

Millenium, 2(Edição Especial Nº20)



**ASSOCIAÇÕES ENTRE STRESS PERCEBIDO, CARACTERÍSTICAS SOCIODEMOGRÁFICAS E BURNOUT RELACIONADO COM O PACIENTE EM ESTUDANTES DE ENFERMAGEM**

**ASSOCIATIONS BETWEEN PERCEIVED STRESS, SOCIODEMOGRAPHIC CHARACTERISTICS, AND PATIENT-RELATED BURNOUT AMONG NURSING STUDENTS**

**ASOCIACIONES ENTRE EL ESTRÉS PERCIBIDO, LAS CARACTERÍSTICAS SOCIODEMOGRÁFICAS Y EL BURNOUT RELACIONADO CON EL PACIENTE EN ESTUDIANTES DE ENFERMERÍA**

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RECEIVED: 12<sup>th</sup> April, 2025

REVIEWED: 26<sup>th</sup> August, 2025

ACCEPTED: 28<sup>th</sup> October, 2025

PUBLISHED: 20<sup>th</sup> November, 2025

DOI: <https://doi.org/10.29352/mill0220e.41300>

## RESUMO

**Introdução:** Na formação em enfermagem, onde os estudantes enfrentam exigências acadêmicas e clínicas intensivas, é essencial compreender os fatores que contribuem para o *burnout*, particularmente o *burnout* relacionado com o paciente, pois é uma dimensão-chave que afeta tanto o bem-estar dos estudantes quanto a qualidade dos cuidados com o paciente.

**Objetivo:** Descrever os efeitos do stress percebido e das características sociodemográficas sobre o *burnout* relacionado ao paciente entre estudantes de enfermagem.

**Métodos:** Estudo transversal com 91 estudantes do último ano de enfermagem no Instituto Superior de Profissões de Enfermagem e Técnicas de Saúde (HINPHT) da cidade de Taza, Marrocos. Os dados foram recolhidos através de um questionário sociodemográfico, a Escala de Stress Percebido (PSS-10) e o Inventário de Burnout de Copenhague (CBI). Uma análise de regressão linear múltipla foi realizada para examinar as associações entre o stress percebido, variáveis sociodemográficas e o *burnout* relacionado com o paciente.

**Resultados:** Os resultados indicam que o *burnout* relacionado com o paciente foi relatado em níveis baixos (52.7%), moderados (41.8%) e altos (5.5%). Entre os fatores sociodemográficos, o uso de tabaco foi a única variável significativamente associada ao *burnout* relacionado ao paciente, mostrando uma correlação negativa ( $B = -0.922$ , IC 95%:  $-1.610$  a  $-0.234$ ,  $p < 0.01$ ). O stress percebido não apresentou uma associação significativa ( $p = 0.775$ ).

**Conclusão:** Fumar pode proteger contra o *burnout* relacionado ao paciente entre estudantes de enfermagem, ao contrário do stress percebido ou de fatores sociodemográficos. No entanto, são necessárias mais pesquisas longitudinais para confirmar a causalidade e orientar intervenções para reduzir o *burnout* e melhorar o bem-estar entre estudantes de enfermagem.

**Palavras-chave:** stress percebido; características sociodemográficas; *burnout* relacionado ao paciente; estudantes de enfermagem

## ABSTRACT

**Introduction:** In nursing education, where students face intensive academic and clinical demands, it is essential to understand the factors contributing to burnout, particularly patient-related burnout, as it is a key dimension affecting both student well-being and the quality of patient care.

**Objective:** This study aimed to describe the effects of perceived stress and sociodemographic characteristics on patient-related burnout among nursing students.

**Methods:** A cross-sectional study was conducted with 91 final-year nursing students at the Higher Institute of Nursing Professions and Health Techniques (HINPHT) of Taza city, Morocco. Data were collected using a sociodemographic questionnaire, the Perceived Stress Scale (PSS-10), and the Copenhagen Burnout Inventory (CBI). Multiple linear regression analysis was performed to examine the associations between perceived stress, sociodemographic variables, and patient-related burnout.

**Results:** Findings indicate that patient-related burnout was reported at low (52.7%), moderate (41.8%), and high levels (5.5%). Among sociodemographic factors, tobacco use was the only variable significantly associated with patient-related burnout, showing a negative correlation ( $B = -0.922$ , 95% CI:  $-1.610$  to  $-0.234$ ,  $p < 0.01$ ). Perceived stress did not exhibit a significant association ( $p = 0.775$ ).

**Conclusion:** Smoking may protect against patient-related burnout among nursing students, unlike perceived stress or sociodemographic factors. However, further longitudinal research is needed to confirm causality and guide interventions to reduce burnout and enhance well-being among nursing students.

**Keywords:** perceived stress; sociodemographic characteristics; patient-related burnout; nursing students

## RESUMEN

**Introducción:** En la educación en enfermería, donde los estudiantes enfrentan demandas académicas y clínicas intensivas, es esencial comprender los factores que contribuyen al burnout, particularmente al burnout relacionado con el paciente, ya que es una dimensión clave que afecta tanto el bienestar de los estudiantes como la calidad de la atención al paciente.

**Objetivo:** Este estudio tuvo como objetivo describir los efectos del estrés percibido y las características sociodemográficas sobre el burnout relacionado con el paciente entre estudiantes de enfermería.

**Métodos:** Se realizó un estudio transversal con 91 estudiantes de último año de enfermería en el Instituto Superior de Profesiones de Enfermería y Técnicas de Salud (HINPHT) de la ciudad de Taza, Marruecos. Los datos se recopilaron mediante un cuestionario sociodemográfico, la Escala de Estrés Percibido (PSS-10) y el Inventario de Burnout de Copenhague (CBI). Se realizó un análisis de regresión lineal múltiple para examinar las asociaciones entre el estrés percibido, variables sociodemográficas y el burnout relacionado con el paciente.

**Resultados:** Los hallazgos indican que el burnout relacionado con el paciente se reportó en niveles bajos (52.7%), moderados (41.8%) y altos (5.5%). Entre los factores sociodemográficos, el uso de tabaco fue la única variable significativamente asociada con el burnout relacionado con el paciente, mostrando una correlación negativa ( $B = -0.922$ , IC 95%:  $-1.610$  a  $-0.234$ ,  $p < 0.01$ ). El estrés percibido no mostró una asociación significativa ( $p = 0.775$ ).

**Conclusión:** Fumar puede proteger contra el burnout relacionado con el paciente entre los estudiantes de enfermería, a diferencia del estrés percibido u otros factores sociodemográficos. Sin embargo, son necesarias más investigaciones longitudinales para confirmar la causalidad y guiar intervenciones para reducir el burnout y mejorar el bienestar entre los estudiantes de enfermería.

**Palabras clave:** estrés percibido; características sociodemográficas; burnout relacionado con el paciente; estudiantes de enfermeira

DOI: <https://doi.org/10.29352/mill0220e.41300>

## INTRODUCTION

Burnout is most often recognized as a psychological syndrome manifested by emotional exhaustion, depersonalization and diminished personal accomplishment, and can occur in those who work with others, regardless of the nature of that work (Maslach & Jackson, 1981). It is also a result of prolonged exposure to occupational stress that has not been adequately managed (World Health Organization, 2019).

In addition to the professional environment, burnout can occur in a variety of non-professional contexts and populations, including among groups such as students, (Faye-Dumanget et al., 2018), in which case it is referred to instead as academic burnout, which refers to a negative emotional, physical and mental reaction to prolonged study, resulting in fatigue, frustration, and reduced motivation and ability to study (University of the People, 2019), in other words, academic burnout results from the conjunction of emotional exhaustion, cynicism and academic inefficiency, stemming from persistent difficulty in effectively managing the stress associated with learning (Schaufeli et al., 2002).

Academic burnout is increasingly encountered, particularly in demanding fields such as health science studies, especially nursing. Indeed, and due to their status as clinical trainees working with patients during clinical placements, nursing students are exposed to mental health risk factors similar to those faced by healthcare professionals (Reverté-Villarroya et al., 2021). However, as university students, they are also subject to specific stress and burnout factors linked to their academic career, such as excessive workload, exams, assessments, and fear of failure (Labrague et al., 2018). From this perspective, our study aims to specifically explore the relationship between patient-related burnout among nursing students during their clinical placements, perceived stress, and selected sociodemographic characteristics. This focused analysis will help identify factors associated with this form of burnout and inform the development of targeted prevention strategies.

## 1. LITERATURE REVIEW

Early research addressing the issue of academic burnout revealed that this syndrome is more prevalent in certain academic fields, particularly medicine and other healthcare-related disciplines (Shankland et al., 2019).

In this context, several studies conducted in different countries on the mental health of nursing students have highlighted that training in this field puts students at high risk of stress and academic burnout, (Ghods et al., 2022; Thiel et al., 2023; Arian et al., 2023).

Although research on occupational burnout has meticulously examined a variety of factors associated with this phenomenon, such as socio-demographic characteristics, working conditions, professional attitudes, social context, as well as personality traits, including stress (Schaufeli & Buunk, 1996). Thus, all these factors need to be considered comprehensively to better understand academic burnout among nursing students (Bresseur et al., 2020). However, inconsistencies in the prevalence and effective factors of academic burnout among nursing students have been reported in the literature (Arian et al., 2023).

Specifically, regarding burnout related to clinical clerkships among nursing students, research has identified associated risk factors or predictors, as well as the main stressors associated with working with patients. These include exposure to emotionally challenging clinical situations, feelings of helplessness and uncertainty, conflicts with patients, lack of practical skills, time pressure and assessments, as well as anxiety related to early clerkships (Lee, Park, & Choi, 2017; Valero-Chillerón et al., 2019).

In Morocco, the Higher Institutes of Nursing Professions and Health Techniques (HINPHT), as non-university higher education establishments specializing in nursing and health techniques training, represent a particularly stressful educational environment, marked by the intensity of their professionalizing training. This setting requires students to meet rigorous academic and clinical demands, exposing them to the risk of burnout both academically and during clinical clerkships.

This observation has led us to further explore burnout syndrome within this training context, focusing specifically on analyzing the impact of perceived stress and sociodemographic characteristics on patient-related burnout experienced by nursing students during clinical placements at the HINPHT.

## 2. METHODS

A descriptive cross-sectional study with a correlational design was used to investigate the influence of perceived stress and sociodemographic characteristics on levels of patient-related burnout among nursing students from two specialties (polyvalent nurse students, family and community health nurse students) in their final year (3rd year), at The Higher Institute of Nursing Professions and Health Techniques (HINPHT) of Taza City, Morocco.

### 2.1 Sample

A total of 91 students enrolled in the sixth semester (third year) of the nursing program at HINPHT in Taza participated in the survey. This group included 56 polyvalent nurse students and 35 family and community health nurse students. Participants were selected using voluntary sampling (Murairwa, 2015), and met pre-established criteria, such as providing consent to participate and being present during the survey period. Students enrolled in other semesters were excluded from our study.

DOI: <https://doi.org/10.29352/mill0220e.41300>

## 2.2 Data collection instruments

The study was carried out between April and May 2023. Data collection was conducted using three measurement instruments distributed online via Google Forms, namely:

- 1) A self-administered questionnaire with combined questions covering the socio-demographic characteristics of nursing students, which were divided into three categories:
  - Personal characteristics (gender, age, marital status, place of residence).
  - Academic characteristics (specialty, type of enrollment, previous education, motivation and conviction in the choice of nursing path, adequacy of study funding, paid work outside of studies).
  - Lifestyle characteristics (living arrangements, commute time, mode of transportation, medical history, surgical history, current illness, tobacco use, marijuana use, dietary habits, exercise practice, supplements or vitamins use, self-medication).
- 2) The validated French version of the 10-item Perceived Stress Scale (Dupret & Boc er an, 2013), originally developed by Cohen and Williamson (1988), has been used to measure perceived stress among nursing students. This scale assesses perceived stress through 10 items rated on a five-point Likert scale (0 to 4). The total score, ranging from 0 to 40, is calculated by summing all item scores, with reverse scoring for positive items (4, 5, 7, and 8) (Cohen et al., 1994). The interpretation of scores is as follows (Dawson et al., 2014):
  - Low stress level: Scores from 0 to 13
  - Moderate stress level: Scores from 14 to 26
  - High stress level: Scores from 27 to 40
- 3) To measure patient-related burnout among participants, we have used the patient-related burnout dimension of the validated French version of the Copenhagen Burnout Inventory (CBI) developed by Doppia et al. (2011). This version is more appropriate for healthcare professionals, including nursing students (Estryn-B ehar et al., 2011). The dimension is composed of 6 items and is assessed using a 5-point Likert scale, with responses ranging from 1 ("never/almost never") to 5 ("always"). The scores for the items in this dimension are averaged and the interpretation of the results is as follows (Doppia et al., 2011):
  - Low patient-related burnout level: Scores from 1 to 2.4
  - Moderate patient-related burnout level: Scores from 2.5 to 3.5
  - High patient-related burnout level: Scores from 3.6 to 5

## 2.3 Statistical analysis

The data processing and analysis process was carried out using Microsoft Excel software (version 2016) as well as the Statistical Package for the Social Sciences (SPSS, version 27). The characteristics of the sample were represented using frequencies and descriptive statistics. Furthermore, a reliability analysis was conducted to assess the internal consistency of the instruments used in this study (Cronbach, 1951). The results showed that Cronbach's alpha for the 10 items of the PSS-10 scale was 0.783, and that for the 6 items of the patient-related burnout dimension of the CBI was 0.837, indicating good reliability of the instruments used.

For the correlational analysis, we examined the impact of perceived stress and sociodemographic characteristics on patient-related burnout among nursing students at HINPHT using a multiple linear regression model (Schober & Vetter, 2021). The dependent variable was patient-related burnout, measured by the corresponding dimension of the CBI, while the independent variables included perceived stress, measured by the PSS-10, as well as various sociodemographic characteristics (personal characteristics, academic characteristics, and lifestyle characteristics), collected from the questionnaire administered to the students. The results of the regression models were reported using the regression coefficients, with a 95% confidence interval (CI 95%) and a significance threshold of p-value < 0.05.

Ethical approval for this study was obtained from the administration of the HINPHT of Taza. All collected information was kept confidential and used solely for scientific purposes. Informed consent was obtained from the students, and their participation was entirely voluntary.

## 3. RESULTS

The sample in our study consisted of 91 nursing students. The analysis of sociodemographic characteristics revealed that most participants were female (72.5%), compared to males (27.5%). The majority of respondents were aged 20 to 22 years (76.9%), with an average age of (21.53 ± 1.07). Most students were single (97.8%) and resided in urban areas (81.3%). Regarding living arrangements, 63.7% lived alone, and 64.8% did not engage in paid work outside their studies.

In terms of study funding, 58.2% of students reported insufficient financial resources for their education. Despite this, 54.9% expressed strong conviction about their choice to pursue a nursing career. Concerning health-related behaviors, the majority of students did not use tobacco (92.3%), marijuana (94.5%), or engage in regular exercise (64.8%). Furthermore, 82.4% of students reported that they did not practice self-medication. These sociodemographic characteristics are summarized in Table 1.

DOI: <https://doi.org/10.29352/mill0220e.41300>**Table 1** - Sociodemographic characteristics of nursing students

Variables		N=91	(%)
Gender	female	66	72.5
	male	25	27.5
Age	18 to 20 years	1	1.1
	20 to 22 years	70	76.9
	Over 22 years	20	22
Specialty	FCHNS	35	38.5
	PNS	56	61.5
Marital Status	single	89	97.8
	married	2	2.2
	divorced	0	0.0
	widowed	0	0.0
Place of Residence	urban	74	81.3
	suburban	16	17.6
	rural	1	1.1
Living Arrangements	alone	58	63.7
	with parents	28	30.8
	others	1	1.1
Commute Time	less than 15 minutes	1	1.1
	15 to 30 minutes	32	35.2
	more than 30 minutes	58	63.7
Mode of Transportation	on foot	50	54.9
	individual vehicle	1	1.1
	public transport	40	44.0
Type of Enrollment	newly enrolled	86	94.5
	deferred or repeating	5	5.5
Previous Education	Yes	2	2.2
	no	89	97.8
Motivation and conviction in the choice of nursing path	convinced	50	54.9
	not convinced	41	45.1
Adequacy of Study Funding	sufficient	38	41.8
	insufficient	53	58.2
Paid Work Outside of Studies	yes	3	3.3
	no	88	96.7
Medical History	yes	14	15.4
	no	77	84.6
Surgical History	yes	7	7.7
	no	84	92.3
Current Illness	yes	16	17.6
	no	75	82.4
Tobacco Use	yes	7	7.7
	no	84	92.3
Marijuana Use	yes	5	5.5
	no	86	94.5
Dietary Habits	yes	19	20.9
	no	72	79.1
Exercise Practice	yes	32	35.2
	no	59	64.8
Supplements or Vitamins use	yes	19	20.9
	no	72	79.1
Self-Medication	yes	16	17.6
	no	75	82.4

Note: PNS = Polyvalent Nurse Students; FCHNS = Family and Community Health Nurse Students

Besides, Table 2 shows the distribution of prevalence rates for perceived stress and patient-related burnout among the surveyed nursing students. Regarding perceived stress, the prevalence of the moderate level is (78.0%), while the low and high levels are (12.1%) and (9.9%), respectively. For patient-related burnout, (52.7%) of the respondents exhibit a low prevalence, (41.8%) a moderate level, and (5.5%) a high level.

DOI: <https://doi.org/10.29352/mill0220e.41300>**Table 2** - Prevalence of perceived stress and patient-related burnout

Category	Perceived stress (PSS-10)		Related patient burnout (CBI)	
	N	(%)	N	(%)
Low	11	12.1%	48	52.7
Moderate	71	78.0%	38	41.8
High	9	9.9%	5	5.5
Total	91	100.0%	91	100.0

Note: PSS-10 = 10-item Perceived Stress Scale; CBI = Copenhagen Burnout Inventory

As demonstrated in Table 3 below, the multiple linear regression analysis was conducted to assess the impact of perceived stress and sociodemographic characteristics on patient-related burnout (CBI) among nursing students. The results revealed that tobacco use was the only variable significantly associated with patient-related burnout, showing a strong negative correlation ( $B = -0.922$ , 95% CI:  $-1.610$  to  $-0.234$ ,  $p < 0.01$ ). This suggests that tobacco use is linked to a reduction in patient-related burnout levels. However, perceived stress (PSS-10) did not demonstrate a significant association with patient-related burnout ( $p = 0.775$ ,  $B = 0.004$ , 95% CI:  $-0.026$  to  $0.035$ ). Other personal, academic, or lifestyle characteristics also failed to show statistically significant associations with patient-related burnout (all  $p > 0.05$ ). Overall, the findings highlight smoking as a key factor influencing patient-related burnout in our regression model.

**Table 3** - Multiple linear regression model assessing the impact of perceived stress and sociodemographic characteristics on patient-related burnout (CBI); N=91

Variables	P-value	B (Coefficient)	95% Confidence Interval
Gender	0.800	-0.056	-0.496 – 0.384
Specialty	0.243	-0.236	-0.637 – 0.164
Age	0.529	0.052	-0.111 – 0.215
Marital Status	0.657	-0.258	-1.410 – 0.894
Place of Residence	0.254	0.236	-0.173 – 0.645
Living Arrangements	0.705	0.067	-0.284 – 0.418
Commute Time	0.136	-0.279	-0.648 – 0.090
Mode of Transportation	0.889	-0.011	-0.176 – 0.153
Type of Enrollment	0.306	-0.403	-1.184 – 0.377
Previous Education	0.374	0.931	-1.147 – 3.010
Motivation and conviction in the choice of nursing path	0.105	0.279	-0.060 – 0.618
Adequacy of Study Funding	0.553	-0.107	-0.467 – 0.252
Paid Work Outside of Studies	0.675	-0.328	-1.884 – 1.227
Medical History	0.185	0.325	-0.160 – 0.810
Surgical History	0.730	0.119	-0.567 – 0.805
Current Illness	0.661	0.119	-0.418 – 0.656
Tobacco Use	<b>0.009**</b>	<b>-0.922</b>	<b>-1.610 – -0.234</b>
Marijuana Use	0.240	-0.504	-1.354 – 0.345
Dietary Habits	0.353	0.240	-0.272 – 0.751
Exercise Practice	0.307	-0.223	-0.655 – 0.209
Supplements or Vitamins use	0.165	-0.358	-0.867 – 0.151
Self-Medication	0.361	-0.255	-0.810 – 0.299
Perceived Stress (PSS-10)	0.775	0.004	-0.026 – 0.035

Note: PSS-10 = 10-item Perceived Stress Scale; CBI = Copenhagen Burnout Inventory; Dependent Variable: Patient-Related Burnout (CBI); \*\* = Significant at p-value &lt; 0.01

#### 4. DISCUSSION

Our findings reveal that (78.0%) of students reported moderate levels of perceived stress, while (12.1%) reported low levels and (9.9%) reported high levels. These results are consistent with a literature review conducted Chaabane et al. (2021), which found that the prevalence of perceived stress among nursing students varies significantly, with some studies reporting up to (99.2%) of students experiencing severe stress. In our study, the majority of students reported moderate levels of perceived stress, reflecting a significant presence of stress in their academic and clinical training environment.

Concerning the results of patient-related burnout in our sample, it is pertinent to note that low levels of burnout predominate, with (52.7%) of respondents showing a low prevalence, which contrasts with the results of the study by Mahmoud et al. (2023), where 92% of nursing students had low levels of academic burnout. In contrast, other research confirms an upward trend in scores for moderate to severe levels of academic burnout among nursing students (Galdino et al., 2020; Ghods et al., 2022; Arian et al., 2023). Furthermore, a study conducted by Marôco et al. (2020) on a group of 4061 university students from various countries and

DOI: <https://doi.org/10.29352/mill0220e.41300>

regions revealed that maintaining a low level of academic burnout could effectively contribute to preventing student dropout while promoting student engagement.

As for the main objective of our study, which was to explore how perceived stress and sociodemographic factors influence patient-related burnout among nursing students, multiple linear regression analysis revealed that smoking was the only variable significantly associated with burnout levels. These findings align with the results of a study by Faye-Dumanget et al. (2018), which examined the effect of socio-demographic variables on burnout levels among students from various university disciplines and did not establish a significant association between burnout levels and the different socio-demographic variables analyzed.

In our study, the identified association between the dimension of patient-related burnout and smoking was negative ( $B = -0.922$ ,  $p < 0.01$ ), suggesting that smoking may act as a protective factor against the development of patient-related burnout among nursing students. In the same way, several studies suggest that smoking may act as a coping mechanism for stress and burnout and indicate that smoking during adolescence could predict the later onset of anxiety disorders and emotional distress (Johnson et al., 2000; Orlando et al., 2001).

However, more recently, a study conducted at the University of Kragujevac in Serbia (Ilic & Ilic, 2022) using the Maslach Burnout Inventory Student Survey (MBI-SS) found that smoking was significantly associated with higher cynicism and increased academic inefficacy among medical students. However, no significant link was observed between smoking and emotional exhaustion. These findings differ from those of a separate study on stress and burnout risk factors among 356 medical students in Saudi Arabia, which also used the same instrument (MBI-SS). In this study smoking was associated with exhaustion, but no significant association was found between smoking and cynicism or academic efficacy (Shadid et al., 2020). Moreover, while the study conducted by Xia et al. (2020) obtained results similar to ours regarding the predominance of low burnout levels (92%), they reported a positive association between smoking and burnout among mental health professionals in China. Their analysis showed that smokers had an increased risk of developing burnout (OR = 1.45, 95% CI: 1.27–1.67,  $p < 0.001$ ), possibly due to tobacco being used as an ineffective coping mechanism for managing burnout. Similarly, Liu et al. (2023) reported higher burnout rates among smoking university students compared to non-smokers.

Let us now examine the effect of perceived stress on academic burnout levels. Our results indicate that perceived stress, as measured by the PSS-10, did not demonstrate a significant association with patient-related burnout ( $B = 0.004$ ,  $p = 0.775$ ). This suggests that, contrary to expectations, perceived stress did not have a notable impact on patient-related burnout levels among nursing students in our study. In contrast, the study by Lin et al. (2014), which involved 2,640 students from five Taiwanese universities, found that stress related to personal identity, relationships, prospects, and academic demands significantly contributed to students' academic burnout. Also, a subsequent investigation by Guruprakash et al. (2018) indicated that perceived stress among medical postgraduate students is positively correlated with general psychopathology as well as depression-anxiety syndrome, considered as a dimension of burnout. Paralleling this, the study conducted by Ma et al. (2022) revealed that high levels of stress, coupled with a passive coping style, were significant predictors of emotional exhaustion among Chinese nursing students, and these factors were also associated with the intention to drop out of nursing studies before graduation among Chinese nursing students. More recently, the study by Ghardallou et al. (2023) involving 703 medical students in Tunisia, showed that perceived stress was positively associated with academic burnout.

That being said, it is interesting to note that other studies, such as the one by Smith et al. (2006), have explored whether stress and burnout are distinct concepts. Using data from 148 participants, their findings support the notion that stress and burnout should be examined as separate concepts.

## CONCLUSION

This study contributes to the growing literature on academic burnout among nursing students, focusing particularly on patient-related burnout, a key dimension of this syndrome. Although our results indicate that perceived stress did not have a significant influence on patient-related burnout, tobacco use emerged as a variable negatively associated with burnout levels. This observation suggests that some students may resort to maladaptive coping strategies, such as smoking, to cope with the emotional burden of clinical placement demands. However, this behavioral response cannot be considered a protective mechanism, given its adverse effects on physical and mental health.

These results highlight the complex and multifactorial nature of academic burnout, which cannot be explained solely by perceived stress or sociodemographic characteristics. Rather, this phenomenon appears to stem from an interaction between individual factors, coping strategies, academic workload, and the emotional demands of clinical training.

Nursing training institutes should therefore strengthen prevention and psychological support measures by incorporating programs for stress management, personal development and resilience building. Longitudinal and multicenter studies are needed to further our understanding of the factors that contribute to academic burnout. Taking these factors into account would help to protect the mental health of nursing students and promote a more balanced and sustainable learning environment.

DOI: <https://doi.org/10.29352/mill0220e.41300>

## ACKNOWLEDGEMENTS

The authors wish to thank the Higher Institute of Nursing Professions and Health Techniques administration, as well as the nursing students who actively participated in our study.

## AUTHORS' CONTRIBUTION

Conceptualization, M.S. and A.A.; data curation, M.S. and Y.E.M.; formal analysis, M.S., A.A. and H.D.; investigation, M.S. and A.A.; methodology, M.S. and A.A.; resources, M.S., A.A., Y.E.M. and H.D.; software, M.S., Y.E.M. and H.D.; supervision, M.S., A.A. and Y.E.M.; validation, M.S. and A.A.; visualization, M.S. and Y.E.M.; writing – original draft, M.S. and Y.E.M.; writing – review & editing, M.S., A.A., Y.E.M. and H.D.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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