

Influence of self-efficiency beliefs on the health and well-being of university students in COVID-19

Influência das crenças de autoeficácia na saúde e bem-estar de estudantes universitários na COVID-19

Influencia de las creencias de autoeficiencia en la salud y el bienestar de los estudiantes universitarios en COVID-19

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ABSTRACT

Objective: To analyze general self-efficacy beliefs in university students during the COVID-19 pandemic and their correlation with psychological well-being and anxiety and depressive symptoms.

Method: Cross-sectional study, carried out with nursing, medicine and psychology students from a higher education institution in the state of São Paulo, Brazil. The sample consisted of 329 students and data collection took place through a questionnaire and scales, from August to December 2020. Mann-Whitney test and Spearman's correlation coefficient were used for analysis of the variables.

Results: Participants' self-efficacy was median (34.3±7.5). Higher self-efficacy scores were correlated with better psychological well-being ($p<0.001$; $r=-0.582$) and absence of anxiety ($p<0.001$) and depressive ($p<0.001$) symptoms.

Conclusion: High self-efficacy beliefs were associated with better mental health outcomes. Strengthening self-efficacy in universities can help improve students' health behaviors and prevent mental illness.

Descriptors: Self-efficacy. Anxiety. Depression. Mental health. Students, health occupations. COVID-19.

RESUMO

Objetivo: Analisar as crenças de autoeficácia geral em universitários, durante a pandemia da covid-19 e sua correlação com bem-estar psicológico e sintomas ansiosos e depressivos.

Método: Estudo transversal, desenvolvido com estudantes de enfermagem, medicina e psicologia de instituição de ensino superior do estado de São Paulo, Brasil. A amostra foi de 329 estudantes e a coleta de dados ocorreu por meio de questionário e escalas, de agosto a dezembro de 2020. Utilizaram-se o teste Mann-Whitney e coeficiente de correlação de Spearman para análise das variáveis.

Resultados: A autoeficácia dos participantes foi mediana (34,3±7,5). Maiores escores de autoeficácia foram correlacionados a melhor estado de bem-estar psicológico ($p<0,001$; $r=-0,582$) e ausência de sintomas ansiosos ($p<0,001$) e depressivos ($p<0,001$).

Conclusão: Crenças elevadas de autoeficácia foram associadas a melhores desfechos em saúde mental. O fortalecimento da autoeficácia nas universidades pode ajudar a melhorar os comportamentos de saúde dos estudantes e prevenir doenças mentais.

Descritores: Autoeficácia. Ansiedade. Depressão. Saúde mental. Estudantes de ciências da saúde. COVID-19.

RESUMEN

Objetivo: Analizar las creencias generales de autoeficacia en estudiantes universitarios durante la pandemia de COVID-19 y su correlación con el bienestar psicológico y la sintomatología ansiosa y depresiva.

Método: Estudio transversal, realizado con estudiantes de enfermería, medicina y psicología de una institución de enseñanza superior del estado de São Paulo, Brasil. La muestra estuvo conformada por 329 estudiantes y la recolección de datos se realizó a través de cuestionario y escalas, de agosto a diciembre de 2020. Para el análisis de las variables se utilizó la prueba de Mann-Whitney y el coeficiente de correlación de Spearman.

Resultados: La autoeficacia de los participantes fue mediana (34,3±7,5). Las puntuaciones más altas de autoeficacia se correlacionaron con un mejor bienestar psicológico ($p<0,001$; $r=-0,582$) y ausencia de síntomas de ansiedad ($p<0,001$) y depresivos ($p<0,001$).

Conclusión: Las creencias de alta autoeficacia se asociaron con mejores resultados de salud mental. Fortalecer la autoeficacia en las universidades puede ayudar a mejorar los comportamientos de salud de los estudiantes y prevenir enfermedades mentales.

Descriptor: Autoeficacia. Ansiedad. Depresión. Salud mental. Estudiantes del área de la salud. COVID-19.

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INTRODUCTION

The COVID-19 pandemic had a negative impact on the mental health of the global population, especially on health workers and students, due to the risks of illness, death and uncertainties regarding professional training and performance^(1,2). Studies revealed that insecurity and fear generated by the high rate of deaths and the long period of social distancing contributed to the increase in anxiety and depressive disorders in the world population^(2,3).

An adaptation was necessary in the academic environment to ensure the continuity of the training process during the period of social distancing. Thus, emergency remote teaching was adopted, which was provided in an improvised manner, with pedagogical and technological resources adapted and planned in an incipient manner⁽⁴⁾. This type of teaching generated fear throughout the academic community, in addition to having an impact on the quality of the teaching offered and weakening human relationships, causing insecurity and emotional destabilization^(5,6).

This phase of adaptation and reconstruction of educational identity imposed challenges on health students, who are already considered psychologically vulnerable^(4,7). Several factors contribute to this vulnerability, such as a demanding academic and clinical curriculum, situations of disruption with the primary family structure and other consolidated support networks, as well as the need to deal with financial, social and emotional responsibilities⁽⁵⁻⁸⁾.

During the pandemic, the challenges of remote teaching associated with social distancing and concerns about personal and family health and well-being increased the occurrence of anxiety and depressive disorders among university students^(2,9). In this period, the approach to the positive aspects of mental health, which generate resources for effectively coping with stressful situations, were little explored⁽⁵⁾. Therefore, it is necessary to identify and encourage conditions that contribute to the emotional well-being of university students and support actions to promote the health of future professionals, especially after the resumption of in-person activities and in future socio-sanitary crises.

One of the positive pillars of mental health is general and perceived self-efficacy, defined in the literature as an individual's beliefs in their personal capabilities to perform tasks successfully⁽¹⁰⁾. These beliefs can decisively influence individuals' choices related to daily, academic, professional and personal actions, in addition to providing a feeling of confidence in overcoming challenges⁽¹¹⁾.

Students who have this enhanced emotional resource tend to be more likely to confront challenges and mobilize resources to overcome them. On the other hand, those

with low general self-efficacy are more likely to feel afraid of performing their tasks and overcoming adversities, believing that they do not have the necessary resources to carry them out and, therefore, they avoid and postpone their accomplishment⁽¹¹⁾.

Having strengthened self-efficacy can help students face challenging situations, such as the one experienced during the period of socio-sanitary restrictions imposed by the COVID-19 pandemic, in addition to preparing them for other possible public health emergency situations. Knowing the behavior of general self-efficacy in the university population and its relationship with psychological well-being and symptoms of anxiety and depression can support researchers and teachers in the construction of psycho-educational programs capable of optimizing the academic and professional potential of students⁽⁹⁾.

In view of the above, this study aimed to analyze general self-efficacy beliefs in higher education students during the COVID-19 pandemic and their correlation with psychological well-being and symptoms of anxiety and depression. Our hypothesis establishes that students with positive general self-efficacy beliefs have better mental health, expressed by the absence of anxiety and depression and better psychological well-being.

METHOD

This study was developed in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines, specific to observational studies⁽¹²⁾.

Cross-sectional, analytical and correlational study, developed in a public Higher Education Institution (IES) in the inland of the state of São Paulo, Brazil. This institution was chosen because it is a reference in the training of health professionals and is linked to one of the largest teaching hospitals in Latin America. This hospital treats serious cases of COVID-19 from 102 municipalities in the northwest region of São Paulo, covering a population of around 1,570,421 inhabitants.

During the pandemic, an adaptation to the new scenario was necessary. Thus, instead of the traditional face-to-face teaching model, emergency remote teaching was implemented in the IES, through the Google Classroom platform. Initially, professors and students were trained to use this platform, so that they could provide minimum conditions for the development first-rate educational activities. The emergency remote teaching period began in March 2020 and ended in March 2022, with the resumption of in-person activities.

The population of this study consisted of all students enrolled in medicine, nursing and psychology courses

in 2020, totaling 727 students (481 from the medicine course, 190 from the nursing course and 56 from the psychology course).

The sample was estimated at 258 participants, considering the calculation for simple random sampling, followed by correction for small populations and a standard error of 5%. For its composition, the following eligibility criteria were used: be 18 years of age or older (six students excluded), be enrolled in one of the three courses offered by the IES and not be taking sick leave (23 students excluded). Students who were absent from the synchronous classes in which the research was presented and in which an invitation to participate was made were excluded ($n=37$). Three hundred and thirty-two students did not express interest in participating in the research. The sample consisted of 329 students.

Four instruments were used in data collection: a questionnaire elaborated by the researchers, consisting of personal, social and academic variables, lifestyle habits and questions about the presence of stress and suicidal behavior, in addition to the perception of the impact of the pandemic on their lives; the General and Perceived Self-Efficacy Scale; the General Health Questionnaire (QSG-12); and the Hospital Anxiety and Depression Scale (HADS).

The General and Perceived Self-Efficacy Scale⁽¹³⁾ is made up of 10 items, with answers ranging from one (totally disagree) to five (totally agree). Each item measures the beliefs that the individual has about their capabilities to achieve a goal, deal with a situation or perform a task. The result is obtained by adding the values of the items, with a higher score indicating a better perception of self-efficacy, in a range of 10 to 50⁽¹³⁾. For the purposes of classifying the level of self-efficacy, the following values were adopted: 10 to 22 points – low self-efficacy, 23 to 37 points – median self-efficacy, 38 to 50 points – high self-efficacy. This scale was validated for several countries and showed good internal consistency and suitability for use in Brazil (Cronbach's alpha of 0.81)⁽¹³⁾. The present study showed a reliability index for this Cronbach's alpha scale of 0.91.

The QSG-12 is made up of 12 items that assess the extent to which the person has experienced symptoms of psychological discomfort (tension, stress, overload, reported unhappiness, lack of self-confidence, feelings of worthlessness, impaired sleep and psychosomatic disorders), with four possible responses. In items that deny mental health, the response alternatives range from one (absolutely not) to four (much more than usual). For positive items, responses range from one (more than usual) to four (much less than usual). The result was measured in a one-dimensional way, in which the lowest score indicated a better level of well-being, in a range of 12 to 48 points^(14,15). Psychological well-being was categorized as high (12 to 23 points), median (24 to 36

points) or low (37 to 48 points). In Brazil, the QGS-12 has demonstrated evidence of validity and precision, in addition to good internal consistency, with Cronbach's alpha above 0.80⁽¹⁵⁾. In this study, Cronbach's alpha was 0.91.

The HADS⁽¹⁶⁾ measures symptoms suggestive of anxiety and depression, based on the last week experienced by the individual. It was designed for use in a hospital clinical environment, but has since been applied in other settings, especially in healthy people and higher education students⁽¹⁷⁾. This scale is widely used in the literature because it is objective and easy to understand. It has 14 interspersed anxiety and depression questions and has good sensitivity (70.8% to 80.6%) and specificity (69.6% to 90.9%), when compared to the Beck Anxiety Scale and the Depression Scale Beck, both considered the gold standard⁽¹⁶⁾. In this study, Cronbach's alpha values for anxiety and depression were, respectively, 0.84 and 0.80. Each HADS item includes four possible responses, ranging from zero to three and totaling a maximum value of 21 points for each subscale. Students with scores ≥ 9 on each subscale are considered to be suffering from anxiety and/or depression⁽¹⁶⁾.

Data were collected from August to December 2020, using the Google Forms platform, and all students were invited to participate in the study. This invitation was made by the researchers during synchronous classes held on the teaching platform. Then, a link containing the TCLE and the instruments were sent to the students' emails, provided by the educational institution, and on the WhatsApp of the classes, provided by the class representatives.

After accepting the informed consent form, the student began to respond to the forms, in the following order: participant characterization, general and perceived self-efficacy scale, QSG-12 and HADS.

To increase the number of participants, the invitation was reiterated four times, once a month (September, October, November and December 2020), through a video created by the authors and disseminated via email and in the classes' WhatsApp groups. This video introduced the researchers, informed the title, objectives and instruments used in the study, and explained the ethical aspects related to preserving confidentiality and voluntary participation.

The data obtained was processed and analyzed using the Minitab 17 program (Minitab Inc.). To check the normality of the data, the Anderson-Darling test was applied. The characterization variables were analyzed descriptively, using absolute and relative frequencies, position measurements (mean and median) and dispersion (variance and standard deviation). General and perceived self-efficacy scores, psychological well-being and symptoms of anxiety and depression were analyzed according to the guidelines of the respective instruments.

Mann-Whitney test was applied to compare self-efficacy scores with the presence/absence of anxious and depressive symptoms with the level of psychological well-being. Spearman's correlation test was also used to analyze the correlation between perceived general self-efficacy, anxiety and depression, and psychological well-being. The correlation was considered weak for values of $r < 0.399$, moderate if $r \geq 0.400$ and ≤ 0.699 , and strong if $r \geq 0.70^{(18)}$. The significance level adopted for all analyzes was 5% ($p \leq 0.05$).

To verify the study's sampling power, an a posteriori calculation was performed using the OpenEpi tool, considering a 95% confidence interval and data on sample size, mean and standard deviation of general and perceived self-efficacy scores and general health questionnaire according to the occurrence of anxiety and depression symptoms (Table 3). The calculation was based on the normal distribution approximation method for difference in means. The result showed that the study had a sampling power of 100% for all variables assessed, indicating that the sample was sufficient to detect significant differences between the groups.

The study was approved by the institution's Research Ethics Committee under Certificate of Presentation for Ethical Appreciation (CAAE) No 31420620.8.0000.5415 and Protocol No 4095190, on 06/18/2020. All participants signed the TCLE online. The study complied with the terms of Resolution 466/2012 of the National Health Council.

RESULTS

A total of 329 students participated in the study, 137 (41.6%) from the medical course (response rate = 28.4%), 138 (42%) from the nursing course (response rate = 72.6%) and 54 (16.4%) from the psychology course (response rate=96.4%). There was a predominance of females (78.4%), white skin color (83.6%), single/without a partner (70.5%), living with their family (52.6%), with sufficient financial resources to their support at college (88.5%) and without performing paid work (86.6%).

Most students stated that they had a harmonious family relationship, had feelings of satisfaction with graduation, were overwhelmed by course activities and had symptoms of stress. Regarding lifestyle habits, most of them reported carrying out weekly leisure activities and physical exercises, not frequently using alcohol, not smoking, not using illegal drugs and not undergoing psychiatric treatment. A considerable portion of the sample reported having suicidal thoughts and symptoms of anxiety and depression. Most students stated that the pandemic had harmed their mental health (Table 1).

The students had median general and perceived self-efficacy and psychological well-being, as shown in Table 2.

Students without symptoms of anxiety and depression had higher general and perceived self-efficacy scores and better psychological well-being (Table 3).

Table 1 – Percentage referring to the sample characterization variables of the students evaluated in the study (N=329). São José do Rio Preto, São Paulo, Brazil, 2020

Sample characterization variables	N	%
Satisfaction with the course		
No	24	7.3
Yes	305	92.7
Burden of graduation		
No	62	18.8
Yes	267	81.2
Frequent stress		
No	65	19.8
Yes	264	80.2
Family relationship		
Conflictive	55	16.7
Harmonious	274	83.3

Table 1 – Cont.

Sample characterization variables	N	%
Weekly physical exercises		
No	107	32.5
Yes, 1 to 2 times	64	19.5
Yes, 3 to 4 times	95	28.8
Yes, 5 to 7 times	63	19.2
Weekly leisure practice		
No	73	22.2
Yes	256	77.8
Frequent alcohol use		
No	265	80.5
Yes	64	19.5
Smoking		
No	308	93.6
Yes	21	6.4
Use of illegal drugs		
No	308	93.6
Yes	21	6.4
Suicidal ideation		
No	217	66.0
Yes, during graduation	55	16.7
Yes, before graduation	57	17.3
Psychiatric monitoring		
No	210	63.8
Yes	119	36.2
Has the pandemic harmed your mental health?		
No	47	14.3
Yes	282	85.7
Symptoms of anxiety		
No	142	43.2
Yes	187	56.8
Symptoms of depression		
No	227	69.0
Yes	102	31.0

Source: Database, 2020.

The results showed a moderate and negative correlation between psychological well-being and self-efficacy ($r = -0.582$; $p < 0.001$), demonstrating that a better perception of

self-efficacy (high values on the scale) is correlated with a high level of well-being (low values on the scale), as shown in Figure 1.

Table 2 – Descriptive statistics of students' general and perceived self-efficacy and psychological well-being (QSG-12). São José do Rio Preto, São Paulo, Brazil, 2020

Variables	n	Descriptive statistics			
		Mean±SD ¹	Md ²	Minimum	Maximum
General and perceived self-efficacy	329	34.3±7.4	35.0	13.0	50.0
Psychological well-being (QSG-12)	329	28.8±7.2	28.0	12.0	48.0

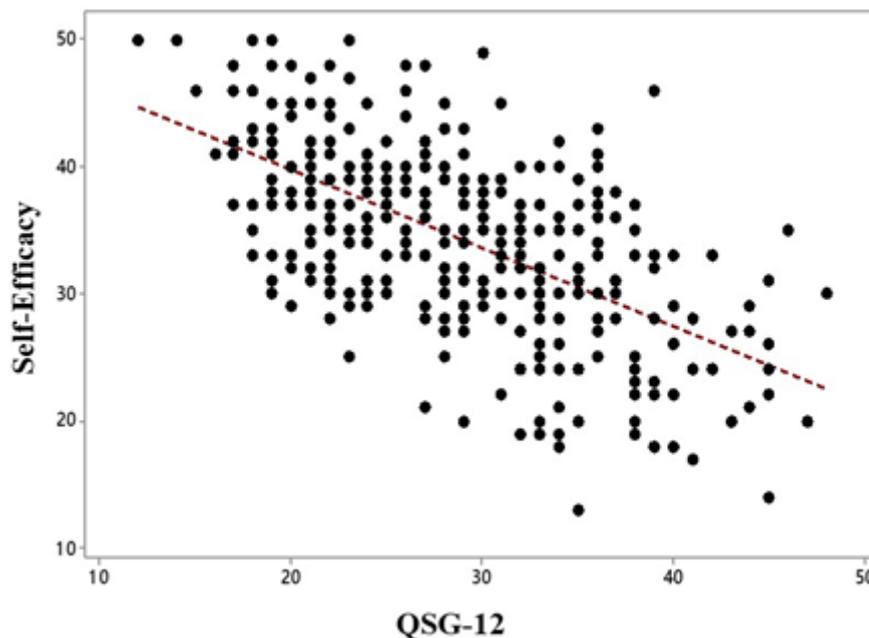
Source: Research data, 2020. Standard deviation. ²Median.

Table 3 – Descriptive statistics of general and perceived self-efficacy scores and psychological well-being (QSG-12), according to the occurrence of anxiety and depression symptoms. São José do Rio Preto, São Paulo, Brazil, 2020

Symptoms of anxiety and depression		Self-efficacy			P ¹ value	Psychological			P ¹ value
		n	Mean±SD	Md		n	Mean±SD	Md	
Anxiety	Yes	142	37.9±6.1	38.0	<0.001	142	23.6±4.9	23.0	<0.001
	Yes	187	31.5±7.2	32.0		187	32.7±6.0	33.0	
Depression	No	227	36.8±6.5	37.0	<0.001	227	25.8±5.7	25.0	<0.001
	Yes	102	28.7±6.4	29.0		102	35.4±5.3	35.0	

Source: Database, 2020. ¹Mann-Whitney test at $p < 0.05$.

Figure 1 – Analysis of the correlation between psychological well-being (QSG-12) and self-efficacy. São José do Rio Preto, São Paulo, Brazil, 2020



Source: Database, 2020.

■ DISCUSSION

This study highlighted the presence of mental health problems in university students in the health field during COVID-19. Investigations around the world have produced evidence that portrays the negative impact of the pandemic on the quality of life of this population^(2,9). Systematic reviews and meta-analyses confirmed the vulnerability of these students to mental illness during the pandemic period^(1,2,19), with high rates of anxiety (32% to 36%), depression (39% to 52%), fear (12.5 % to 41%), stress (21.6% to 30%) and sleep disorders (3% to 27%)^(8,19). The present study identified a prevalence of 56.8% for the symptom of anxiety and 31% for depression, and this difference can be attributed to the personal and cultural characteristics of students from different continents, as well as the date of data collection.

The high rate of psychological distress obtained may be related to concerns about COVID-19 and its consequences, such as the risk of death, financial instability, social isolation and changes in the way of life imposed by the disease⁽³⁾. Furthermore, the university population faced difficulties in adapting to online teaching methods and numerous uncertainties regarding their future and access to first-rate training.

During the study period, Brazil was experiencing intense political instability, constant changes in Ministry of Health managers, fragile health policies and the dissemination of fake news⁽²⁰⁾. Research carried out by the Group of the Observatory for the Containment of COVID-19 in Latin America demonstrated that Brazil's response to the pandemic was not effective and unified, being marked by lax compliance with non-pharmacological interventions, such as the use of masks, restrictions on travel and the need to stay at home. The authors stressed that the implementation of a robust and consolidated health policy to face the pandemic was essential to promote clear and accurate information to the population, in order to reduce insecurity and fear⁽²⁰⁾.

The participants in this study obtained median scores for perceived general self-efficacy. In other words, the students had certain beliefs that limited them and did not encourage them to achieve their goals, to persevere in the face of adversity and to fully motivate themselves. This result is corroborated by other investigations conducted in the European continent, with Italian⁽²¹⁾ and German⁽²²⁾ students, and on the Asian continent, with Chinese⁽²³⁾ and Iranian⁽²¹⁾ students.

The fact that students with positive feelings of self-efficacy have greater psychological well-being and absence of anxiety and depression can be explained by the protective effect of self-efficacy against stress disorders, anxiety and depression⁽²⁴⁾. Studies carried out in Latin America and Asia

demonstrated that self-efficacy and socio-emotional aspects were valuable for building psychological well-being in university students during the pandemic^(25,26). The authors concluded that self-efficacy is closely linked to optimism, autonomy, self-acceptance, positive relationships with others, personal growth, and purpose in life. These characteristics motivate future-oriented behaviors⁽²⁶⁾.

Research carried out with 2,707 university students in France, Germany, Russia and the United Kingdom showed that the sudden interruption of external support offered by universities, through programs such as tutoring, had a strong impact on the mental health of this population. This fact, associated with suspensions in face-to-face academic processes and social isolation, weakened a link that enhanced students' mental resources, helping them to develop and strengthen positive constructs, such as self-efficacy and resilience⁽²⁷⁾.

Recent research on the mental health of university students in Southwest Asia highlighted self-efficacy as a fundamental adaptive mechanism for maintaining psychological and physical health and adjustment to difficulties⁽²¹⁾. Based on this evidence, the need for educational institutions to regulate policies to improve students' ability to deal with everyday challenges is affirmed, since self-efficacy can be taught and improved as a skill. Knowing the most mentally vulnerable students can favor the use of strategies aimed to prevent illnesses and maximize the academic and personal potential of this population.

Data compiled by a systematic review from 14,064 participants from the USA, Australia and Europe, aged 10-19 years, pointed to self-efficacy as one of the mental resources that curbed the negative impact caused by social isolation. Other factors were important to mitigate these harmful effects, such as self-esteem, optimism, ethnic identity and social connection with family and school⁽²⁸⁾.

From this perspective, it is essential that universities, based on this data, provide students with community moments of leisure, socialization, sports programs and tutoring. These initiatives aim not only to cultivate deeper emotional and academic connections, but also to provide a warm welcome that contributes to the psychological well-being of university students.

The results of this study highlighted the university educational experience as a space for universal psycho-educational interventions aimed at promoting personal resources, both for disease prevention and health promotion, and also from a gender perspective, in order to respond to the diversity of trajectories in the construction of these psychosocial resources⁽²⁹⁾. These actions aim to provide techniques that favor the adequate development and emotional management

of strategies for coping with the different challenges related to the university education period, in addition to other complex events.

This study has some limitations. The choice of a cross-sectional design, with data collection in only one HEI and at a specific moment in the pandemic (August to December 2020), limits the generalization of the results. It is suggested that multicenter studies be carried out to evaluate different scenarios, with greater scope in terms of sample size and considering gender differences.

By highlighting the negative impact of the pandemic on students' mental health, this study raised opportunities for intervention to improve the experience of university students in developing their personal, academic and professional projects, in a context marked by adversity.

CONCLUSION

According to the results, the general and perceived self-efficacy beliefs of university students in the health field were median. The prevalence of anxiety and depression symptoms among students was high and they had median levels of psychological well-being. A high perception of general self-efficacy was associated with better psychological well-being and the absence of anxious and depressive symptoms. Most students considered that the COVID-19 pandemic had harmed their mental health.

COVID-19 was one of the biggest health challenges at a global level and evidence demonstrated that the mental health of students was significantly impacted by this event, which can lead to numerous personal losses, such as the emergence of mental and academic disorders, like lack of motivation, reduced academic performance and even dropping out of the course.

This study revealed that self-efficacy is a resource that builds the mental health of young people and that it can be valuable in nursing interventions. Therefore, it can promote advances in terms of conduct and decision-making, both in nursing care practice and in undergraduate education. In terms of management, it encourages and guides the creation and implementation of programs aimed at improving self-efficacy among university students, in addition to assisting in the formulation of policies that promote mental health in IES. The present study also makes a significant contribution to research, as it provides valuable insights into how individual beliefs influence behaviors, attitudes and outcomes related to the university context.

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