

Psychosomatic manifestations, coping, and adaptation in nursing students: an observational study

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Abstract

Objective: To analyse the relationship between the risk of psychosomatic manifestations associated with stressful life events and coping adaptive capacity in nursing students in southern Colombia.

Methods: Analytical cross-sectional study with 172 students. The Life Events Scale, the Callista Roy Coping and Adaptation Scale, and a sociodemographic questionnaire were administered via Google Forms®. The analysis included Chi-square, Mann-Whitney U, Pearson correlation, and multiple linear regression tests.

Results: 35.5% showed intermediate risk and 8.7% high risk of psychosomatic manifestations. Besides, 69.8% showed high coping/adaptive capacity, with no significant differences by gender. Religious practice was significantly associated with greater coping (76.5% vs. 39.2%; $p = 0.026$). The “physical and focused” dimension of coping correlated negatively with psychosomatic risk ($r = -0.272$; $p < 0.001$). Regression identified religion as a protective factor against psychosomatic manifestations ($\beta = -0.184$; $p = 0.023$).

Conclusion: Although low psychosomatic risk and high resilience predominated, the need to strengthen coping strategies was evident, particularly social support, the least reported. Religious practice emerged as a modulating variable, suggesting its integration into student welfare programs.

Descriptors: Mental Health; Stress, Psychological; Adaptation, Psychological; Life Change Events; Students, Nursing (source: DECS, BIREME).

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Manifestaciones psicosomáticas, afrontamiento y adaptación en estudiantes de enfermería: estudio observacional

Resumen

Objetivo: analizar la relación entre el riesgo de manifestaciones psicosomáticas asociadas a acontecimientos vitales estresantes y la capacidad de afrontamiento/ adaptación en estudiantes de enfermería del sur de Colombia.

Método: estudio transversal analítico con 172 estudiantes. Se aplicó la Escala de Eventos Vitales, la Escala de Afrontamiento y Adaptación de Callista Roy y un cuestionario sociodemográfico mediante Google Forms®. El análisis incluyó pruebas de chi-cuadrado, U de Mann-Whitney, correlación de Pearson y regresión lineal múltiple.

Resultados: el 35,5 % presentó riesgo intermedio y el 8,7 % presentó riesgo alto de manifestaciones psicosomáticas. El 69,8 % mostró una alta capacidad de afrontamiento/ adaptación, sin diferencias significativas por género. La práctica religiosa se asoció significativamente con un mayor afrontamiento (76,5 % vs. 39,2%; $p = 0,026$). La dimensión “física y centrada” del afrontamiento se correlacionó negativamente con el riesgo psicosomático ($r = -0,272$; $p < 0,001$). La regresión identificó la religión como factor protector frente a las manifestaciones psicosomáticas ($\beta = -0,184$; $p = 0,023$).

Conclusión: aunque predominaron un bajo riesgo psicosomático y una alta resiliencia, se evidenció la necesidad de fortalecer las estrategias de afrontamiento, en particular el apoyo social, el menos reportado. La práctica religiosa emergió como variable moduladora, lo que sugiere su integración en programas de bienestar estudiantil.

Descriptores: Salud Mental; Estrés Psicológico; Adaptación Psicológica; Acontecimientos que Cambian la Vida; Estudiantes de Enfermería (fuente: DeCS, BIREME).

Manifestações psicosomáticas, enfrentamento e adaptação em estudantes de enfermagem: estudo observacional

Resumo

Objetivo: Analisar a relação entre o risco de manifestações psicosomáticas associadas a eventos de vida estressantes e a capacidade de coping/adaptação em estudantes de enfermagem do sul da Colômbia.

Método: Estudo analítico transversal com 172 estudantes. Foram aplicados a Escala de Eventos de Vida, a Escala de Coping e Adaptação de Callista Roy e um questionário sociodemográfico utilizando o Google Forms®. A análise incluiu testes de qui-quadrado, U de Mann-Whitney, correlação de Pearson e regressão linear múltipla.

Resultados: 35,5 % apresentaram risco intermediário e 8,7 % alto risco de manifestações psicosomáticas. 69,8 % apresentaram elevada capacidade de coping/adap-

tativa, sem diferenças significativas por género. A prática religiosa foi significativamente associada a uma maior capacidade de coping (76,5 % vs. 39,2 %; $p = 0,026$). A dimensão “física e focalizada” do coping correlacionou-se negativamente com o risco psicossomático ($r = -0,272$; $p < 0,001$). A regressão identificou a religião como um fator de proteção contra manifestações psicossomáticas ($\beta = -0,184$; $p = 0,023$).

Conclusão: Embora tenha havido predominância de baixo risco psicossomático e alta resiliência, ficou evidente a necessidade de fortalecer as estratégias de enfrentamento, especialmente o apoio social, o menos relatado. A prática religiosa surgiu como uma variável moduladora, sugerindo sua integração aos programas de assistência estudantil.

Descritores: Saúde Mental; Estresse Psicológico; Adaptação Psicológica; Acontecimentos que Mudam a Vida; Estudantes de Enfermagem (fonte: DECS, BIREME).

Introduction

Globally, the study of mental health has experienced a remarkable boom due to the increase in mental disorders in the general population (1). During the SARS-cov-2 pandemic, many people faced situations that affected their physical and psycho-emotional health (2), with a high prevalence of depressive, post-traumatic symptoms, anxiety, and stress (2). These symptoms were associated with prolonged periods of confinement and traumatic events experienced during that time. These experiences led to an increase in psychosomatic manifestations, which are now considered a global public health problem (3).

Overall, it is estimated that one in four people suffer from stress, suggesting that at least 50 % of human beings develop health problems related to this factor (4). Young people, as a population at risk, are susceptible to developing psychosomatic symptoms at an early age due to the multiple stressful life events they experience in different environments, including family, academic, and social settings (5).

Stressful life events (SLES) are psychological, family, and/or socio-economic phenomena that abruptly cause psychological distress or social maladjustment, resulting from inadequate coping responses that lead to feelings of failure and frustration (6). Among the main SLES experienced by young people are those related to bereavements, family conflicts, illness, financial problems, personal achievements, and violence, leading to outcomes such as anxiety and depression (6).

University students, especially those in the health sciences, experience stressful events associated with their academic workload, which demands new study methods, changes in sleep and eating habits, an increased pace of work, high levels of pressure and competitiveness, as well as an excess of unclear assignments and uncomfortable classrooms (7). These circumstances can generate varying degrees of anxiety and psychological stress in the university environment, accompanied by physiological, behavioural, cognitive, emotional, and affective manifestations (8, 9). Furthermore, the transition to virtual education during the pandemic added new dimensions to these challenges (10).

Evidence shows that there are two main sources of stress for nursing students: academic and clinical stressors, with the latter being perceived by students as the most intense (11). Analytical studies have identified that students are frequently exposed to these stressors during their training, which

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has a considerable impact on their physical and mental health. As a result, some students develop positive strategies to manage stress, while others adopt maladaptive coping mechanisms (12).

Coping mechanisms are essential when dealing with accompanying stressors. Lazarus and Folkman (13) classified these mechanisms into two types: problem-focused and emotion-focused. In this regard, it should be noted that problem-solving is the most common coping strategy among nursing students, whereas avoidance behaviours are the least used (14). Problem-focused mechanisms have been shown to be beneficial for students' learning, clinical performance, and well-being, while emotion-focused mechanisms can have negative effects on their health (15).

It is recognised that stress, in moderate amounts, can be positive, as it increases motivation and enthusiasm. However, uncontrolled stress or the inability to cope with chronic stress can seriously affect a person's health and well-being (16). Chronic stress can negatively affect learning, decision-making, and thinking, and even academic performance among university students. In some cases, stress becomes one of the reasons for dropping out of school. In addition, inefficient mechanisms for managing stress lead students to experience negative emotions, sadness, anxiety, worry, anger, low self-esteem, guilt, depression, loneliness, apathy, and insomnia (17).

In this context, the objective of this study was to analyse the relationship between the risk of psychosomatic manifestations associated with stressful life events and the coping and adaptation capacities of nursing students at a university in southern Colombia. To this end, the following hypothesis is proposed: There is a significant relationship between the level of stressful life events and the coping and adaptation capacity of nursing students.

Methods

This research, with a cross-sectional, observational, analytical design, was conducted with nursing students at a university in the city of Neiva, Huila.

Participants

A review was conducted of students enrolled in the nursing programme during the first semester of 2022. Study participants were selected using non-probability sampling, comprising a sample of 246 students enrolled in the first to ninth semesters of the nursing programme. Of these, 172 voluntarily participated after being informed of the research proposal and project objectives.

The inclusion criteria were: 1. Being enrolled in a public higher education institution (HEI) in the first semester of 2022; 2. Being enrolled in the first to ninth semesters of the nursing programme. The exclusion criteria were: 1. Suffering from the side effects of psychiatric medication; 2. Having taken academic assessments on the day the instruments were administered.

Instruments

The information collection questionnaire was created in Google Forms® and included variables on sociodemographic characteristics (gender, marital status, origin, children, religious practice, cohabitation, age, semesters completed).

Holmes and Rahe's Spanish-language version of the Stressful Life Events Scale lists 43 life events and/or events that generate uncertainty that have occurred in the last year, grouped into five categories: student, personal, family, social, and work, and includes a YES/NO response option. Each event has been assigned a score based on how stressful it is for the person experiencing it, with the probability of presenting psychosomatic manifestations increasing if the final score exceeds 150. In the process of validating the instrument, consistency indices were calculated using test-retest procedures, yielding 0.65 and 0.74 for halves; 80% reliability; and a principal component analysis with five orthogonal factors, confirming the five categories (18).

The Coping and Adaptation Process Scale (CAPS), based on Callista Roy's theoretical model, identifies a person's capacity and strategies for controlling a situation and promoting adaptation. This ordinal measurement instrument consists of 47 items, grouped into five strategies referred to as factors (recursive and focused, physical and focused reactions, alerting process, systematic processing, knowing and relating), with a Likert-type format of four response criteria (never, rarely, almost always, always), explaining a minimum value of 47 and a maximum of 188 for each of the factors and the total scale. It operationalises low coping and adaptation process capacity as a score of 47–117, and high capacity as a score of 118–188.

This scale was validated in a study conducted in Chía and Bogotá with 417 participants. Its reliability was determined through internal consistency analysis, obtaining a Cronbach's alpha coefficient of 0.88. Stability was verified using Spearman's correlation coefficient ($r = 0.94$) for the entire instrument and an analysis of variance (ANOVA) with a non-significant probability value ($P = NS$), which supports the face validity and reliability of the scale (19).

Procedure

Once the study objectives were read and the informed consent form signed, participants were sent a link via WhatsApp to the questionnaire created in Google Forms®, which included the study variables. This form did not request students' email addresses or identification details, nor did it collect any secondary data upon completion, thereby guaranteeing students' anonymity. The researchers accompanied each participant and remained present until each participant completed the questionnaire.

Students who obtained probable results of psychosomatic manifestations due to the level of psychological stress they faced in the last year, with low coping and adaptation skills, were guaranteed a consultation with a psychologist from the research group and the university's wellness services. Similarly, experiential workshops were offered to students and parents or guardians, focusing on topics such as self-awareness, self-confidence, self-esteem, anger management, and assertive communication.

Statistical Analysis

A cross-sectional analytical study was conducted (20,21). Categorical variables were described using absolute and relative frequencies. In addition, sociodemographic variables were compared across coping skills (high vs. low) using the Chi-square test. Ratio variables were summarised using the median and interquartile range and were compared using the Mann-Whitney U test.

A correlation analysis was performed using Pearson's coefficient to examine the relationship between the risk of psychosomatic manifestations, as measured by the quantity and score of the SLES, and coping and adaptation capacity. In addition, a multiple linear regression model was estimated using the total score from the coping and adaptation process measurement scale. An alpha level of 0.05 was adopted for all tests, and statistical analyses were performed using JASP®.

Ethical Aspects

The study was approved by the Central Committee for Research Ethics and Bioethics of the Universidad Surcolombiana through memorandum 1-2-7-VIPS-080, dated 15 March 2022. All participants provided their written informed consent, and the researchers ensured that participants could withdraw at any time without repercussions. Similarly, the data collected from participants were recorded anonymously, preventing individual identification in the results.

Results

A total of 172 students participated in the research. There were no losses, as all instruments were completed. Data collection took place between April and July 2022. From a demographic point of view, the sample was characterised by a majority of women (67.4 %); 95.9 % of the students were single, 86 % came from urban areas, 66.9 % lived with their family or partner, only 4.6 % had children, and 22.1 % reported being employed (Table 1).

The sociodemographic characteristics of the participants were analysed according to their coping and adaptation abilities (see Table 1), and it was found that a higher proportion of men had high coping skills than women, although this difference was not statistically significant. Age (median 20 years, IR 3) and the number of semesters passed during the degree programme (median 5 semesters, IR 5.2) were similar in the groups with low and high coping skills (Table 1).

When comparing these sociodemographic factors, there were no differences between participants in the low- and high-coping skill groups. Only religion showed significant differences: 76.5 % of students who reported being affiliated with a religion had high coping skills, while 39.2 % who did not practise any religion had low coping skills ($p = .026$) (Table 1).

Regarding the results of the stressful life events scale, 55.8 % of students had a low risk of psychosomatic manifestations, indicating that more than half of the participants did not have significant problems related to SLES. However, 35.5 % presented an intermediate risk and 8.7 % a high risk. In addition, the SLES instrument enabled measurement of the risk of crisis due to psychosomatic manifestations, showing that approximately one-third (28.5 %) of respondents had a moderate or severe risk (Table 2).

On the other hand, 69.8 % of students reported high coping and adaptation skills. With regard to the factors that measured coping and adaptation skills, the first factor, called centred and recursive, had the highest proportion of students with high skills (78.5 %), while the factors called systematic processing and knowing and relating had the highest number of students with low skills (76.2 % and 67.4 %, respectively) (Table 2).

Table 3 describes the relationship between the risk of psychosomatic manifestations and coping and adaptation capacity in nursing students. There is a low negative correlation between total

coping ability and the risk of psychosomatic manifestations, as reflected in the total score and the number of SLES experienced ($r = -0.224$, $p = 0.003$; $r = -0.222$, $p = 0.003$), respectively. With regard to the scales of the coping skills instrument, the physical and focused dimensions ($r = -0.272$, $p < 0.001$) and the alertness process ($r = -0.160$, $p < 0.036$) are statistically significant.

Table 1. Sociodemographic Characteristics Classified by Coping Skills among Nursing Students

Factors	Coping Skills				Statistic χ^2	p-Value
	High (n)	%	Low (n)	%		
Gender						
Male	44	78.6	12	21.4	3.051	0.081
Female	76	65.5	40	34.5		
Marital status						
Single	116	70.3	49	29.7	0.551	0.458
Common-law marriage	3	42.9	4	57.1		
Origin						
Urban	104	70.3	44	29.7	0.127	0.721
Rural	16	66.7	8	33.3		
Children						
Yes	6	75.0	2	25.0	0.109	0.741
No	114	69.5	50	30.5		
Religious practice						
Yes	75	76.5	23	23.5	4.940	0.026
No	45	60.8	29	39.2		
Cohabitation						
Alone/PWAB	42	73.7	15	26.3	0.620	0.431
Family/Couple	78	67.8	37	32.2		
Current job						
Yes	27	75.0	9	25.0	0.591	0.442
No	93	68.4	43	31.6		
Age	20 ^a	3 ^b	20 ^a	1 ^b	3339.5	0.460
Passed Semesters	5.0 ^a	5.2 ^b	5.0 ^a	5.0 ^b	3374.5	0.392

Note: PWAB: person without affective bonding. Chi-square test (χ^2): the statistic for comparing nominal factors.

Source: authors.

Table 2. Risk of Psychosomatic Manifestations and Coping and Adaptive Capacity in the Study Population

Risk of Psychosomatic Manifestation	Frequency (n)	Percentage (%)
High risk 80%	15	8.7
Low risk 30%	96	55.8
Intermediate risk 50%	61	35.6
Crisis risk		
Minor crisis	27	15.7
Moderate crisis	34	19.8
Severe crisis	15	8.7
There are no major problems	96	55.8
Coping and adaptive capacity		
Low	52	30.2
High	120	69.8
Recursive and focused		
Low	37	21.5
High	135	78.5
Physical and focused reactions		
Low	68	39.5
High	104	60.5
Alert process		
Low	70	40.7
High	102	59.3
Systematic processing		
Low	131	76.2
High	41	23.9
Knowing and relating		
Low	116	67.4
High	56	32.6

Source: authors.

Table 3. Correlations between the Risk of Psychosomatic Manifestations and Coping and Adaptation Capacity

Coping and Adaptation	Total SLES		Quantity of SLES		Age		Academic Semester		
	r	p	r	p	r	p	p	p	p
Focused and recursive	-0.049	0.524	-0.052	0.497	-0.024	0.754	0.034	0.655	
Physical and focused reactions	-0.272	<0.001	-0.255	<0.001	0.010	0.893	-0.072	0.348	
Alert process	-0.160	0.036	-0.155	0.042	-0.053	0.493	-0.022	0.778	
Systematic processing	-0.144	0.060	-0.142	0.064	0.032	0.681	-0.002	0.981	
Knowing and relating	-0.090	0.241	-0.085	0.266	-0.038	0.618	-0.073	0.339	
Total	-0.224	0.003	-0.222	0.003	-0.004	0.957	-0.045	0.560	

Note: The statistic used for correlation was Pearson's (r), except for academic semester, which was calculated using Spearman's coefficient (p). Value (p) = Statistical significance.

Source: authors.

The total score on the coping and adaptation scale (Table 4) was included in the model as a response variable, and the score of SLES, the number of SLES reported, age, gender, academic semester, marital status, place of origin, having children, currently working, and belonging to a religion were used as independent variables in the multiple linear regression analysis. Table 4 indicates that the SLES score is a negative predictor of coping and adaptation capacity ($\beta = -0.216$, $p = 0.004$); while gender ($\beta = 8.100$, $p = 0.007$) and belonging to a religion ($\beta = 5.906$, $p = 0.037$) are positive, being the only significant predictors for coping and adaptation abilities in undergraduate nursing students.

Table 4. Multiple Linear Regression Analysis of Factors Influencing Coping and Adaptation Capacities

Independent Variable	β	Standard Error	β^a	t	p
(Intercept)	127.418	3.023		42.145	< .001
SLES Score	-0.036	0.012	-0.216	-2.957	0.004
Sex	8.100	2.967		2.730	0.007
Religious practice	5.906	2.810		2.101	0.037
R^2	0.136				
Adjusted R^2	0.153				
F-value	$F = 6.397$. $p < 0.01$				

Note: β : unstandardised coefficient; β^a : standardised coefficient; Standard Error: standard error of the coefficient; t: Student's t-test value; p: significance level; R^2 : coefficient of determination; Adjusted R^2 : adjusted coefficient of determination; F-value: F statistic of the model.

A p-value is statistically significant when it is less than 0.05. 95% CI for each calculated coefficient. The assumptions of normality, homoscedasticity, and multicollinearity (VIF < 5) were verified.

Source: authors.

Discussion

The results obtained allowed for an analysis of the relationship between the risk of psychosomatic manifestations associated with stressful life events and the coping and adaptation capacities of nursing students at a university in southern Colombia. The study highlights the importance of various factors in nursing students' coping ability. The sample consisted of 172 students, mostly women and single, from urban areas and predominantly living with their families or partners.

The strong association observed between religious practice and higher coping ability highlights the role of spirituality as a psychosocial buffer. This aligns with evidence showing that faith-based frameworks can support meaning-making, emotional regulation, and resilience, especially in high-demand academic contexts (12,22). Rather than functioning merely as a personal belief system, religion appears to offer a structured set of strategies that students mobilise to manage stress more effectively.

The distribution of psychosomatic risk among participants suggests that, although a substantial proportion experience moderate to severe vulnerability, most maintain high levels of coping capacity. This coexistence of stress exposure and resilience underscores the dynamic nature of adaptation processes. Consistent with Leodoro (23), who emphasises problem-solving and optimism as key coping components, our results indicate that students tend to rely on active strategies when facing adversity. However, persistent psychosomatic symptoms signal that coping resources may be insufficient or unevenly developed in some areas.

The contrast between strengths in the "focused and recursive" dimension and weaknesses in "systematic processing" and "knowing and relating" suggests that students excel at immediate problem-solving but struggle with organising coping efforts and integrating past experiences into current decision-making. This pattern echoes previous findings indicating that nursing students often privilege problem-focused strategies—associated with better psychological outcomes and lower stress levels (24,25) yet may face challenges in reflective or meaning-oriented coping. Such gaps are relevant, as deficits in strategic planning or contextual interpretation can limit the effectiveness of otherwise adaptive responses (26).

The correlation between coping ability and the risk of psychosomatic manifestations showed that the "physical and focused" dimension had a negative and significant relationship with the total number of stressful life events reported, indicating that greater use of physical and practical strategies was associated with a lower perceived impact of stressful events. Similarly, the "alert process" dimension showed a negative correlation with the risk of psychosomatic manifestations, albeit with lower values, suggesting that students who can identify and anticipate stressful situations are better able to mitigate their impact.

Linear regression analysis shows a significant inverse relationship between stressful life events and coping and adaptation capacity, suggesting that the greater the number of stressful events, the lower the coping capacity. However, being male and belonging to a religion were significant positive predictors, reinforcing the idea that gender and religious practice influence the way students cope with stress.

When analysing the relationship between sociodemographic characteristics and coping ability, men showed a higher proportion of coping skills than women; however, this difference was not statistically significant. This finding suggests that women tend to use more prosocial coping strategies,

such as seeking social support and maintaining positive internal dialogue, compared to men, who are more likely to use antisocial and aggressive strategies (27).

However, both genders benefit from active coping strategies, which are associated with lower emotional stress (28,29). These findings suggest that, in addition to individual coping strategies, it is essential to consider the impact of cultural and social context on the development of resilience mechanisms (30,31).

It is important to note that stressful events do not always lead to negative consequences. The concept of positive stress refers to stress that, rather than causing distress or discomfort, drives personal growth and motivation. In this sense, academic and personal challenges can be seen as opportunities for learning and developing new skills, provided students have appropriate coping strategies. Studies have shown that when people perceive stress as a challenge rather than a threat, their performance and emotional well-being improve considerably.

Finally, the results of this study provide valuable evidence on the relationship between stressful life events and coping skills among nursing students, which can guide psychoeducational intervention strategies and resilience-building programmes in academic settings. Its relevance lies in the possibility of incorporating these findings into institutional policies on student wellbeing and mental health. Future research could delve deeper into longitudinal monitoring of coping with stress, as well as explore specific interventions that enhance underdeveloped coping dimensions and their impact on academic performance and professional practice.

Limitations of the Study

The main methodological limitations include the cross-sectional design, which prevents establishing causal relationships between variables, and the use of a self-administered questionnaire. In addition, the study was conducted at a single institution, limiting the generalisability of the findings. Similarly, voluntary participation could imply selection bias, as students with greater interest or availability may have been overrepresented. Finally, coping was measured at a single point in time, without longitudinal follow-up to assess its evolution.

Conclusion

The findings show that the greater the risk of psychosomatic manifestations resulting from stressful life events, the lower the capacity for coping and adaptation, highlighting the modulating role of religious practice and gender. These results provide a better understanding of the factors that promote resilience in nursing students. They also highlight the importance of strengthening certain dimensions of coping, especially those related to structuring thought and integrating prior experiences for problem-solving. Promoting strategies that transform stress into an opportunity for growth is essential to improving students' resilience and well-being, thereby facilitating their adaptation to both academic and personal challenges.

In terms of its contribution to nursing, the study highlights the relationship between psychosomatic manifestations and students' coping and adaptation abilities, reaffirming the relevance of Callista Roy's Adaptation Model. The results highlight religious practice and social support as protective

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factors, guiding wellness and self-care actions for nursing students. This strengthens training in resilience and promotes mental health in the academic setting.

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Conflict of interest

The authors declare that they have no conflict of interest.

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