of stress among nursing students, including academic personnel situations, financial and environmental. Nursing is the cornerstone of caring services in the health care system. Student nurses were prepared to give this care without perceiving any sources of stress that hindered the process of caring. To the researchers' knowledge, many studies assess clinical environmental stressors for graduates or internship students but not for first-year nursing students, especially in Arab culture during the era of COVID 19. Therefore, the present study aims to assess the clinical hospital stressors among first-year nursing students in the Egyptian clinical areas during the COVID-19 pandemic.

The present study showed that most of the studied students were females. That was consistent with a study done by Tantalanukul and Wongsawat (2022) who reported that more than three-quarters of the studied students were females. That can be justified as in Egypt, most of the students who preferred to join the nursing profession were females, and the nursing profession was mainly dependent on a caring attitude, which was biologically related to feminism.

The present study showed that >90 % of the studied students never

Table 3
The relationship between the studied students' mean score of clinical hospital stressors subtypes and their socio-demographic characteristics.

Socio-demographic data	Clinical assignments & workload		Clinical educators/ instructors and ward staff		Clinical environment		Peers and nursing students from other colleges		Taking care of patients		Lack of knowledge and skills	
	Test	P value	Test	P value	Test	P value	Test	P value	Test	P value	Test	P value
Age (years)	$t = 6.24$	0.000*	$t = 12.66$	0.000*	$t = -4.175$	0.000*	$t = 8.49$	0.000*	$t = 6.34$	0.000*	–	–
Sex	$t = 3.79$	0.000*	$t = 0.16$	0.872	$t = 3.528$	0.001*	t = 6.34	0.000*	$t = 2.94$	0.004*	–	–
Number of study hours per week	F = 1.35	0.261	F = 13.99	0.000*	F = 30.57	0.000*	F = 0.89	0.412	F = 3.36	0.037*	–	–
Number of educational assignments per week	F = 49.00	0.000*	F = 7.77	0.001*	F = 74.50	0.0.000*	F = 6.41	0.002*	F = 12.40	0.0.000*	–	–
Work preference	t = −3.847	0.000*	$t = -1.434$	0.153	$t = 1.444$	0.150	$t = -0.499$	0.619	t = −3.269	0.001*	–	–
Economic independence	t = −3.29	0.001*	$t = 1.26$	0.208	$t = 1.179$	0.240	$t = -2.26$	0.024*	$t = 5.46$	0.000*	–	–
Stress management previous training program	$t = 0.15$	0.876	$t = -0.77$	0.441	$t = -0.38$	0.701	$t = -1.34$	0.182	$t = 0.61$	0.540	–	–
Worry from COVID-19	F = 3.24	0.023*	F = 15.21	0.000*	F = 9.23	0.000*	F = 7.21	0.000*	F = 14.55	0.000*	–	–

F: One-Way ANOVA t: independent sample *t*-test.
– No variance within groups as the standard deviations of both groups is zero.
* P value of $p \leq 0.05$ (significant).

Table 4
The relationship between the studied students' total mean score of clinical hospital environment stressors and their socio-demographic characteristics.

Socio–demographic data	Clinical hospital stressors	Test of significance	P
	Mean ± S.D.		
Age (years)			
▪ 17–18	114.429 ± 3.9038	t = −15.382	0.000*
▪ 19–20	122.844 ± 2.2618		
Sex			
▪ Female	116.435 ± 5.6126	t = 2.190	0.030*
▪ Male	118.326 ± 3.0188		
Number of study hours per week			
▪ 15 h/week	114.325 ± 4.357	F = 10.280	0.000*
▪ 20 h/week	116.865 ± 4.513		
▪ 25 h/week	118.943 ± 6.131		
Number of educational assignments per week			
▪ 1–2 assignments	112.893 ± 1.749	F = 11.330	0.000*
▪ 3 assignments	116.862 ± 5.960		
▪ >3 assignments	117.851 ± 4.885		
Work preference			
▪ Working in group	117.095 ± 5.203	t = −2.713	0.007*
▪ Working in individual base	112.600 ± 2.319		
Economic independence			
▪ No	117.163 ± 5.285	t = 1.334	0.184
▪ Yes	116.056 ± 4.865		
Stress management previous training program			
▪ No	116.823 ± 5.246	$t = -0.470$	0.639
▪ Yes	117.500 ± 4.468		
Worry from COVID-19			
▪ Not at all worried	115.062 ± 4.485		
▪ Mild worried	116.593 ± 5.021	F = 18.077	0.000*
▪ Moderate worried	122.800 ± 1.874		
▪ Severe worried	123.615 ± 2.467		

F: One way ANOVA t: independent sample *t*-test.
* P value of p ≤ 0.05 (significant).

got training in stress management skills and they just used self-learning skills like praying, reading Quran, sleeping, and diverting attention activities (video games, watching TV). That was consistent with a study done by Elsaid et al. (2019) in Egypt with internship students; she reported that most of the students had not attended any previous training programs in stress management. Another study by Kumar et al. (2020) pointed out that most nursing students in India use stress-relieving techniques like yoga, meditation, and music therapy. However, these reliving stress techniques were found insignificant to their academic stress.

Concerning the worry from COVID 19, most of the students in the present study experienced moderate to severe levels of worry from COVID 19. Qualitative responses were documented as what they were worried about related to COVID 19. The most-reported worrying ideas were fear of getting infected by patients in the clinical setting; worry about their families' crossing infection to them; and worry about a lack of knowledge and experience in dealing with this contagious disease.

The present study results revealed that all of the first-year nursing students had perceived moderate and high levels of academic stress. As shown, there are two types of academic stress perceived as severe stress, which is stress from the clinical environment and stress from a lack of professional knowledge and skills. This can be justified, as clinical-nursing practices are a crucial part of patient care and necessitates that nursing students have both theoretical knowledge and practical abilities. However, nursing students did not have any clinical practice experience before, only brief simulation exercises in the lab. These findings and justifications uncovered how nurse educators need to make plans and strategies to decrease academic stress among nursing students and improve the process of learning. This finding is consistent with the results by Liu et al. (2022) nursing students experience moderate levels of stress during the initial period of the clinical practicum; the need for knowledge and skills is the most common stressor.

The present study showed that the most commonly reported clinical stressors were stress from the clinical environment and stress from a lack of professional knowledge and skills, as all of the studied students reported high stress in this category. Clinical experience is one of the most important aspects of nursing education. It was a dynamic and complex experience. Because of that, students are challenged by numerous threats, such as learning to use high-tech medical equipment; maintaining positive relationships with clinical staff and instructors; managing changes in a patient's condition; and dealing with the demands of patients' relatives. As well as, the perceived stress of the experience of the clinical environment in the presence of COVID-19 restrictions and lack of knowledge. That was inconsistent with a study done by Aedh

et al. (2015) in Saudi Arabia, which reported that the stress of the clinical environment took the fourth place among nursing students.

A study done in Egypt before the pandemic of coronavirus by Amina and Hanan (2019) revealed that around half of the nursing students' perceived high academic stress related to the clinical environment. They justified their results as the importance of students' clinical orientation and the use of nursing laboratories in creating a simulated picture of the real situation in the clinical areas and settings. In addition, it was obvious to the first-year nursing students, experienced the clinical environment as unfamiliar to them, which made them feel self-doubt and insecurity.

The present study reported that more than three-quarters of first-year nursing students suffered from a severe degree of academic stress related to clinical assignments and workload. The well-severe degree of academic stress is related to a lack of professional knowledge and skills. That was consistent with a study done by Labrague (2013), who found that nursing students reported high academic stress related to clinical assignments and workload. Other findings reported by Jimenez et al. (2010) and Khater et al. (2014) reported other findings; they found that lack of professional knowledge and skills was the second perceived academic stress among nursing students. These results can be justified by the fact that, despite the rigorous training provided in both the classroom and the clinical setting, students felt that there was still much more to learn, and they were afraid of making mistakes when practicing nursing skills in the clinical area or receiving poor results on exams. They were concerned about a lack of experience, technical skills implementation, and the need for additional time in the ward.

The present study revealed that all first-year nursing students perceived a severe degree of academic stress with a mean score of 116.87. One year before the pandemic a study done at Alexandria University by Amina and Hanan (2019) revealed that all nursing students had moderate to high levels of academic stress, with more than three quarters experiencing high levels of academic stress. According to the findings of this study, nurse educators would face greater difficulty in devising techniques to avoid academic stress among students while still keeping them motivated to accomplish more learning. A consistent finding was found in a study done by Tamang et al. (2020) among undergraduate health professional students during their clinical education. They revealed that nursing students showed mild to moderate stress and students were highly stressed from patients' care, assignments and workload, lack of knowledge and professional skills, and environment, but were minimally stressed by peers and daily life, teachers and other staff.

Academic stress is a widespread issue with several causes or risk factors. In terms of student risk factors, it was discovered that the age and gender of the students have a significant impact on the experience of academic stress, as the older the students, the more they perceived academic stress, and male students were more exposed to academic stress than female nursing students in the current study, which was similar to Chen et al. (2013) findings. This conclusion might be explained by the fact that, as compared to male students, female students are more truthful, timely, responsible, and “serious” about their academic pursuits. In addition, the results showed that age and gender were significant not only for all academic stress but in all categories of academic stress.

Concerning the number of study hours per week and overall academic stress, the present study found that the more hours studied by nursing students, the more they perceived stress, and that was found to be highly statistically significant. The results can be attributed to the Egyptian nursing curriculum, which determines professional standards of performance in didactic and practical courses. Nursing students face particular stress. The nursing curriculum contains the most needed clinical training hours before the end of the program. In addition to assignment submission, heavy homework, assessment deadlines, projects, reports, term papers, quizzes, and tests, these also entail clinical competence, making the curriculum tighter and heavier than other programs. These results were supported by another study (Abasmi et al., 2015).

The present study showed that the students who preferred to work in groups perceived more academic stress than those who worked individually, and that relation was found to be highly statistically significant. This can be attributed to nursing students' being afraid of getting embarrassed or humiliated by their colleagues because of making mistakes or malpractice in nursing procedures, especially first-year nursing students who feel alienated from the curriculum contents before they become familiar with them.

Finally, according to students worried about the COVID-19 pandemic, the present study revealed that the more students worried about COVID-19, the more they perceived academic stress. Moreover, that relationship was found to be highly statistically significant. This can be justified as the COVID-19 pandemic is a crisis that threatens students' lives and has an emotional impact on everyone. Each person, community, and socioeconomic class will be affected differently by this life event. The concern of being ill, uncertainty, the fear that the sickness may touch one's family, a lack of safety in one's zone, and other similar issues are all sources of high anxiety (Kaya, 2020). These results were supported by a study done by Aslan and Pekince (2021), who found that age, sex, and some variables related to the pandemic process affect the perceived stress levels of nursing students.

Conclusion

Based on the findings of the present study, it can be concluded that clinical hospital stressors are a prevalent problem among first-year nursing students as all nursing students experienced moderate to severe stress levels. Stress from professional knowledge and skills and stress from the clinical environment were the most ranked types of hospital stressors nursing students experienced. As well as students' age, sex, number of study hours per week, number of educational assignments per week, work preference, and worry from COVID-19 were found statistically significant with the perceived hospital stressors by nursing students.

Recommendation

Based on the findings of the present study, it can be recommended that nurse educators and stakeholders play an important role in reducing stress among student nurses. In addition, nurse educators and curriculum planners should focus on the COVID-19 pandemic and involve it in the nursing curriculum as nursing content for first-year nursing students. Finally, stress management and coping skills workshops should be provided to first-year nursing students to make sure that they can adapt effectively to their perceived stressors.

Ethics approval and consent to participate

The necessary formal approval, permission to conduct the study was taken by the Research Ethics Committee (Institutional Review Board) of the Faculty of Nursing, Alexandria University, Egypt. Informed written consent was obtained from each study subject in this study after an explanation of the purpose of the study and participants' anonymity and confidentiality were guaranteed. The right to withdrawal from the study at any time was emphasized to students.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Declaration of competing interest

The authors declare that there are no conflicts of interest.

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