Analysis of Stress, depression, and coping resources in Post-confinement COVID-19 university students

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— Abstract—

The present study was proposed as a mixed, cross-sectional, and analytical study. Its main objective was to identify the presence of stress and depression, in addition to the Coping Resources (CO) of university students after confinement by COVID-19. Coping resources allow us to adapt to different situations in the environment; they are elementary cognitive and behavioral processes in response to the presence of stress (Lazarus & Folkman, 1986), the latter, in university students, has been present for various reasons; but, in what ways has it been presented after confinement? The results obtained by a sample of 220 students show a greater presence of perceived stress (PE=2.404) than the perception of stress control (PCE=2.378), in addition to the presence of mild depression (BDI-2=8.1); a correct perception of CO was identified; but a weak use of these. Only stress finds evidence of a relationship with confinement.

Keywords:

Anxiety; students; Perceived Stress Scale; Beck Depression Inventory.

T he COVID-19 pandemic generated a change in the modalities and structures of education at all levels, moving the ordinary classes from in-person modality to videoconferences and school file management platforms. This change had notable impacts on education, both by the process itself and the implications on the order of human relationships (Avendaño *et al*, 2021). There are relationship data between symptoms of depression and anxiety during confinement and online classes in high school and college students (Velastegui-Mendoza *et al*., 2022).

The objective of the present study was to identify the presence of stress, depression, and coping resources perceived and applied by university students after confinement due to COVID-19.

It is important to mention that the population of Chiapas, and even more so of the area Altos de Chiapas, has a wide cultural, ethnic, and linguistic diversity, and this reality can be seen reflected in the students who are enrolled in some degree program.

The importance of the psycho-emotional life of students in times of COVID-19 and the new normality is relevant to build better educational structures, in addition to being valuable information in terms of public mental health. This increases its importance when we talk about the search for improvement in the quality of life of human populations, in the improvement of human development indexes, and, specifically, in the improvement of education indexes.

STRESS, DEPRESSION, AND COPING RESOURCES

Anxiety is a feeling that comes from the emotion of fear. Giorgio Nardone (2004) defines it as an extension of the basic feeling of fear that invalidates a person's activities. Anxiety disorders are characterized by the recurrent presence of intense and/or persistent worries and fears about neutral situations, which give rise to somatomorphic symptoms, that is, physical symptoms related to emotional distress (Craske *et al*., 2011). This group of disorders is more frequent in women than in men, with a 2:1 ratio (Alonso *et al*., 2004).

Depression, on the other hand, is a complex psychopathology characterized by demotivation and lack of interest in the patient towards their daily activities, which results in a decrease in the energy and activity of the subject; in young people, feelings of anger, frustration, and comparison are also frequent (Arrivillaga *et al*., 2003). The prevalence of depressive disorders in Mexico shows a significant gap since 2005, 5.8% of women and 2.5% of men presented this clinical picture (Belló *et al*., 2005).

The relationship between these pathologies and online classes suggests the existence of other related factors. It has been brought up that social

isolation can cause the presence of depressive symptoms in the general population (Sánchez-Millán *et al.*, 2022; Sepúlveda *et al.*, 2020 and Vrito-Farfan *et al.*, 2021), in addition to the fact that prolonged isolation triggers feelings of deep loneliness, which turns into depressive conditions (Banerjee & Rai, 2020). As for the expressions of anxiety, the fear of contagion by SARS-CoV2 was the variable with the greatest relationship with anxiety disorders, the main one being agoraphobia, a disorder characterized by the temporary and isolated appearance of somatomorphic symptoms before the idea or presence of the open space other than the domestic one (APA, 2014 and Prieto-Molinaria *et al.*, 2020).

However, the relationships found focus on isolation and psychological symptoms, even though confinement has recently begun to decrease in most countries; rates of anxiety and depression have not declined at the same rate in young students (Fuentes, 2022 and Velástegui *et al.*, 2022). This opens the possibility of investigating the relationship of anxiety and depression with other variables.

Stress has been documented as a third problematic psychoemotional state in young students (Jiménez, 2022), which is a reaction of physical-cognitive demand to a stimulus considered dangerous (Gómez & Escobar, 2002). Both anxiety and depression have a direct relationship with stress, especially in adolescents and young university students (Lomelí & Martín del Campo, 2018).

The biological utility of stress has been widely discussed becoming a useful emotion for certain facts, but dysfunctional when triggering stimuli do not pose a real threat (Duval *et al.*, 2010). Negative overestimation of stress-causing stimuli often occurs in young people (Trucco, 2002).

The way of reacting to stressful events is known as a "coping response" (CO) (Vázquez *et al.*, 2000). These COs determine whether stress is expressed as distress or becomes a manageable stimulus for the subject. Functional RAs, that is, they avoid psychoemotional alterations, are characterized by the notion and use of internal and external resources of the person; on the contrary, dysfunctional RAs cause psychoemotional alterations due to the low visibility or ability to use these resources (Lega *et al.*, 2002).

For Remor *et al.* (2016), psychological resources are "*psychological protection factors that are positively associated with health and well-being and that, in turn, allow to increase resistance to adversity*". Those produced by a person's elements are internal, such as ideas, beliefs, education, or self-esteem; and those that are obtained from the environment such as relationships, physical spaces, and sound or visual stimuli, among others, are external.

In this order of ideas, psychological alterations related to distress can occur as a result of the real or imagined absence of external sources of support and internal resources of the individual. If the individual does not have the correct notion of his personal resources to face problems, he usually

considers these as too threatening stimuli; which can trigger depressive characteristics, since this disorder is characterized by pessimism towards one and others (Robles *et al.*, 2020).

Based on the above, it is important to know the relationship between internal resources and external supports, as well as the rates of stress and depression in students. If, as mentioned above, the social changes resulting from the covid-19 contingency are one of several variables involved in the permanence of depressive symptoms in students, internal and external resources may constitute other variables involved.

ALARM SIGNALS IN YOUNG UNIVERSITY STUDENTS

There have been multiple warnings of the negative effects of prolonged stress on humans. For example, quality of life and social relationships are impaired, generating psychological vulnerability in the person (Cumsille & Martínez, 1994), neuroplasticity and brain neurogenesis are seriously affected, which can have an impact on cognitive abilities (Zárate *et al.*, 2014), physical involvement is notorious, due to the alteration in the immune system that stress causes in the human body (Gómez & Escobar, 2006).

Adolescence and adult youth are important stages for the development of neuropsychological capacities, at which point, through learning, the habits and structures of thought that govern adult life are shaped; due to this, the health of young students is very important.

Stress is a risk factor for psycho-emotional health in young students, which has been studied on several occasions, and where it has been found that stress in students is related to self-perception and future thoughts (Cassaretto *et al.*, 2003). The amount of perceived stress is related to the degree (Celis *et al.*, 2001) and ongoing university career (Martín, 2007). Stress has also been found to be related to poor school performance (García-Ros *et al.*, 2012).

Based on the above, it is understood that stress is related to young students, affecting their quality of life and school performance, a factor that could generate other psychological problems that further impair their mental health.

MATERIALS AND METHODS

The study was carried out in an area of low human development index (HDI), the average municipal HDI in Chiapas, is 0.647 and is below the national average of 0.779 occupying the last place in HDI in Mexico. As for education, one of the components of the Human Development Index, Chiapas has an EI of 0.528 (UNDP, 2019).

The study is mixed, cross-sectional, and analytical. The variables depressive symptoms, perception of stress, and coping with difficulties were

operationalized using the Beck Depression Inventory adapted version (BDI-2), the Perceived Stress Scale (PES), and qualitative assessment questions of the present study, respectively.

The scales and questionnaires were applied online to students enrolled in undergraduate programs, the research was carried out in the period from November 2021 to March 2022, following the applicable ethics and data confidentiality criteria.

A sample of n=220 obtained through the snowball method was obtained, through which the participation of university-level students enrolled in a program of the educational offer in San Cristóbal de Las Casas, Chiapas, a medium city located in the Altos Tseltal-Tsotsil Zone of Chiapas, Mexico.

Inclusion criteria: Students enrolled in undergraduate programs at universities located in San Cristóbal de Las Casas, Chiapas, Mexico.

Exclusion criteria: Students who are enrolled in undergraduate programs at universities outside San Cristobal de Las Casas, Chiapas, Mexico.

Description of the instruments used: The EEP (Cohen *et al.*, 1983) consists of 14 items in its full version. The scale is validated for the Mexican university population with adequate reliability (α =0.86) and adequate adjustment (GFI=0.91, RMSEA=0.056, NFI=0.97, CFI=0.98, and IFI=0.98) (Brito-Ortíz *et al.*, 2019).

It is divided into two subscales: the stress perception subscale and the stress control subscale. With the information of both subscales, the perceived stress score and control tools are obtained, which expresses the degree of stress management; scores less than 0 indicate good stress control, and those equal to or greater than 0 indicate a greater perception of stress with lesser measures of coping.

For its part, BDI-2 has been multiplied, validated, and standardized for the Mexican population in general, with a high internal consistency (from α =0.87 to =0.91) (Moral de la Rubia, 2013 and Jurado *et al.*, 1998).

The test consists of 15 items that expose depressive symptoms, in which the user selects between 4 possible responses depending on the identification he has with the statement in the item. Finally, the average of the responses is contrasted with the correction factor, scores from 0 to 6 represent a minimum depression, from 7-13 mild, from 14 to 26 moderate, and greater than 27 severe depression.

The 3 qualitative assessment questions are: What is the greatest difficulty currently in your life? What resources do you have to deal with your greatest difficulty? Or do you have none? Do you have a routine or element to de-stress yourself from obligations? Which one?

The above questions were used to assess the perception of difficulties or challenges, the notion of favorable psychological and environmental resources,

and explore relaxation behaviors. These elements were treated with general and descriptive statistics based on principles of grouping by topic in the responses.

RESULTS

The average age of the young people participating in the study was 20.59 years, with a maximum of 40 years and a minimum of 17. Of the sample, 46.81% identified as female, 49.54% as male, and 2.72% as members of the LGBTQ+ community.

Regarding the EEP, the average perception of stress (PE) in the sample was 2.404, out of a possible total on a scale of 4; on the other hand, the perception of stress control (PCE) is 2.378, with the same possible total as the previous scale; based on this, the average scale score obtained by the sample is 0.025.

The items with the highest scores have been 3 (In the last month, how often have you felt nervous or stressed?) and 12 (in the last month, how often have you thought about the things you had left to do?).

On the BDI-2 the sample obtained a total net score of 1788, with an average sample score of 8.1, representing a mild depression according to the test correction factor.

Within the test, the items on discouragement are relevant, where 31.4% responded to feeling more discouraged about the future than before; the item of guilt feeling where 43.2% exposes feeling guilty for several things they have done or should have done; and the energy item where 39.1% report having less energy than before.

Finally, regarding open-ended questions, in the first question (what is the greatest difficulty currently in your life?), 26.36% answered elements regarding academic training, 25% positioned their difficulties in emotional problems, and 17.27% reported having no difficulty; the rest of the sample gave varied answers regarding relational questions.

Regarding whether participants consider having psycho-emotional and/or physical resources to face problems, 59.54% consider family and/or friends as the biggest support, 15.45% can not identify any resource, and 14.54% consider internal resources (emotions and abilities) as their resource for solving difficulties.

Participants expressed that 30% use exercise and/or sport as a routine to de-stress, 13.63% responded with activities of a musical nature; highlights that 37.27%, the highest percentage among the responses, expressed not having any activity or routine that helps them reduce stress levels. The remaining percentage of responses gathered elements such as family co-existence (11%), reading, video games or movies (19.08%), and drugs and alcohol use (4.45%).

DISCUSSION OF RESULTS AND CONCLUSIONS

In the present study, the sample presents a score in the EEP that represents a high PE and weak coping; this finds a second check on the values obtained in the subscales, being higher than the average score of the stress perception scale (2.404), than the control perception score of this (2.378).

Another study conducted in Mexico that applied the EEP to young students also found high levels of PE above PCE (Martín del Campo *et al.*, 2018). On the other hand, two studies (Halgrevez *et al.*, 2016, Silva-Ramos *et al.*, 2020) find an elevated perception of stress in students with variations between enrollment careers.

Studies done before 2019, when there was no COVID-19, find significant stress levels, but less elevated than the cited studies conducted after 2019.

In this regard, the higher scores in the individual items of the question-naire reflect that the sample has noticed a high frequency of feelings of nervousness or stress and thoughts about future tasks. This may be related to the problem of greater presence in the sample, which are problems related to academic training.

The relationship of stress with the demand for activities in various careers has been documented previously, being related to the academic load and extra-class activities, as well as the responsibility coupled with the curriculum (Román & Hernández, 2011). Careers in health and engineering are mainly related to high levels of stress (Huaquín & Loaíza, 2004, Martín *et al.*, 2013).

In attention to the evaluation of depressive symptoms, the sample had an average in the BDI-2, an indicator of mild depression, results that contrast with other studies where the average of the samples represented minimal depression (Tangarife, 2021, and Prada *et al.*, 2021), and agrees with the study by Ochoa and team (2021), which finds mild depression in students in the health area.

A pre-pandemic study (Riveros *et al.*, 2007) found lower levels of depression in a sample of 500 students. On the other hand, another study conducted in 2008 (Agudelo *et al.*, 2008) states that a sample of Colombian students obtained an average score of 8.7 in the BDI-2, a result similar to that obtained in the sample of the present study (8.1).

These results may be related to perceived stress, as indicated by other studies (Arrieta *et al.*, 2013, Cabezas-Hereida *et al.*, 2021 and Gutiérrez *et al.*, 2010), which also indicate a greater presence of depression in people with a lower capacity to cope with stress.

In the stress-academic performance relationship, the presence of depressive symptoms may also be related to academic performance, consisting of a stress-depression-academic performance type feedback, with the possible influence of the COVID-19, situation, especially with the stress factor.

The sample presents high levels of perception of stress and mild depression, with few resources for coping with them. Based on the qualitative assessment questions of the method, it can be understood that university students have support elements for stress management, but do not have routines or methods of use for such support elements. This shifts research and application interest from resource visibility to effective usage mechanisms.

From the above, the results of the present study confirm that there is a high perception of stress, mild depression, and weak coping mechanisms on the part of university students; being that only stress finds evidence of relationship with confinement due to COVID-19, time in which students took online classes. Regarding depression, the previous and post-pandemic literature shows variable results, which do not allow determining whether the confinement situation is a significant variable in the presence of depression in students.

The most significant result of the present study is the existence of a lack of use of coping resources for stress and emotional problems by university students; even if they have adequate visibility of these resources.

It is important to continue with studies that reveal the direct factors related to the presence of stress, depression, and coping mechanisms as indispensable elements for the design of intervention projects from public health and university education.

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