

Perceived Stress Among Iranian Nursing Students in a Clinical Learning Environment: A Cross-Sectional Study

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Background: Nursing students experience a high level of stress in clinical settings. This study aimed to investigate the stress perceived by Iranian nursing students in the clinical learning environment and its relationship with the characteristics of students.

Methods: In this cross-sectional study, 430 nursing students who had passed at least 1 clinical training unit were recruited from universities in the Southeast of Iran using the census method. Data were collected by administering a demographic and researcher-made questionnaire to assess the perceived clinical stress. Demographic characteristics included age, sex, marital status, year of study, interest in the field, and previous semester average. Data were analyzed using independent *t*-test, ANOVA, and correlation coefficient test ($\alpha < 0.05$).

Results: The mean score of overall stress experienced by the participants was 92.08 ± 16.8 (out of 160), which was at a moderate level. Based on the study results, the most stress-inducing factors for students were instructors' limited clinical competence and instructors' inappropriate conduct. Gender ($p = 0.01$), fathers' education ($p = 0.01$), mothers' education ($p = 0.01$), interest in the field ($p = 0.01$), and year of study ($p = 0.01$) had a significant effect on the mean score of perceived clinical stress.

Conclusion: The results of this study showed a moderate level of stress among the students. Also, instructors' limited clinical competence and inappropriate conduct were 2 factors that caused the highest perceived stress among nursing students more than other factors.

Keywords: clinical learning environment, clinical education, nursing students, stress, instructor

Introduction

Stress occurs when people feel they need more social and personal resources.¹ This definition reflects cognitive factors, including thoughts, attitudes, and beliefs about stressors. When people assess a situation as threatening and damaging (initial assessment), they are more likely to experience stress. Then, they examine whether they have enough resources, facilities, and skills to cope with the situation (secondary assessment).² Therefore, perceptions of the situation have a more important effect than the situation itself.³

Stress is a constant problem in nursing education. A review of the literature showed that nursing students experience more stress than students of other majors.⁴ Stress in nursing students can be attributed to academic, clinical, and financial factors. Clinical stress is more prevalent than other types of stress.² Since nursing students

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spend most of their time in the clinical setting, clinical stressors are the most important sources of stress for them.⁵

Betty Neuman's theory of stress is appropriate for understanding the stress students experience in the clinical setting.⁶ Neuman's model of stress categorizes stressors to extrapersonal, intrapersonal, or interpersonal factors. According to this theory extrapersonal stressors factors, which occur outside of the individual (eg, instructors' limited clinical competence), intrapersonal factors, which occur within the individual (eg, inadequate knowledge and skill), and interpersonal factors, which takes place between individuals and may include negative interactions with instructors, staff, and patients.

International studies show nursing students frequently face moderate to severe stressors in clinical settings.^{6,7} In the literature clinical stressors of nursing students include caring for dying patients and end-stage patients,^{6,8} lack of clinical knowledge and skills, clinical dishonesty, fear of making a mistake, interpersonal conflicts with peers, fear of unknown events, and phenomenon, new clinical situations, and heavy workload.⁹⁻¹¹

Exposure of nursing students to clinical stress may adversely affect their learning outcomes, overall health, well-being, academic performance, quality of life,¹² and clinical performance.¹³ Several studies have been conducted on stress among nursing students in Iran.¹⁴⁻¹⁶ However, a detailed analysis of this issue is a critical step in identifying clinical stressors in nursing students and planning to take the necessary measures to reduce them.³ Therefore, this study aimed to investigate the stress perceived by nursing students in the clinical learning environment in the Southeast of Iran.

Methods

In this descriptive-analytical study, the research population was selected from universities in 2 southern provinces of Iran (Kerman and Sistan & Baluchestan). There were 430 nursing students in these schools, and participants were randomly selected from nursing schools of both provinces (Kerman, Jiroft, Zabol, and Zahedan) by the census method. The inclusion criteria were passing at least 1 clinical unit and willingness to participate in the study.

Data were collected by 2 instruments: (1) demographic characteristics questionnaire, which included age, sex, marital status, year of study, interest in the field, and previous semester average; (2) the Nursing Students' Perceived Clinical Stressors Scale (NSPCSS), which was presented in the form of a researcher-made questionnaire, as the existing tools for stress assessment of nursing students

have been developed in other countries with different clinical settings and have not been evaluated psychometrically in Iran. The questionnaire was designed by interviewing 19 first year to fourth-year nursing students and by an extensive literature review. To validate the questionnaire, face and content validity and internal consistency were evaluated. Internal consistency was 0.9, and face validity was assessed quantitatively and qualitatively. Also, 12 nursing students commented on the difficulty, appropriateness, clarity, and essentiality of the items, and the items were amended based on their comments. In the quantitative evaluation of face validity, 12 students from different educational levels were asked to rate the importance of each item on a 5-point scale from 1 (not important) to 5 (very important). The impact score was calculated and items with the impact score less than 1.5 were revised.¹⁷ Content validity was evaluated using both qualitative and quantitative methods. Twelve nursing instructors who were experienced in instrument development were asked to comment on the grammar, wording, item allocation, and scoring of the NSPCSS items. Next, a validity evaluation of the quantitative content was performed using a content validity ratio (CVR) and content validity index (CVI). Also, 15 experts evaluated the content validity and excluded 7 items with CVR values less than 0.49 and amended items with CVI values less than 0.79. Therefore, the S-CVA/Ave of the 54-item NSPCSS was 0.97. Exploratory factor analysis (EFA) was conducted on data obtained from 215 students. The Keiser-Meyer-Olkin test value was 0.921, and Bartlett's test value was 6674.18 ($P < 0.001$). A parallel analysis resulted in the extraction of 6 main factors: instructors' limited competence in clinical environments (6 items), inappropriate clinical environment (10 items), inadequate knowledge and skills (3 items), inefficient education in clinical planning (4 items), inappropriate conduct by the instructor (6 items), and concerns about the nursing profession (3 items). The eigenvalues of these 6 factors were 6.46, 4.96, 3.24, 2.86, 2.72, and 1.41, respectively, and they explained 58.80% of the total variance of the NSPCSS. The 32 items of the NSPCSS were scored on a 5-point Likert scale, and the total score of the scale ranged from 32 to 160 (32-64: low clinical stress; 65-96: moderate clinical stress; 97-128: high clinical stress; and 129-160: very high clinical stress).

Statistical Analysis

Data were analyzed using descriptive and inferential statistics in SPSS software version 18. The Kolmogorov-Smirnov

test was used to assess the normality of continuous data. Independent samples *t*-test was run to determine the relationship between perceived clinical stresses and gender. Also, ANOVA and Tukey post hoc test were used to determine the relationship between perceived clinical stresses and nominal scale characteristics with more than 3 categories, including parents' education level, year of study, and interest in the field. Spearman correlation was used to determine the relationship of perceived clinical stress with students' age and their grade point average in the previous semester.

Ethical Considerations

The ethics committee of Jiroft University of Medical Sciences in Iran approved this study (code: IR.JMU.REC.1397.30). Before the study, the aim of the research was explained to the participants and they were assured their data would remain confidential. Informed consent was obtained from participants before the interviews. Moreover, after obtaining the approval of the ethics committee and permission of the university authorities, anonymous questionnaires were distributed and collected by a trained nursing graduate student who did not study at any of the target universities. Data were collected from November 2018 to January 2019.

Results

A total of 422 valid responses were obtained, representing 98% of students who completed the questionnaire. Also, 200 students (49%) were male and 208 (51%) female and the mean age of the students was 21.86 ± 2.32 years. Moreover, 353 of students (84.7%) were single, 199 (47%) reported interest in nursing, and their grade point average of in the previous semester was 16.5 ± 1.6 (out of 20).

The degree of stress perceived by the participants ranged from 41–136, with a mean score of 92.08 ± 16.8 , which was at a moderate level. Moreover, 35 (8.3%) students had low, 230 (54.5%) moderate, and 155 (36.7%) high stress, and only 2 (0.5%) reported very high stress.

The students reported that their most common cause of stress in the clinical course was instructors' limited clinical competence ($M = 3.11 \pm 0.71$), followed by instructors' inappropriate conduct ($M = 3.04 \pm 0.69$) (Table 1). The 3 most frequent common stressors perceived by the students were instructors' insufficient knowledge about personal safety, instructors' limited skills, and instructors' inadequate attention and guidance (Table 2).

We examined the relationship between the total score of students' clinical stress with demographic variables and

Table 1 The Mean of Stressors of the Clinical Environment from the Viewpoint of Nursing Students

Stressors Factors	Mean	SD
Instructors' limited clinical competence	3.11	0.71
Inappropriate clinical environment	2.69	0.62
Inadequate knowledge and skills	2.93	0.75
Inefficient clinical education planning	2.82	0.89
Instructors' inappropriate conduct	3.04	0.69
Concerns over the characteristics of nursing	2.72	0.82

found the male students had a significantly higher level of clinical stress than the females (Table 3). Clinical stress perceived by the participants differed based on their fathers' education (one-way ANOVA $F(2, 415) = 4.11$, $p = 0.017$). The students whose fathers had academic education experienced a significantly lower level of stress than those whose fathers had a high school diploma or a lower education level (Mean Difference= 3.53, Std. Error= 1.95, $p = 0.015$). Moreover, perceived clinical stress reported by the participants differed based on their mothers' education (one-way ANOVA $F(2, 419) = 4.18$, $p = 0.016$). The students whose mothers had academic education perceived a significantly lower level of clinical stress than those whose mothers had a high school diploma or a lower education level (Mean Difference= 5.77, Std. Error= 2.11, $p = 0.018$).

Furthermore, we found a relationship between students' clinical stress and their interest in nursing (one-way ANOVA $F(2, 413) = 4.66$, $p = 0.01$). The results of the post hoc test showed the clinical stress scores of the students who expressed no interest in the field were significantly higher than those of interested students (Mean Difference= 9.23, Std. Error= 3.12, $p = 0.009$).

The results of data analysis revealed a significant difference between the perceived clinical stress of the students based on the year of study (one-way ANOVA $F(3, 400) = 3.73$, $p = 0.01$). According to the results of the post hoc test, significant differences existed between senior students and freshman students (Mean Difference= 7.49, Std. Error= 2.81, $p = 0.04$) and between senior students and sophomore students (Mean Difference= 5.93, Std. Error= 2.16, $p = 0.03$).

Also, a negative and weak correlation was found between the previous semester average and perceived clinical stress ($r = -0.13$, $p = 0.015$). However, the correlation between age and perceived clinical stress was not significant ($p = 0.72$).

Table 2 Clinical Stressors Perceived by Nursing Students

Dimensions	Items	Mean	SD
Instructors limited clinical competence	Instructors' inadequate attention and guidance	3.26	0.97
	Difference between instructors' education and students' educational needs	2.98	0.95
	Instructors' limited skills	3.28	1.00
	Instructors' use of traditional teaching methods and routine in clinical education	3.20	1.01
	Instructor failure to provide independence for students	3.09	0.99
	Overemphasis of theoretical training (as opposed to applied clinical education by the instructor)	2.86	1.02
Inappropriate clinical environment	Inadequate equipment for appropriate nursing care	2.50	0.95
	Shortage of recreational and educational facilities in the clinical environment	2.22	1.05
	Observing the violation of patient rights by healthcare providers	2.79	0.91
	Students exploitation by health care providers	2.45	1.08
	Observing nonstandard care delivery to a patient by others	2.75	0.97
	Inadequate time for appropriate nursing care	2.81	1.00
	Fatigue due to heavy physical workload	2.66	0.98
	Receiving inadequate support from healthcare providers	2.90	1.05
	Misconduct by a patient or family member	2.95	0.90
Inconsistency between the theoretical and clinical education explanation provided	2.85	0.99	
Inadequate knowledge and skills	Students' inadequate knowledge for patient care	2.92	0.84
	Students' inadequate experience in patient care	2.75	1.00
	Students' inadequate skills for patient care and equipment use	3.11	0.85
Inefficient clinical education planning	Vague job description	2.77	1.12
	Vague explanations of the objectives of clinical education	2.86	1.11
	Instructors' personalized approach to the use of educational rules and regulations	2.87	1.12
	Inappropriate planning for clinical education by school authorities	2.77	1.11
Instructor's inappropriate conduct	Instructors' inappropriate conduct in the case of student error	3.15	1.02
	Instructors' high expectations	2.94	1.00
	Instructors' unfair evaluation	2.76	1.06
	Lack of instructors' feedback after a task	3.08	0.94
	Instructors' insufficient education about personal safety	3.34	1.03
	Feeling of bafflement due to contradiction by some instructors	2.96	0.99
Concerns over the characteristics of nursing	Concern over the affliction of psychological problems during patient care	2.85	1.17
	Concern over legal problems due to negligence or error in patient care	2.71	1.07
	Concern over the affliction of physical problems during patient care	2.60	1.00

Discussion

The results of this study revealed that the nursing students in the Southeast of Iran experience a moderate level of stress. The level of stress reported by nursing students in other studies in Iran was high,¹⁴ moderately high,⁶ moderate,^{18,19} and mild-moderate.⁷ Furthermore, a review article found that nursing students experience moderate to a high level of stress in clinical settings.²⁰

In this study, the most common type of clinical stressors of nursing students was stress because of instructors' limited clinical competence, followed by instructors' inappropriate conduct. Besides, the 3 most common stressors were about instructors' teaching and conduct. In another

study in Iran, students reported faculty-related factors as the most frequent stressors in the clinical setting.¹⁵ Moreover, a qualitative study in Iran found that shortcomings of clinical teaching methods and limited competence of instructors were challenges that nursing students faced in clinical education.²¹ Alzzayat and AlGamal²² in Jordan and Ismail²³ in Saudi Arabia found a similar result. Communication problems between nursing students and clinical educators have been widely reported.² On the other hand, teachers were a strong stressor for nursing students because the students felt their teachers constantly observed and evaluated them.²⁰ Also, teachers' unclear expectations and undefined and uncertain learning goals

Table 3 Comparison Between Demographic Data and Overall NSPCSS*

Variables		N	Mean of Clinical Stress Scores (SD)	P-value
Gender	Male	195	93.75 (15.99)	0.018
	Female	208	89.83 (17)	
Fathers' education	Lower than High School Diploma	159	94.81 (16.48)	0.017
	High School Diploma	135	91.28 (15.17)	
	academic	125	89.2212 (18.47)	
Mothers' education	Lower than High School Diploma	191	94.51 (16.47)	0.016
	High School Diploma	139	90.97 (15.64)	
	academic	92	88.73 (18.51)	
Interest to the field	Yes	197	93.99 (16.84)	0,01
	Somewhat	186	91.37 (15. 96)	
	No	33	84.76 (18.98)	
Year of study	Year 1	54	95.59 (19.84)	0.01
	Year 2	145	93.02 (15.26)	
	Year 3	105	90.24 (18.57)	
	Year 4	100	88.09 (14.57)	

Note: *Nursing Students' Perceived Clinical Stressors Scale.

can be stressful for students.²³ Instructors are an important component of the education structure. The role of the instructor in providing a practical model of professional care delivery has been emphasized.²¹ King and Gate²⁴ also stressed the importance of the instructors' role in the professional empowerment of nurses. Similarly, the most common stressors reported by the nursing students in this study were related to instructors. According to Neuman's theory, these stressors are related to extrapersonal and interpersonal stressors.

In Neuman's theory, stress can affect physiological, psychological, sociocultural, developmental, and/or spiritual dimensions of humans.²⁵ Therefore, educators are expected to be aware of the impact of stress on students' existential dimensions and increase their support role instead of creating stress.

The results of the present study revealed that male students experience higher clinical stress than females. This finding is different from other studies that showed female nursing students have higher clinical stress than males.^{7,18,26,27} The nursing literature has identified the problems and challenges experienced by male nurses in clinical and educational settings. Men are marginalized in nursing and they have to face challenging traditional gender-defined roles and stereotypes from society when entering a profession dominated by women.²⁸ A previous study in Iran revealed that job security is the important factor in choosing the nursing career, and the public view of

nursing as a feminine discipline was the most important factor for Iranian male nurses leaving the profession.²⁹ Therefore, nursing may not be a favorite occupation for Iranian men, and thus they may experience higher levels of stress.

Clinical perceived stress was lower in students whose parents had academic education, which is not surprising, as it has been reported talking to parents is a coping strategy to manage clinical stressors.³⁰ It is expected that educated parents provide more effective support than those parents with lower education levels.

In the present study, the participants who were interested in nursing had lower clinical stress. This result was similar to the study that reported a negative correlation between career satisfaction and career stress in nursing students.³¹ It seems that interest in the nursing discipline is a personal factor to facilitate coping with this field.³² Thus, in addition to the administration of the nursing entrance exam, nursing applicants should be interviewed to ensure their interest in the nursing field.

In other studies^{7,33,34} the participants who were studying in the fourth year had lower clinical stress than those who were in the first and second years. This finding may be related to the fact that nursing students have acquired the necessary knowledge and skills for patient care in the last year. Also, the nursing students who were studying in the fourth year completed a preceptorship program and spent their internships under the direct supervision of

head nurses and clinical staff. The preceptorship program can create a positive clinical learning environment and increase the independence and competency of nursing students³⁵ if properly implemented.

In this study, a negative and weak relationship was found between stress level and academic performance of the respondents, as was evident in other studies.^{36,37} The data on students' grade point average were obtained through self-report, which may not be realistic. Thus, further studies should be conducted to investigate the relationship between clinical stress and academic achievement and the clinical performance of nursing students using validated data.

Limitations

In this cross-sectional study, data were collected by a self-report questionnaire with the potential risk of social desirability answers. Although the questionnaire was valid and its reliability was confirmed, it needs to be revised and modified to better fit international students at different nursing programs. Furthermore, the data were collected from 2 provinces in the Southeast of Iran, and thus the findings are not generalizable to other regions of Iran. Conducting a longitudinal study on a cohort of students in a large population and conducting interventional studies can provide a better view of clinical stress in nursing students. Also, qualitative studies are necessary to better understand nursing students' experiences about clinical stressors.

Conclusions and Implication for Education and Practice

Iranian nursing students are subjected to many stressful sources that can contribute to poor academic performance. Therefore, nursing education authorities should pay attention to students' concerns in the clinical setting, ensure the employment of skilled educators, and develop and implement training programs to emphasize the importance of effective communication and create a supportive atmosphere for students in the clinical setting. Moreover, health officials should pay particular attention to instructors' professional development. As primary prevention, instructors should be made aware that they may cause stress for their students. Therefore, it is recommended that educators improve their clinical skills to reduce stress in nursing students and attend to nursing students' educational and practical needs. Moreover, supporting instructors and nursing staff by building positive interpersonal

relationships with nursing students in Iran's clinical settings can help reduce stress in nursing students. Based on the findings of this study, male students whose parents have lower education levels and junior nursing students may experience more stress in clinical settings. Therefore, more attention should be paid to this vulnerable group. Furthermore, interest in nursing should be considered as a factor in the enrollment of nursing students.

Ethics Approval and Consent to Participate in the Study

This study was approved by the research ethics committee of Jiroft University of Medical Sciences and was performed in accordance with the declaration of Helsinki. Also, no potential harm was caused to participants, and the anonymity of participants was guaranteed. Also, written informed consent was obtained from all participants.

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Disclosure

The authors declare that they have no competing interests.

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