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# The relationship between perceived stress and emotional intelligence in Moroccan nursing students

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## Abstract:

**BACKGROUND:** Nursing students are subjected to many stressors during their clinical practicums. Emotional intelligence (EI) could act as a real stress regulator. In this perspective, we sought to study the relationship between stress and EI in a sample of Moroccan nursing students.

**MATERIALS AND METHODS:** This study was conducted using the descriptive correlational method. The statistical population consisted of the nursing students of the Higher Institute of Nursing Professions and Health Techniques of Tetouan in Morocco during the academic year 2021-2022. Among them, 146 participants were selected on the basis of simple random sampling. Participants completed a self-administered questionnaire addressing sociodemographic factors, perceived stress (the Perceived Stress in Clinical Practice Scale), and emotional intelligence (Wong and Law Emotional Intelligence Scale test). Descriptive statistics were used and Pearson's correlation coefficient was applied to assess the correlation between stress and EI, and to compare them according to socio-demographic characteristics. A linear regression analysis was calculated to analyze the effect of independent variables on perceived stress and EI. For the analysis, a level of 0.05 was chosen.

**RESULTS:** The overall mean age of the students was  $20.02 \pm 1.12$  years. Participants had moderate levels of perceived stress ( $M = 2.42 \pm 0.77$ ) and high levels of EI ( $M = 3.79 \pm 1.09$ ). A significant positive correlation between perceived stress and EI was found ( $r = 0.741$ ,  $P < 0.05$ ). The regression model shows that EI, education level, and clinical practice setting can explain changes in perceived stress levels and are effective and significant factors ( $P < 0.001$ ).

**CONCLUSION:** EI has been shown to be a protective factor against stress in nursing students. Those with well-developed EI have lower levels of stress. Therefore, it is suggested that a mindfulness-based training program be incorporated into the nursing curriculum to develop emotional skills and combat stress in students.

## Keywords:

Clinical practice, emotional intelligence, nursing student, perceived stress

## Introduction

Nursing is one of the most stressful and demanding fields in the world today.<sup>[1,2]</sup> From this perspective, students in the nursing education program also have higher levels of stress than their counterparts in other health disciplines.<sup>[1,3]</sup> An Indian study found that 82% of participating nursing students

reported moderate levels of stress.<sup>[4]</sup> In Saudi Arabia, a study found that 71% of medical students suffered from severe stress.<sup>[5]</sup> In Morocco, according to a study conducted at the Faculty of Medicine and Pharmacy in Rabat, Cohen's test showed a mean stress of  $24 \pm 7.18$ . This value was higher in female students  $25.73 \pm 6.7$  compared to male students  $20.41 \pm 6.9$  ( $p < 0.001$ ).<sup>[6]</sup>

The sources of stress that lead these students to be particularly stressed are academic

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and clinical related.<sup>[3]</sup> Indeed, Jimenez *et al.*<sup>[7]</sup> note that students perceive clinical stressors more intensely than academic and external stressors. This finding has been confirmed by numerous previous studies revealing that the demands of clinical training induce extreme levels of stress capable of negatively influencing academic and clinical performance as well as the psychological and physical health of students.<sup>[8-12]</sup>

The existing literature reports many stressors that students face in the clinical setting, including lack of technical skills, lack of familiarity with the clinical environment, and fear of making errors or causing harm to patients, especially early in their clerkship.<sup>[13]</sup>

Furthermore, complex and problematic interpersonal relationships with supervisors and nurses affect students' negative perception of the clinical experience.<sup>[14]</sup> In terms of assessments and exams, they are also perceived as quite stressful and scary by students. Indeed, in some cases, students finished their practicum without any validation of their skills. They usually learned on the last day of the internship about the grievances that the tutors or instructors were holding against them.<sup>[15,16]</sup>

These students also exhibit sources of stress identical to those of state-registered nurses, such as workload, confrontation with suffering and death, problems with the patient or family, conflict, and competition among pairs.<sup>[17, 18]</sup>

Dealing with death is perceived as difficult for most nursing students, and the encounter with family can be a frightening factor for two-thirds of them. A study by Magnavita and Heponiemi<sup>[19]</sup> found that 34% of students reported at least one episode of physical or verbal abuse in their lifetime in a clinical setting. Celebioglu *et al.*<sup>[20]</sup> found that half had experienced physical abuse and over 90% had experienced verbal abuse. Student status can also be a problem for patients or their families who do not want to deal with a student because of their lack of experience.<sup>[9,10]</sup> In addition, it would appear from student discourse that some clerkship settings are more stressful than others. Among them, emergencies and resuscitations due to the use of complex equipment or psychiatry due to the apprehension of the public are regularly mentioned. Indeed, the confrontation with death and the difficult pathologies of certain services can make the work more difficult and complex, especially for these novices in the profession.<sup>[17,19,21]</sup>

However, Parveen and Inayat<sup>[22]</sup> confirms that the clinical training of students meets a triple obligation: to bring students to acquire technical and scientific skills, to train them in relational skills, and then to guide them to increase their level of confidence in order to base their

practice on their intelligence and their clinical reasoning necessary in the situations encountered.

In the same sense, the professor, as trainer and designer, places the student in critical and dynamic learning situations that will make him/her recognize his/her own resources and make him/her more capable of developing the body of knowledge and skills necessary to intervene in specific care situations. Through this posture, the student becomes aware of his or her limits, perfects his or her own intervention procedures and improves his or her skills in similar or different care situations.<sup>[23]</sup>

In this logic, the perception of stressful situations revêt inter-individual differences.<sup>[24]</sup> In fact, people with high EI are able to manage all stress-related situations.<sup>[25-27]</sup> This assertion has been supported by various researches that indicate a significant association between stress and EI.<sup>[28,29]</sup> Indeed, a recent study in Sri Lanka confirmed a relationship between EI and feelings of stress, stating that it is a key contributor to the identification and management of stress levels, particularly among students and health professionals.<sup>[30]</sup>

Along these lines, other studies have emphasized the important role of EI in maintaining and developing satisfactory interpersonal relationships between students, patients, caregivers, and practicum instructors.<sup>[31,19,32]</sup> Similarly, the enhancement of intrapersonal skills also helps to improve the stressful work environment in which students must constantly collaborate and deal with complex situations.<sup>[33]</sup>

Thus, in the absence of studies examining the relationship between perceived stress and EI among undergraduate nursing students in Morocco, exploring this relationship and identifying the concept of EI as a tompion and manager of stressful situations among Moroccan nursing students is a necessity. In this sense, nursing education has become today, all over the world, a field sophisticated enough to face many positive and negative challenges.

The implementation of training and awareness programs related to the concepts of EI and perceived stress could improve the students skills and ability to prevent and control stressful situations, which would contribute to their adaptation and success in their academic and clinical curriculum. The results of this study will serve as both a reference and a foundation for advancing knowledge and clinical research in this area.

The purpose of this study was to examine the potential relationship between stress and EI and to determine their differences from sociodemographic characteristics in a sample of nursing students in Morocco. We hypothesized that EI would serve as a protective factor against stress,

such that higher levels of EI would be inversely related to lower levels of stress.

## Materials and Methods

### Study Design and Context

The present study is based on a descriptive correlational design among students enrolled in the undergraduate nursing program at the Higher Institute of Nursing Professions and Health Techniques of Tetouan, (HINPHT-T) Morocco.

### Study Participants and Sample

The study population included all HINPHT-T undergraduate nursing students during the 2019-2020 academic year. The sample included: Multipurpose Nursing students (MPNs), Family and Community Health Nursing students (FCHNs), and Mental Health Nursing students (MHNs). To recruit participants, we adopted a simple random sampling technique based on the Cochran formula. We chose times when students were attending a class session. Professors were informed and asked permission to interview students at the end of each session. A member of the research team explained to the students the purpose of the survey and assured them of confidentiality. Students who met the selection criteria and agreed to participate in the study were asked to complete two self-administered paper questionnaires and return them once completed. Each student was assigned a code using a preselected number. Inclusion criteria included being a student enrolled in the nursing program and being in their second or third year. First-year students were excluded from the study because they did not have clinical placements. A total of 146 students were included in our study.

### Data Collection Tool

An investigator-designed questionnaire was used to collect demographic information from the participants, including age, gender, level of education, specialty, and clinical Training setting.

#### *The Perceived Stress Scale in Clinical Practice (PSS-CP):*

In this study, the Arabic validation of PSS-CP<sup>[34]</sup> was used to measure the types of perceived stressful events and the degree of stressors that occurred during clinical practice on a 5-point Likert scale, with responses ranging from 0 (never) to 5 (very often). The total score ranges from 0 to 116. A higher score indicates a greater degree of stress. The scale consisted of 29 items grouped into two factors related to the sources of stress as follows: The first factor is composed of 14 items, assessing Interpersonal and workload stress and the second factor is composed of 15 items assessing Lack of nursing skills stress. A higher score indicates a higher level of stress. Based on the students' mean scores, their perceived stress levels

were classified as low (0-1.33), moderate (>1.33-2.66) and high (>2.66-4). Cronbach's alpha of .986 and 10-day test-retest reliability of .942 ( $P < .01$ ) demonstrated the reliability of this instrument, while the content validity index of .92 proved its validity. In addition, 76.948% of the total variance was explained by the two factors, which confirmed the construct validity of this instrument.

#### *Wong and Law Emotional Intelligence Scale (WLEIS):*

The Moroccan Arabic version of the WLEIS scale was used to assess the level of EI. This scale is considered a short instrument composed of 16 items, grouped into four factors (four items per factor): Self-Emotional Appraisal (SEA); Others' Emotional Appraisal (OEA); Use of Emotions (UOE); Regulation of Emotions (ROE). Responses to the WLEIS scale are presented as 04-point Likert-type questions, ranging from 1 (strongly disagree) to 4 (strongly agree). Total EI scores could range from 16 to 64, with the following groupings: low = 16-32, moderate = 32-48, and high = 48-64. The Moroccan Arabic version of the WLEIS showed good psychometric properties in the sample of students in Morocco.<sup>[35]</sup> In this study, the Cronbach's alpha value of the scale was found to be 0.96.

### Statistical Analysis

Descriptive statistics were used to analyze the data, such as number, percentage, mean and standard deviation. Pearson's correlation coefficient was applied to assess the correlation between stress and EI, and compare them according to socio-demographic characteristics. A linear regression analysis was calculated to analyze the effect of independent variables on perceived stress and EI. For the analysis, a level of 0.05 was chosen. Data were analyzed using SPSS-23.0 (Armonk, NY: IBM Corp.).

### Ethical Considerations

The study was approved by the research directorate of HINPHT-T. Consent was obtained from the participants and the purpose of the study was clearly explained. The principles outlined in the Declaration of Helsinki were followed throughout the study.

## Results

The mean age of the participants was  $20.02 \pm 1.12$  years; 74.6% were female and 72.6% were in the specialty of MHNs. Of the respondents, 62.3% were in their second year of study and 60.6% were doing their practicum in a hospital setting [Table 1].

According to the mean PSS-CP scores achieved by the participants, the highest mean value is attributed to the interpersonal and workload stressor ( $M = 2.50 \pm 1.02$ ), while the overall mean value of the scale is ( $M = 2.42 \pm 0.77$ ), which represents a moderate level.

For the four F factors of the EI scale, the highest average value is for the ROE factor ( $M = 4.60 \pm 1.07$ ). However, the overall mean of the scale is ( $M = 3.79 \pm 1.09$ ), which corresponds to a high level [Table 2].

Pearson correlation results indicate that the PSS-CP factors are positively correlated with the EI scale factors ( $r = 0.741, P = 0.05$ ) [Table 3].

The results also showed that the Interpersonal and workload stress were significantly and positively correlated with two socio-demographic characteristics, that is, education level and clinical practice setting ( $r = 0.681, P = 0.002; r = 0.711, P = 0.001$ ). The

**Table 1: Sociodemographic characteristics of the participants (n=146)**

Demographics	variable	n	(%)
Age (Mean±SD)=20.02±1.12			
Gender	Female	108	74.6%
	Male	38	25.4%
Specialty	MPNs	26	17.8%
	FCHNs	14	9.6%
	MHNs	106	72.6%
Education level	2nd year	91	62.3%
	3rd year	55	37.7%
Clinical practice setting	Health Center	58	39.4%
	Hospital	88	60.6%

Multi-Purpose Nursing student (MPNs), family and community health nursing students (FCHNs), mental health nursing students (MHNs)

**Table 2: Means and standard deviations (SD) of the PSS-CP and EIS factors (n=146)**

Scale/Test Factors	Mean	SD	Level
PSS-CP	Interpersonal and workload stress	2.50	1.02 Moderate
	Lack of nursing skills stress	2.34	0.53 Moderate
	Mean scores of PSS-CP	2.42	0.77 Moderate
EIS	Self-Emotional Appraisal	3.56	1.15 High
	Others' Emotional Appraisal	3.59	0.99 High
	Use of Emotions	3.41	1.17 High
	Regulation of Emotions	4.60	1.07 High
	Mean scores of EI	3.79	1.09 High

Perceived Stress Scale in Clinical Practice (PSS-CP), Emotional Intelligence Scale (EIS)

**Table 3: Correlation matrix between the observed factors of PSS-CP and IE (n=146)**

Variables	PSS-CP	IWS	LNSS	SEA	OEA	UOE	ROE
IWS	0.671*	1.00					
LNSS	0.765*	0.582*	1.00				
SEA	0.689*	0.644*	0.538*	1.00			
OEA	0.694*	0.665*	0.582*	0.679*	1.00		
UOE	0.611*	0.591*	0.614*	0.781*	0.811*	1.00	
ROE	0.788*	0.758*	0.739*	0.793*	0.764*	0.833*	1.00
EIS	0.741*	0.749*	0.669*	0.791*	0.746*	0.784*	0.739*

Note : \* $P < 0.05$ . Perceived Stress Scale in Clinical Practice (PSS-CP), Emotional Intelligence (EI), Self-Emotional Appraisal (SEA), Others' Emotional Appraisal (OEA), Use of Emotions (UOE), Regulation of Emotions (ROE). Interpersonal and workload stress (IWS), Lack of nursing skills stress (LNSS)

same finding was observed for the lack of nursing skills stress ( $r = 0.635, P = 0.002; r = 0.729, P = 0.001$ ) and overall stress ( $r = 0.658, P = 0.002; r = 0.795, P = 0.001$ ) [Table 4]. In contrast, no statistically significant differences were found at ( $P < 0.05$ ) in EI for the following variables: Age, gender, specialty, education level and clinical practice setting [Table 5].

In the linear regression analysis performed to assess the effect of age, gender, and specialty on the dependent variable Stress, it was shown that there was no significant regression with the PSS-CP score. However, it was determined that there was significant regression with EI score, education level, and clinical practice setting. Therefore, non-significant independent variables were removed from the model so that it could be adjusted with other independent variables [Table 6].

In the final linear regression of stress after removing the variables age, gender and specialty from the model due to lack of statistical significance, it was determined that EI, education level, and clinical practice setting can influence changes in stress levels and were significant effective factors in the final regression model [Table 7]. As shown in Table, the effect of EI on the stress score was 0.261. This means that with an increase in an EI score, there is a decrease of 0.261 in the stress score, just like the other independent variables. It is shown that when all other variables are constant or zero, the average Stress score is 13.899 [Table 7].

## Discussion

Results of this study show that the students mean perceived stress score was  $2.42 \pm 0.77$ , reflecting a moderate level of stress. The same findings were reported by Shahin's<sup>[36]</sup> study which found a mean perceived stress level of  $1.75 \pm 0.5$ , using the same scale. In contrast, in Australia, a study concluded that the mean level of perceived stress among medical students was significantly higher than the normative mean, particularly among pharmacy and dental students.<sup>[37]</sup>

In this research, the highest stressor was interpersonal stress and workload with a mean and standard deviation of  $2.50 \pm 1.02$ . This result is consistent with the findings of Shaban *et al.*<sup>[38]</sup> study that non-sympathetic relationships and lack of respect and support from some faculty and nurses, as well as workload, are the main stressor in clinical education. However, in a study of nursing students at a Saudi university, the highest perceived stressors was associated with lack of professional knowledge and skills.<sup>[39]</sup> Indeed, it seems that this difference in the levels and sources of stress experienced by nursing students probably stems from the particularities of each country's professional training

**Table 4: Results of Pearson correlation between sociodemographic characteristics and PSS-CP factors (n=146)**

Variables	PSS-CP factors				Overall Stress	
	Interpersonal and workload Stress		Lack of nursing skills Stress		R	P
	R	P	R	P		
Age	0.051	0.702	0.136	0.679	0.113	0.618
Gender	0.086	0.597	0.054	0.975	0.048	0.731
Specialty	0.062	0.642	0.049	0.842	0.071	0.583
Education level	0.681	0.002*	0.635	0.002*	0.658	0.002*
Clinical practice setting	0.711	0.001*	0.729	0.001*	0.795	0.001*

Note : \*P<0.05. Perceived Stress Scale in Clinical Practice (PSS-CP)

**Table 5: Results of Pearson correlation between sociodemographic characteristics and EI factors (n=146)**

Variables	EI factors								Overall EI	
	SEA		OEA		UOE		ROE		R	P
	R	P	R	P	R	P	R	P		
Age	0.043	0.027*	0.063	0.729	0.057	0.642	0.079	0.582	0.108	0.802
Gender	0.082	0.732	0.047	0.561	0.073	0.521	0.005	0.614	0.132	0.583
Specialty	0.065	0.360	0.016	0.324	0.049	0.172	0.021	0.328	0.081	0.106
Education level	0.093	0.407	0.023	0.153	0.038	0.327	0.062	0.760	0.148	0.079
Clinical practice setting	0.073	0.328	0.035	0.203	0.042	0.788	0.128	0.842	0.131	0.163

\*P<0.05. Emotional Intelligence (EI), Self-Emotional Appraisal (SEA), Others' Emotional Appraisal (OEA), Use of Emotions (UOE), Regulation of Emotions (ROE)

**Table 6: Linear regression of stress with independent variables (EI, Age, Gender, Specialty, Level of study and clinical practice setting) (n=146)**

Model	Unstandardized coefficients		Standardized coefficients (beta)	t	Sig.
	B	Standard error			
Constant value	12.031	9.496		1.278	0.216
EI	0.229	0.034	0.351	5.251	0.001
Age	0.252	0.373	-0.038	0.689	0.579
Gender	2.071	1.224	-0.089	1.289	0.084
Specialty	3.611	1.403	0.036	1.231	0.076
Education level	0.214	0.045	0.149	5.187	0.001
Clinical practice setting	0.131	0.041	0.185	5.113	0.001

Emotional Intelligence (EI)

systems, cultural diversity, differences in the sample and data collection tools used, but also differences in the way they are supervised and monitored clinically.

In assessing differences in stress, based on the students' sociodemographic characteristics, the present study found that students' educational level and clinical practice setting were significantly correlated with Interpersonal and workload stress ( $r = 0.658, P = 0.002$ ) and lack of nursing skills ( $r = 0.795, P = 0.001$ ). Indeed, Gardner and Emory<sup>[40]</sup> confirm that second and third-year students working in hospital wards are confronted with many stressors that constitute a real pressure and in particular the workload, relational tensions with patients and their families, daily confrontation with suffering and death, the obligation to develop skills and the complexity of mastering gestural techniques of care. This finding was

confirmed by another study by Voltmer *et al.*<sup>[41]</sup> With a population of dental students.

This fact is certainly related to the nature of clinical training, but also to the rigor and complexity of the nursing profession, which is based on the great responsibility of protecting the lives of people. Indeed, during the practicum, the student draws cognitive and technical skills through the various professional situations experienced that mobilize a body of sociological, psychological, cultural and other pharmacological, anatomical and pathophysiological knowledge.<sup>[10]</sup> Furthermore, the clinical setting requires some interaction between the student, the practicum supervisor, peers, health care personnel, but also with the patient and family. Therefore, this implies the need to know effective ways to communicate with others, to carry out the acts of care well in collaboration with one's team, to master the general functioning of the group, and finally to know how to solicit and ask for help.<sup>[22]</sup> On this basis, the various interactions during the process of constructing this clinical knowledge by the students give learning a socio-relational dimension that is enriching and beneficial for their training, but also stressful in its realization, especially if it takes place in an unfriendly and demotivating work environment.<sup>[23]</sup> From this perspective, the role of the professor is to guide the learner in the development of his skills and to make him capable of working under pressure and managing stressful or anxiety-provoking tasks. Therefore, he assumes a heavy responsibility in the students' journey and development towards a better professional qualification.

**Table 7: Final linear regression of stress after removing Age, Gender, and Specialty variables from the model due to lack of statistical significance (n=146)**

Model	Unstandardized coefficients		Standardized coefficients (beta)	t	Sig.
	B	Standard error			
Constant value	13.899	4.476		5.312	0.001
EI	0.261	0.033	0.369	6.681	0.001
Education level	1.707	0.284	0.254	5.912	0.001
Clinical practice setting	1.424	0.228	0.229	5.829	0.001

Dependent variable : total PSS-CP

Regarding the relationship between age, specialty, and perceived stress, the results of our study show no significant relationship. Yet, in Spain, a study of multipurpose nursing students showed that senior students had higher levels of perceived stress than younger students because of the life changing experiences.<sup>[42]</sup>

Our study also found that the mean EI score of the students was  $3.79 \pm 1.09$ , reflecting a high level of EI. These results are consistent with a comparative study conducted at an Indian university that found a high level of EI in most medical students.<sup>[43]</sup>

Although our study did not demonstrate a significant difference in the EI scores of students in relation to demographic characteristics as found in similar studies<sup>[44, 45]</sup>, it did show a positive correlation between all perceived stressors and EI factors. Indicating that students with higher EI levels experience less stress and inversely. For comparison, normative data from the study by Ranasinghe *et al.*<sup>[30]</sup> showed that Sri Lankan medical students with higher EI scores also had lower self-perceived stress. Similar to our results, Enns *et al.*<sup>[46]</sup> found that higher EI scores were associated with moderate perceived stress among American undergraduate and graduate students majoring in helping disciplines such as psychology, nursing, and social work. In addition, results from Albeshar and Alsaeed's study<sup>[47]</sup> revealed that individuals with a more developed EI are better able to cope with stressful situations than those with a low EI, by reducing their level of reaction (reduced emotional disturbance and physiological manifestations) and regaining balance more quickly. This finding is also supported by the results of Foster *et al.*'s study.<sup>[37]</sup> in Australia who found strong significant correlations between EI and perceived stressors in nursing and pharmacy students. From this perspective, the concept of EI is considered a moderator of stressful or traumatic events in a person's life. Therefore, the significant and positive relationship between stress and EI found in our results as well as in other research may provide a

possible avenue of research to determine the extent to which a mindfulness training program helps to reduce stress levels and develop emotional competency in nursing students.

### Limitations and Recommendation

Nursing students are more prone to stress than students in other disciplines. Therefore, an EI training program is of great importance to promote the development of emotional intelligence and to anticipate and overcome stressors.

It should be noted that the results of this study are usable and applicable to a limited extent, as the data collection was conducted in a single nursing training institute, which may limit the representativeness of all nursing students in Morocco. Indeed, cross-sectional descriptive studies could generate more variable results by including a random sample of students from different nursing training institutes. Similarly, future studies could be based on personal interviews or observational checklists, as studies based on self-administered questionnaires are likely to generate responses that are perceived as socially acceptable by respondents.

### Conclusion

In the study population, we determined a moderate level of stress and EI in the majority of 2<sup>nd</sup> and 3<sup>rd</sup> year nursing students. The correlation between stress and emotional intelligence was statistically significant. Indeed, students with higher emotional intelligence felt less stressed in their clinical practices and interpersonal relationships and workload were the greatest source of perceived stress for all students. Because of the importance of student mental health in nursing, the predictive role of emotional intelligence therefore deserves attention from all authorities.

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### Conflicts of interest

There are no conflicts of interest.

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