ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

DOI: 10.5336/nurses.2023-100407

Determination of Nursing Students' Perceived Stress Levels and Competency: A Cross-Sectional Study

Hemşirelik Öğrencilerinin Algıladıkları Stres Düzeyleri ve Yetkinliklerinin Belirlenmesi: Kesitsel Bir Çalışma

Gamze TUNÇER ÜNVER[a], Nihal ÜNALDI BAYDIN[a]

[a]Ondokuz Mayıs University Faculty of Health Sciences, Department of Nursing Administration, Samsun, Türkiye

ABSTRACT Objective: This study was conducted to determine the factors affecting nursing students' perceived stress levels and their competency. **Material and Methods:** This study was a descriptive, cross-sectional study with 198 nursing students in Türkiye. A Student Identification Form completed by students, the Competency Inventory of Nursing Students and the Student Nurse Stress Index were used to collect data. The data were evaluated in the IBM SPSS 21 statistical program using mean, standard deviation, range, number and percentage, and the Mann-Whitney U and Kruskal-Wallis tests. **Results:** The results showed that stress experienced by nursing students was moderate and that they evaluated their competence as good. While there was a significant difference between the students' Competency Inventory of Nursing Students mean scores and the variables of class, family income, and general weighted grade point average, there was a significant difference between Student Nurse Stress Index mean scores and the gender and class variables. **Conclusion:** The nursing students experienced moderate stress while maintaining high levels of competency, ethics, and responsibility. It was concluded that the female students had higher stress levels than male students, and that the stress levels of students whose income was lower than their expenses were higher than those of students whose income and expenses were equal. It was determined that fourth-year students, third-year students, and students whose income was higher than their expenses and whose grade point average was higher felt more competent.

Keywords: Clinical competence; education; nursing students; psychological stress

ÖZET Amaç: Bu araştırma, hemşirelik öğrencilerinin algıladıkları stres düzeylerini ve yetkinliklerini etkileyen faktörlerin belirlenmesi amacıyla yapılmıştır. **Gereç ve Yöntemler:** Bu araştırma, Türkiye'de 198 hemşirelik öğrencisi ile tanımlayıcı, kesitsel bir çalışma olarak yapılmıştır. Verilerin toplanmasında Öğrenci Tanılama Formu, Hemşirelik Öğrencileri Yetkinlik Ölçeği ve Öğrenci Hemşire Stres İndeksi kullanıldı. Verilerin değerlendirilmesi IBM SPSS 21 istatistik programında ortalama, standart sapma, aralık, sayı ve yüzdelik, Mann-Whitney U ve Kruskal-Wallis testi ile gerçekleştirildi. **Bulgular:** Hemşirelik öğrencilerinin yaşadıkları stresin orta düzeyde olduğu ve mesleki yeterliliklerini iyi olarak değerlendirdikleri görülmüştür. Öğrencilerin Yetkinlik Ölçeği puan ortalamaları ile sınıf, aile gelir durumu, genel ağırlıklı not ortalaması değişkenleri arasında anlamlı fark bulunurken, Öğrenci Hemşire Stres İndeksi puan ortalamaları ile cinsiyet, sınıf değişkeni arasında anlamlı fark olduğu saptandı. **Sonuç:** Hemşirelik öğrencilerinin yüksek mesleki yeterlilik, etik ve sorumluluk düzeyleri göz önüne alındığında orta düzeyde stres yaşadıkları belirlenmiştir. Kız öğrencilerin stres düzeylerinin erkeklere göre daha yüksek olduğu, geliri giderinden düşük olanların stres düzeylerinin ise; geliri gideri eşit olan öğrencilerden daha yüksek olduğu sonucuna ulaşılmıştır. Dördüncü sınıf öğrencilerinin, üçüncü sınıf öğrencilerinin ve geliri giderinden yüksek olan ve genel not ortalaması yüksek olan öğrencilerin kendilerini daha yetkin hissettikleri belirlenmiştir.

Anahtar Kelimeler: Klinik yetkinlik; eğitim; hemşirelik öğrencileri; psikolojik stres

Students in professions such as medicine, dentistry, and nursing are exposed to high levels of physical, mental, and emotional stress. This stress is particularly pronounced in the final years of their education, leading to emotional fatigue.[1] Students experience stress due to academic factors, high performance expectations in clinical practice, academic evaluations, and future expectations. Stress can impede learning skills, academic performance, and professional competency. To reduce stress, it is im-

TO CITE THIS ARTICLE:
Tunçer Ünver G, Ünaldı Baydın N. Determination of nursing students' perceived stress levels and competency: A cross-sectional study. Turkiye Klinikleri J Nurs Sci. 2024;16(1):197-206.

Correspondence: Nihal ÜNALDI BAYDIN
Ondokuz Mayıs University Faculty of Health Sciences, Department of Nursing Administration, Samsun, Türkiye
E-mail: nihal.unaldibaydin@omu.edu.tr

Peer review under responsibility of Turkiye Klinikleri Journal of Nursing Sciences.

Received: 20 Nov 2023 ***Received in revised form:*** 11 Jan 2024 ***Accepted:*** 17 Jan 2024 ***Available online:*** 29 Jan 2024

portant to address these factors.[2] This situation can have negative effects on nursing students' relationships with patients and healthy individuals in the clinical field.[3]

During the process of education, student nurses may experience intense stress while trying to apply their professional competencies, which include the knowledge, skills and attitudes required in their future profession, during their clinical practice.[4] Understanding the stress experienced is crucial in terms of enabling nurses to develop effective coping behaviors, so that they can learn effectively during their education and construct a positive professional identity.[5]

The rapid changes and developments in the field of health care, its complex structure, the use of advanced technology, decreased funding, and the need for accountability require health professionals to be professionally competent.[6,7] In the "From novice to expert" model defined by Benner in 1984, which consists of five stages, the "novice stage" is the first stage. In this stage, individuals are inexperienced, are not ready to take on responsibilities and can only fulfil tasks and instructions given to them; nursing students are considered as being at this level.[8] However, nursing students require professional competency to determine the conditions of patients accurately, to predict the problems that may arise during nursing care and to deal with these problems.[6] Students who have such competency before graduation will have sufficient knowledge and skills, the required attitudes, and the ability to communicate and make decisions in order to perform their job safely and effectively after becoming nurses. If nursing students graduate with professional competencies, this will help maintain professional standards, ensure patient safety and increase the quality of care.[9] For this reason, it is crucial to evaluate the competency of nursing students so that they can prepare for their future jobs and responsibilities.[10] Studies have demonstrated that low professional competency in nurses increases mortality rates.[11,12]

The clinical learning and practice environment is a major source of stress for nursing students.[13] In the clinical practice and learning environment, caring for patients has been found to be one of the identified stressors.[14,15] In the light of all the findings, it is important to determine nursing students' stress levels, and the factors affecting this stress and their professional competencies, in order to raise awareness in theoretical and clinical areas throughout nursing education and to create changes in behaviors. In this regard, this study was designed to determine the factors affecting nursing students' perceived stress levels and their competency. The knowledge obtained will be useful in terms of allowing nurse educators and school managers to design the educational content of the nursing education course in ways that enable students to gain the competencies required while also effectively coping with stress. This will also ensure that prospective nurses are able to develop an appropriate professional identity and provide quality care.

RESEARCH QUESTIONS

- What are the stress levels of nursing students?
- What are the variables that affect the stress levels of nursing students?
- What are the professional competency levels of nursing students?
- What are the variables that affect the competency levels of nursing students?

MATERIAL AND METHODS

DESIGN AND PARTICIPANTS

The study had a descriptive, cross-sectional design. It was conducted during the fall semester of the 2019-2020 academic year in the faculty of health sciences of a state university. There were 250 students in their third and fourth years of study in the faculty. The inclusion criteria for the study were being a third- or fourth-year nursing student and volunteering to participate. The sample group was chosen because this period is one when students are able evaluate their competency and make professional initiatives before starting their profession. In the study, the researchers aimed to reach the entire population without using any sample selection method. In this regard, only the voluntary participation of the participants in the research was taken into account. The students who volunteered were interviewed face-to-face, the study and

its purpose were explained, and data collection forms were applied after obtaining consent forms from those who wanted to participate. In this regard, all students who voluntarily agreed to participate in the research (n=198) constituted the sample of the study. The response rate of the research was determined as 79.2%.

INSTRUMENTS

Data was collected using the Student Nurse Stress Index (SNSI) and the Competency Inventory of Nursing Students (CINS), which were completed by students after they had filled out the Student Identification Form.

Student Identification Form: This form consisted of seven questions related to the students' age, gender, year of study, grade point average (GPA), the high school they had graduated from, place of residence and their family's income status.

SNSI: This scale was developed by Jones and Johnston to evaluate the stress levels of nursing students and was tested for Turkish validity and reliability by Sarikoc et al.[16,17] The 15-item scale consists of four subscales (academic load, personal problems, interface worries and clinical concerns). An increase in the score obtained from the scale shows an increase in the stress level. The Cronbach's alpha coefficient of the whole scale was 0.90, while the reliability values of the subscales ranged between 0.78 and 0.92.

CINS: This scale was developed by Hsu and Hsieh to evaluate the competency levels of nursing students and was tested for Turkish validity and reliability by Ülker.[18,19] The 43-item scale consists of six subscales [clinical biomedical science (five items); general clinical skills (seven items); critical thinking and reasoning (four items); caring (six items); ethics and responsibility (15 items); and lifelong learning (six items)]. The total score obtainable from the inventory ranges between 43 and 301. Whereas a high score for the CINS indicates that the student has a good level of competency, a low score indicates that the level of competency is not good. The Cronbach's alpha coefficient of the whole scale was 0.97, while the Cronbach's alpha coefficients of the subscales ranged between 0.87 and 0.98.

DATA COLLECTION METHOD

After all the required explanations had been given, the data collection tools were provided to the students who agreed to participate at a day and time deemed appropriate by the institution manager. The forms were collected on the same day after the students had filled them in. It took approximately 10-15 minutes to fill in the data collection forms.

DATA ANALYSIS

The data were analyzed using IBM SPSS 21 (SPSS Inc., Chicago, USA) program. The Kolmogorov-Smirnov test was used to determine the normality of the distribution and the tests to be used in comparisons. It was found that the data were not normally distributed, and non-parametric tests were chosen. Descriptive statistics (mean, standard deviation, range, number and percentage), and the Mann-Whitney U and Kruskal-Wallis tests were used in evaluating the data.

ETHICAL ASPECTS OF THE RESEARCH

Before starting the study, ethical approval was obtained from Ondokuz Mayıs University Clinical Research Ethics Committee (date: May 23, 2019, no: 2019/418), and institutional permission was obtained from the Faculty of Health Sciences in which the study was conducted. In addition, each student who participated in the study was informed about its content, and written consent was obtained from the students. The research was conducted in accordance with the provisions of the Helsinki Declaration.

RESULTS

The sociodemographic characteristics of the nursing students are presented in Table 1.

When the scores of the participants for the SNSI scale and subscales were evaluated, it was found that while the participants' SNSI total score was 48.82±9.86, and their stress was thus determined to be at a moderate level, their academic load subscale score was 10.31±2.60. Furthermore, their personal problems subscale score was 12.95±4.18, and their interface worries subscale score was 13.21±3.09. Lastly, their clinical concerns subscale score was 12.34±3.71 (Table 2).

TABLE 1: Sociodemographic and personal characteristics of nursing students (n=198).

Variables	n	%
Age X̄±SD	21.46±1.14	
Gender		
Female	167	84.3
Male	31	15.7
Year of study		
Third year	122	61.6
Fourth year	76	38.4
Family income status		
Income<Expenses	15	7.6
Income=Expenses	160	80.8
Income>Expenses	23	11.6
Place of residence		
City center	99	50
Small town	99	50
Grade point average		
0.00-1.99	3	1.5
2.00-2.99	84	42.4
3.00-4.00	111	56.1

SD: Standard deviation

TABLE 2: Nursing Students Competency Scale and Student Nurse Stress Index subscale scores and total scores.

Scales and Subscales	X̄±SD	Minimum-Maximum
Academic load	10.31±2.60	3-15
Personal problems	12.95±4.18	4-20
Interface worries	13.21±3.09	4-20
Clinical concerns	12.34±3.71	4-20
Student Nurse Stress Index-total	48.82±9.86	15-75
Clinical biomedical science	26.13±5.19	5-35
General clinical skills	40.01±7.15	7-49
Critical thinking and reasoning	21.76±4.23	4-28
Caring	35.82±5.61	6-42
Ethics and responsibility	91.61±12.85	15-105
Lifelong learning	33.79±6.37	6-42
Competency Inventory of Nursing Students-total	249.11± 35.47	43-301

SD: Standard deviation.

When the participants' SNSI total scores and subscale scores were compared in terms of gender, a statistically difference was found between the SNSI interface worries subscale ($p<0.05$), and women were found to have higher scores than men (Table 3).

When the participants' SNSI total scores and subscale scores were compared in terms of family income status, ($p<0.05$) the difference was found in the academic load subscale ($p<0.05$). In the advanced analyses conducted to discover from which groups the difference resulted, it was found that the students who had an income lower than their expenses had higher scores than those who had an income higher than their expenses and those who had an income equal to their expenses in the academic load subscale (Table 3). No statistically significant difference was found when the SNSI total score and subscale scores were compared in terms of their grade, place of residence and GPA ($p>0.05$).

When the scores of the participants on the CINS scale and its subscales were evaluated, the participants' CINS total score was 249.11±35.47 and their professional competency was thus determined to be at a high level, whereas their clinical biomedical science subscale score was 26.13±5.19; their general clinical skills subscale score was 40.01±7.15; their critical thinking and reasoning subscale score was 21.76±4.23; their caring subscale score was 35.82±5.61; their ethics and responsibility subscale score was 91.61±12.85; and their lifelong learning subscale score was 33.79±6.37 (Table 4).

When the participants' CINS total scores and subscale scores were compared in terms of their year of study, the difference was found in the lifelong learning subscale of the CINS, and students in their fourth year of study were found to have higher scores than those in their third year of study ($p<0.05$).

When the participants' CINS total scores and subscale scores were compared in terms of family income status, the difference was found in the caring subscale of CINS ($p<0.05$). In the advanced analyses conducted to determine from which groups the difference resulted, it was found that the students whose income and expenses were equal had higher scores than those who had an income lower than their expenses in the caring subscale (Table 4).

When the participants' CINS total scores and subscale scores were compared in terms of GPA, the difference was found in the CINS clinical biomedical science subscale ($p<0.05$). In the advanced analyses conducted to find out from which groups the difference resulted, it was found that the students who had

TABLE 3: Comparison of SNSI subscale and total scores with personal and sociodemographic characteristics.

			SNSI				
			Academic load	Personal problems	Interface worries	Clinical concerns	Total SNSI
Variables	n	%	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Gender			10.44 (2.52)	13.11 (4.25)	13.47 (3.01)	12.49 (3.71)	49.51 (9.72)
Female	167	84.3	9.58 (2.91)	12.10 (3.73)	11.81 (3.16)	11.58 (3.71)	45.06 (9.90)
Male	31	15.7	z=-1.733	z=-1.314	z=-2.460	z=-0.976	z=-2.099
			p=0.830	p=0.189	p=0.014*	p=0.329	p=0.360
Test & p value	10.48 (2.64)	12.40 (4.20)	13.17 (3.16)	12.10 (3.68)	48.15 (9.88)		
Year of study			10.04 (2.53)	13.17 (3.16)	13.28 (2.98)	12.74 (3.77)	49.89 (9.79)
Third year	122	61.6	z=-1.108	z=-2.299	z=-0.450	z=-0.937	z=-1.461
			p=0.268	p=0.021	p=0.653	p=0.349	p=0.144
Fourth year	76	38.4	11.27 (3.03)	13.20 (4.51)	14.33 (3.86)	11.67 (3.85)	50.47 (12.13)
Test & p value	10.39 (2.46)	12.99 (4.09)	13.16 (2.97)	12.47 (3.77)	49.00 (9.40)		
Family income status			9.13 (2.97)	12.57 (4.74)	12.87 (3.36)	11.91 (3.31)	46.48 (11.40)
Income<Expenses[a]	15	7.6	χ^2=**6.080**	χ^2=0.229	χ^2=1.939	χ^2=1.412	χ^2=0.388
			p=0.048*	p=0.892	p=0.379	p=0.494	p=0.824
			a>c, a>b				
Income=Expenses[b]	160	80.8	10.25 (2.56)	13.08 (4.25)	13.27 (3.18)	12.52 (3.73)	49.12 (9.90)
Income>Expenses[c]	23	11.6	10.36 (2.65)	12.83 (4.14)	13.15 (3.01)	12.17 (3.71)	48.52 (9.86)
Test & p value			z=-0.305	z=-0.405	z=-0.229	z=-0.635	z=-0.305
			p=0.760	p=0.686	p=0.819	p=0.526	p=0.760
Place of residence			9.00 (3.46)	10.67 (4.16)	12.00 (4.35)	9.67 (5.03)	41.33 (16.25)
City centers	99	50	10.06 (2.69)	12.96 (4.14)	13.21 (3.11)	12.51 (3.94)	48.75 (10.02)
Small towns	99	50	10.53 (2.50)	13.01 (4.23)	13.24 (3.07)	12.29 (3.51)	49.0 (9.59)
Test & p value			χ^2=1.900	χ^2=0.950	χ^2=0.207	χ^2=1.530	χ^2=0.695
			p=0.387	p=0.622	p=0.901	p=0.465	p=0.707

*p<0.05; Z: Mann-Whitney U; χ^2: Kruskal-Wallis; SNSI: Student Nurse Stress Index; SD: Standard deviation.

a GPA between 3.00 and 4.00 had higher scores than those who had a GPA between 0.00 and 1.99 in the clinical biomedical science subscale (Table 4). No statistically significant difference was found when the CINS total score and subscale scores were compared in terms of gender and place of residence (p>0.05).

DISCUSSION

Table 2 shows that the nursing students evaluated their stress levels as moderate. Several studies have reported that nursing students typically experience moderate levels of stress.[20] However, studies by He et al. and Ribeiro et al. demonstrated that nursing students had high perceived stress levels.[21,22] Unlike students in other departments, nursing department students may be exposed to a large number of stressors because of issues such as clinical practice with high workloads in complex situations, including caring for hospitalized patients, including those who are terminally ill, and having to deal with communication problems between educators and clinicians.[23] In addition, the stress experienced by students can be associated with trying to "be successful" during their time at university, whether in the initial stages of acclimatization or the specific stress of trying to plan a future career when they are close to graduating. It was found that the nursing students in the present study obtained the highest score in the interface worries subscale, which included items related to peer competition, the attitudes of other health professionals towards students, having too many responsibilities, and lack of feedback about performance. In parallel with this result, one study indicated that the hospital environment and clinic are more stressful for third- and fourth-year students in particular due to increased responsibilities, the necessity of spending

TABLE 4: Comparison of nursing students competency subscale and total scores with personal and sociodemographic characteristics.

			CINS						
			Clinical biomedical science	General clinical skills	Critical thinking and reasoning	Caring	Ethics and accountability	Lifelong learning	Total CINS
Variables	**n**	**%**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
Gender									
Female	167	84.3	26.21 (4.85)	40.47 (6.42)	21.79 (3.98)	36.25 (4.99)	92.82 (10.93)	33.93 (5.98)	251.47 (30.38)
Male	31	15.7	25.71 (6.79)	37.48 (9.98)	21.58 (5.47)	33.52 (7.89)	85.10 (19.27)	33.03 (8.27)	236.42 (54.37)
	Test & p value		z=-0.277	z=-1.242	z=-0.259	z=-1.560	z=-1.929	z=-0.029	z=-0.906
			p=0.782	p=0.214	p=0.796	p=0.119	p=0.054	p=0.977	p=0.365
Year of study									
Third year	122	61.6	25.70 (4.94)	39.90 (6.61)	21.60 (4.18)	35.92 (5.38)	91.92 (12.67)	33.18 (6.29)	248.21 (33.65)
Fourth year	76	38.4	26.83 (5.52)	40.17 (7.98)	22.01 (4.32)	35.66 (6.00)	91.12 (13.20)	34.7 6 (6.43)	250.55 (38.41)
	Test & p value		z=-1.232	z=-0.948	z=-0.762	z=-0.269	z=-0.069	**z=-2.117**	z=-1.250
			p=0.218	p=0.343	p=0.446	p=0.788	p=0.945	**p=0.034***	p=0.211
Family income status									
Income<Expenses[a]	15	7.6	24.13 (4.98)	37.13 (9.63)	19.60 (4.61)	33.53 (5.16)	86.47 (14.76)	32.47 (6.36)	233.33 (37.84)
Income=Expenses[b]	160	80.8	26.39 (4.86)	40.50 (6.44)	22.04 (3.97)	36.40 (5.01)	93.01 (10.94)	34.30 (5.98)	252.64 (30.77)
Income>Expenses[c]	23	11.6	25.65 (7.13)	38.43 (9.41)	21.17 (5.35)	33.26 (8.40)	85.22 (19.99)	31.09 (8.33)	234.83 (55.11)
	Test & p value		χ^2=3.025	χ^2=1.652	χ^2=3.558	**χ^2=6.982**	χ^2=5.780	χ^2=3.839	χ^2=5.655
			p=0.220	p=0.438	p=0.169	**p=0.030***	p=0.056	p=0.147	p=0.059
						b>a			
Place of residence									
City center	99	50	26.33 (5.34)	40.02 (7.70)	21.89 (4.36)	35.67 (5.85)	91.89 (13.58)	34.07 (6.46)	249.87 (36.85)
Small town	99	50	25.93 (5.05)	39.99 (6.59)	21.63 (4.11)	35.97 (5.39)	91.33 (12.14)	33.51 (6.31)	248.35 (34.20)
	Test & p value		z=-0.835	z=0.536	z=-0.673	z=-0.322	z=-0.544	z=-0.693	z=-0.385
			p=0.404	p=0.592	p=0.501	p=0.748	p=0.587	p=0.488	p=0.701
Grade point average									
0.00-1.99[a]	3	1.5	24.67 (7.02)	29.67 (12.74)	17.33 (7.23)	32.33 (5.50)	83.33 (15.56)	34.67 (6.65)	222.00 (20.95)
2.00-2.99[b]	84	42.4	24.99 (5.39)	39.30 (7.44)	21.81 (4.44)	35.13 (6.13)	90.11 (14.72)	33.21 (6.76)	244.55 (40.11)
3.00-4.00[c]	111	56.1	27.04 (4.85)	40.82 (6.54)	21.84 (3.95)	36.43 (5.14)	92.97 (11.06)	34.20 (6.08)	253.30 (31.27)
	Test & p value		**χ^2=7.315**	χ^2=4.738	χ^2=1.762	χ^2=3.903	χ^2=2.539	χ^2=0.810	χ^2=4.701
			p=0.026*	p=0.094	p=0.414	p=0.142	p=0.281	p=0.667	p=0.095
			c>a						

*p<0.05; Z: Mann-Whitney U; χ^2: Kruskal-Wallis; CINS: Competency Inventory of Nursing Students; SD: Standard deviation.

more time in the clinic, difficulties in relationships with friends, the effort needed to manage multidisciplinary working processes, and the fear of making mistakes.[24] Similarly, it has been found that students particularly experienced stress in clinical environments, and these stressors included the process of adapting to the clinic's culture and the process of trying to learn and apply skills in busy clinics.[25] This could also be because at the point when students encounter these kind of worries, they also begin to withdraw from their previous social lives due to a lack of free time.

The second research question was "What are the variables that affect the stress levels of nursing students?" It was found that the female students had higher stress levels than the male students. Similarly, Ribeiro et al. found that female students had higher stress levels than male students, and the American Psychology Association reported in 2017 that women experienced more stress than men.[22,26] Whereas "sex" refers to the biological differences between women and men, "gender" refers to features taught to and acquired by individuals as a result of their lived experience. Most of the time, individuals have to act according to gender roles. Acting in accordance with gender roles causes stress. More often than not, these roles can put pressure on women, and it is believed that this pressure may be a source of stress for women. Women are more sensitive to stress due to hormonal changes, especially because of their menstrual cycle.[22] Therefore, women may feel more burdened and therefore more vulnerable to stress, with possible issues related to household and family care permeating their daily lives in addition to any academic difficulties.

When the nursing students' stress levels and family income levels were compared, it was revealed that the students with incomes lower than their expenses had higher stress levels than students whose incomes were equal to their expenses. In accordance with this finding, Alghamdi et al. indicated that students with a low socioeconomic status suffered from the academic load stressor more than students with a high socioeconomic status.[27] Ribeiro indicated that the stress levels perceived by nursing students were associated with family income level and that students with a high monthly income experienced less stress.[22] Low family income is budgetary constraint that create tensions which may threaten academic life and even survival itself. Nursing students need to ensure that they have enough to spend on food, housing and transportation, as well as academic materials and for attending any necessary scientific events. Not having the resources to secure the essentials of life is a source of stress. Additionally, having a low family income affects individuals' ability to access cultural and sports activities that can contribute to the reduction of stress levels.

As a result of the analyses conducted for the third research question "What are the competency levels of nursing students?" it was found that the nursing students believed that they had good levels of competency. This finding was consistent with previous studies conducted among nursing students.[18,28] Furthermore, in the present study, the nursing students believed they were most competent regarding ethics and responsibility, while they evaluated their competencies related to anatomy and physiology, physical examination, information about medication, information and competency about clinical tests (which are included in the clinical biomedical science subscale) as being lower. In parallel with the results of this study, other studies have also demonstrated that the highest degree of competency of nursing students was in the ethics and responsibility subscale, while the lowest degree of competency was in the clinical biomedical science subscale.[18,19] It can be suggested that the students had better competency in ethics and responsibility since these topics are related to individuals' past experiences and because the third- and fourth-year students had already taken the ethics course within their nursing education. Clinical biomedical science includes all pathological, biological and physical examinations and treatment given to patients in clinical contexts. Studies have indicated that, although nursing students and recently graduated nurses feel competent in some areas, they also have limitations with regard to their competency.[29] The dominant authority of physicians in clinical areas prevents nurses and therefore nursing students from fully attending to their patients, and may mean that they do not receive sufficient mentoring. When the

quality of the education received is not adequate, a suitable clinical environment is lacking, and it is not possible to engage in evidence-based educational practices, then this will result in students failing to demonstrate their competency in biomedical science.

As a result of the analyses conducted for the fourth research question "What are the variables that affect the competency levels of nursing students?" with regard to the year of study, it was found that students in their fourth year felt more competent than students in their third year. In parallel with this result, Ulker and Korkmaz found that students' competency level increased as their year of study increased.[30] This may be due to the fact that the knowledge and experience of fourth-year students increases in parallel with the year of study and that they have more clinical experience as interns. This time spent in clinics enables students to communicate better with patients and to use and develop professional nursing knowledge and skills. It may also help them learn better decision-making skills and to understand themselves better. In analyzing the relationships between competency levels and family income, it was found that students who had an income higher than their expenses felt more competent. It is believed that this may result from the fact that nurses with a good level of income are able to participate more in courses, training and scientific programs that contribute to their competency and professional development. It may also suggest that students who have to work to support their families may be negatively affected in terms of performance and may not be able to participate in external courses and programs. When the competency levels of the nursing students were examined in terms of their GPAs, it was found that the students who had higher GPA felt more competent. Similarly, Vasli et al. determined that GPA was a significant predictor of students' clinical competency in the objective-structured clinical examination. In contrast to this result, Heydari et al. did not find a significant association between student competency and GPA.[31,32] In the nursing profession, competencies are generally classified as professional, clinical and expert. Whereas professional competency consists of knowledge and skills related to general nursing that require working independently and taking responsibility, clinical competency primarily includes clinical knowledge and skills. During their education, nursing students attempt to acquire general knowledge and skills in order to become more competent. The clinical and theoretical assessment of this knowledge and these skills is expressed in the marks and scores they obtain. Therefore, it is significant that the students with a higher GPA felt more competent.

LIMITATIONS

The study is limited to nursing students studying at only one state university.

CONCLUSION

The nursing students experienced moderate stress while maintaining high levels of competency, ethics, and responsibility. It was concluded that the female students had higher stress levels than the male students, and the stress levels of students whose income was lower than their expenses were higher than those of students whose income and expenses were equal. The nursing students believed that they had most competency regarding ethics and responsibility. It was determined that fourth-year students, third-year students, and students whose income was higher than their expenses and whose GPA was higher felt more competent. Therefore, the following measures can be recommended:

- Explaining to students the information, skills and attitudes required for each competency that they are expected to gain;
- Including subjects such as those related to knowing oneself and stress management so that students can cope with the stress they experience, in addition to including courses where in which they can engage in social, cultural or sporting activities;
- Setting up counseling units in which students can share and find solutions for the problems they may be experiencing in their private and academic lives;
- Focusing on the students' personal needs and offering an orientation program before the students begin nursing education programs in order to reduce the sources of stress during the students' first year.

Acknowledgements

We would like to thank the 3rd and 4th grade nursing students who participated in our study. Also we thank Polen Translation Company for editing in English.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Gamze Tunçer Ünver, Nihal Ünaldı Baydın;* ***Design:*** *Gamze Tunçer Ünver, Nihal Ünaldı Baydın;* ***Control/Supervision:*** *Gamze Tunçer Ünver, Nihal Ünaldı Baydın;* ***Data Collection and/or Processing:*** *Gamze Tunçer Ünver, Nihal Ünaldı Baydın;* ***Analysis and/or Interpretation:*** *Gamze Tunçer Ünver;* ***Literature Review:*** *Gamze Tunçer Ünver, Nihal Ünaldı Baydın;* ***Writing the Article:*** *Gamze Tunçer Ünver, Nihal Ünaldı Baydın;* ***Critical Review:*** *Gamze Tunçer Ünver, Nihal Ünaldı Baydın.*

REFERENCES

1. Teo I, Chay J, Cheung YB, Sung SC, Tewani KG, Yeo LF, et al. Healthcare worker stress, anxiety and burnout during the COVID-19 pandemic in Singapore: a 6-month multi-centre prospective study. PLoS One. 2021;16(10):e0258866. [Crossref] [PubMed] [PMC]
2. Turner K, McCarthy VL. Stress and anxiety among nursing students: a review of intervention strategies in literature between 2009 and 2015. Nurse Educ Pract. 2017;22:21-9. [Crossref] [PubMed]
3. López-Pérez B, Ambrona T, Hanoch Y. Influence of the type of patient in the emotional response of nurses and nursing students. Nurse Educ Pract. 2016;19:7-11. [Crossref] [PubMed]
4. Ma H, Zou JM, Zhong Y, Li J, He JQ. Perceived stress, coping style and burnout of Chinese nursing students in late-stage clinical practice: a cross-sectional study. Nurse Educ Pract. 2022;62:103385. [Crossref] [PubMed]
5. Oner Altiok H, Ustun B. The stress sources of nursing students. Educational Sciences: Theory and Practice. 2013;13(2):760-6. [Link]
6. Fan JY, Wang YH, Chao LF, Jane SW, Hsu LL. Performance evaluation of nursing students following competency-based education. Nurse Educ Today. 2015;35(1):97-103. [Crossref] [PubMed]
7. Grande RAN, Berdida DJE, Susanto T, Khan A, Waelveerakup W, Saad Z. Nursing competency inventory and professional competence of graduating students in six Asian countries: a cross-sectional study. Nurse Educ Today. 2022;116:105470. [Crossref] [PubMed]
8. Koç Z, Çınarlı T, Şener A, Kızıltepe SK. Patricia benner: hemşirelik uygulamalarında klinik bilgelik ve beceri edinimi [Patricia benner: clinical wisdom and skill acquisition in nursing practices]. ACU Sağlık Bilimleri Dergisi. 2018;9(1):1-12. [Link]
9. Reebals C, Wood T, Markaki A. Transition to practice for new nurse graduates: barriers and mitigating strategies. West J Nurs Res. 2022;44(4):416-29. [Crossref] [PubMed]
10. Forsberg E, Ziegert K, Hult H, Fors U. Clinical reasoning in nursing, a think-aloud study using virtual patients - a base for an innovative assessment. Nurse Educ Today. 2014;34(4):538-42. [Crossref] [PubMed]
11. Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Griffiths P, Busse R, et al; RN4CAST consortium. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet. 2014;383(9931):1824-30. [Crossref] [PubMed] [PMC]
12. Cho E, Sloane DM, Kim EY, Kim S, Choi M, Yoo IY, et al. Effects of nurse staffing, work environments, and education on patient mortality: an observational study. Int J Nurs Stud. 2015;52(2):535-42. [Crossref] [PubMed] [PMC]
13. Mazalová L, Gurková E, Štureková L. Nursing students' perceived stress and clinical learning experience. Nurse Educ Pract. 2022;64:103457. [Crossref] [PubMed]
14. Labrague LJ, McEnroe-Petitte DM, Gloe D, Thomas L, Papathanasiou IV, Tsaras K. A literature review on stress and coping strategies in nursing students. J Ment Health. 2017;26(5):471-80. [Crossref] [PubMed]
15. Bhurtun HD, Turunen H, Estola M, Saaranen T. Changes in stress levels and coping strategies among Finnish nursing students. Nurse Educ Pract. 2021;50:102958. [Crossref] [PubMed]
16. Jones MC, Johnston DW. The derivation of a brief student nurse stress index. Work & Stress. 1999;13(2):162-81. [Crossref]
17. Sarikoc G, Bayram Demiralp M, Oksuz E, Pazar B. Turkish Version of the Student Nurse Stress Index: validity and reliability. Asian Nurs Res (Korean Soc Nurs Sci). 2017;11(2):128-33. [Crossref] [PubMed]
18. Hsu LL, Hsieh SI. Development and psychometric evaluation of the competency inventory for nursing students: a learning outcome perspective. Nurse Educ Today. 2013;33(5):492-7. [Crossref] [PubMed]
19. Ülker T. Hemşirelik öğrencilerinin kendi mesleki yetkinliklerini değerlendirme aracının geçerlik ve güvenirlik çalışması [Yüksek lisans tezi]. Ankara: Hacettepe Üniversitesi; 2018. [Erişim tarihi: 9 Şubat 2024]. Erişim linki: [Link]
20. Liu J, Yang Y, Chen J, Zhang Y, Zeng Y, Li J. Stress and coping styles among nursing students during the initial period of the clinical practicum: a cross-section study. Int J Nurs Sci. 2022;9(2):222-9. [Crossref] [PubMed] [PMC]
21. He FX, Turnbull B, Kirshbaum MN, Phillips B, Klainin-Yobas P. Assessing stress, protective factors and psychological well-being among undergraduate nursing students. Nurse Educ Today. 2018;68:4-12. [Crossref] [PubMed]
22. Ribeiro FMSES, Mussi FC, Pires CGDS, Silva RMD, Macedo TTS, Santos CAST. Stress level among undergraduate nursing students related to the training phase and sociodemographic factors. Rev Lat Am Enfermagem. 2020;28:e3209. [Crossref] [PubMed] [PMC]
23. Tung YJ, Lo KKH, Ho RCM, Tam WSW. Prevalence of depression among nursing students: a systematic review and meta-analysis. Nurse Educ Today. 2018;63:119-29. [Crossref] [PubMed]

24. Zhao FF, Lei XL, He W, Gu YH, Li DW. The study of perceived stress, coping strategy and self-efficacy of Chinese undergraduate nursing students in clinical practice. Int J Nurs Pract. 2015;21(4):401-9. [Crossref] [PubMed]

25. Ching SSY, Cheung K, Hegney D, Rees CS. Stressors and coping of nursing students in clinical placement: a qualitative study contextualizing their resilience and burnout. Nurse Educ Pract. 2020;42:102690. [Crossref] [PubMed]

26. American Psychological Association-APA. Stress in America: Coping with Change. Stress in America™ Survey. 2017. [Link]

27. Alghamdi S, Aljabri S, Jafari G, Alzebali R, Alkunaidiri N, & Kalantan N. Sources of stress among undergraduate nursing students. Global Journal of Health Science. 2019;11(9):116-22. [Crossref]

28. Yu M, Tong H, Li S, Wu XV, Hong J, Wang W. Clinical competence and its association with self-efficacy and clinical learning environments among Chinese undergraduate nursing students. Nurse Educ Pract. 2021;53:103055. [Crossref] [PubMed]

29. Nehrir B, Vanaki Z, Mokhtari Nouri J, Khademolhosseini SM, Ebadi A. Competency in nursing students: a systematic review. International Journal of Travel Medicine and Global Health. 2016;4(1):3-11. [Crossref]

30. Ulker T, Korkmaz. Hemşirelik öğrencilerinin kendi mesleki yetkinliklerini değerlendirme aracının geçerlik ve güvenirlik çalışması: metodolojik çalışma [Nursing students' self-assessment of professional competence scale' validity and reliability: methodological study]. Turkiye Klinikleri J Nurs Sci. 2022;14(3):788-97. [Crossref]

31. Vasli P, Shahsavari A, Estebsari F, AsadiParvar-Masouleh H. The predictors of nursing students' clinical competency in pre-internship objective structured clinical examination: the roles of exam anxiety and academic success. Nurse Educ Today. 2021;107:105148. [Crossref] [PubMed]

32. Heydari A, Kareshki H, Armat MR. Is nurses' professional competence related to their personality and emotional intelligence? A cross-sectional study. J Caring Sci. 2016;5(2):121-32. [Crossref] [PubMed] [PMC]