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ORIGINALES

Relationship between full attention sessions and the stress level in university students

Relación entre sesiones de atención plena y el nivel de estrés en estudiantes universitarios

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ABSTRACT:

Introduction: Academic stress constitutes an important problem to be addressed today, the student population during the last 10 years has faced various stressors triggering signs and symptoms, which are exacerbated when facing certain subjects. These subjects are those that include new methodologies in order to achieve the expected learning results, within which we find clinical simulation, which looks for situations close to the real thing.
Objective: To determine the relationship between the number of Mindfulness sessions on the level of stress compared to clinical simulation methodology in university students of 3rd and 4th level of Nursing Career at a private University Antofagasta, Chile.
Method: Quantitative, quasi-experimental experimental with post-intervention test measurement. A sample of 58 students was studied. To process the information, normality tests were applied to the variables of the applied scale (SISCO) using Shapiro-Wilks, ANOVA, Tukey's test and T tests (men and women).
Results: The stress level presented in the sample is distributed as follows: 5% mild, 79% moderate, 16% profound. There is an association between stress and gender, as well as mean differences in physical and behavioral reactions in students who attend 4 sessions (physical reactions: 0.91 and compartment reactions: 1.07).
Conclusion: It is shown that the greater the number of Mindfulness sessions, the lower the stress level in the areas of physical and behavioral reactions.

Key words: Students, mindfulness, stress, simulation

RESUMEN:

Introducción: El estrés académico constituye una problemática importante de abordar en la actualidad, la población estudiantil durante los últimos 10 años se ha enfrentado a diversos estresores desencadenando signos y síntomas, que se exacerban al enfrentarse a ciertas asignaturas. Estas asignaturas son las que incluyen metodologías nuevas en pro de lograr los resultados de aprendizajes

esperados, dentro de las cuales encontramos a la simulación clínica, la cual busca situaciones cercanas a lo real.
Objetivo: Determinar la relación existente entre el número de sesiones Mindfulness sobre el nivel de estrés frente a la metodología de simulación clínica en estudiantes universitarios de 3ero y 4to nivel de la Carrera de Enfermería en una Universidad privada de la ciudad de Antofagasta, norte de Chile.
Método: Cuantitativa, experimental de tipo cuasi experimental con medición de test post-intervención. Muestra de 58 estudiantes. Para procesar la información se utilizaron pruebas de normalidad a las variables de la escala aplicada (SISCO) mediante Shapiro-Wilks, ANOVA, prueba de Tukey y pruebas T (hombres y mujeres).
Resultados: El nivel de estrés presentado en la muestra fue destribuido de la siguiente manera: 5% leve, 79% moderado, 16% profundo. Existiendo una asociación entre estrés y género, así como diferencias de medias en reacciones físicas y comportamentales en estudiantes que asisten a 4 sesiones (reacciones físicas: 0.91 y reacciones compartimentales: 1.07).
Conclusión: A mayor número de sesiones de Mindfulness, disminuye el nivel de estrés en las áreas de reacciones físicas y comportamentales.

Palabras claves: Estudiantes, atención plena, estrés, simulación.

INTRODUCTION

Nowadays, one of the most experienced problems in Chilean youth and that is alarmingly affecting the student population is the term academic stress. The authors Jerez and Oyarzo point out the following about this definition: “[..] from preschool grades to postgraduate university education and are triggered during the learning period” [(1)]. In Latin America, according to Román, the impact of academic stress in university students is present at 67% [(2)]. In 2015, an investigation was performed at a University in the South of Chile, aimed at students from different careers in the health area (kinesiology, nutrition and dietetics, speech therapy and nursing. 314 people participated in the study). The study showed that 98% of the participants are affected by academic stress [(1)].

If we consider the data mentioned above, it is possible to claim that at some point this student population from the health area will enter the world of work. About this subject, Mejías and Manriquez indicate that: "[...] one of the groups most exposed to stress, as a result of the characteristics of their work, are health professionals, especially nursing professionals" [(3)]. However, physical, and emotional overload begins in the undergraduate stage, according to Duarte [(4-6)].

The previous evidence invites us to reflect about the stress in students of the health areas and how the academic load is distributed, considering that there are subjects of chairs and laboratories. Moreover, in recent years the clinical simulation project has been integrated as part of the subjects, evaluated in a positive way, for the strengthening of students' knowledge through the trial-error methodology, allowing students “[..] the opportunity to perform an analogous practice to the one they will develop in the healthcare reality” [(6)].

However, this methodology also has disadvantages. One of them is the need for prior work such as carrying out a case according to the learning objectives, for which there must be a pre-established script before the simulation scenario (they must be real cases), however, they do not fully reflect what happens in reality [(6)].

Regarding the research developed worldwide to the undergraduate population in the health area, some studies have used the development of personal tools to cope with

stress, highlighting the one carried out in 2015 by Song and Lindquist, cited by Sansó et al. [7] in South Korea. This research considered a sample of 50 nursing students, showing that the MBSR (mindfulness) program presents as results "[...] healthy effects on depression, anxiety, stress and attention". On the other hand, in 2011 in Tasmania, an investigation was also developed on undergraduate students in the health area with a sample of 66 medical students, with a control group and an experimental group intervention with guided meditation were applied, reaching a significant decrease in stress [8]. The same variables are replicated in the study carried out by the Autonomous University of Mexico in 2017, giving a positive result to the use of Mindfulness at the level of academic stress [9].

Indeed, Mindfulness allows those who practice it, to contemplate feelings and thoughts, making them conscious, thus breaking the triad of thinking, feeling and acting, allowing the achievement of self-management of these signals, facilitating that the person can choose effectively their form to act in diverse situations, avoiding the negative influence of stress [10]. As Creswell indicates, cited by Moreno [10] "[..] the effects of the practice of "being attentive" on the nervous system are related to the promotion of a state of relaxation of the peripheral nervous system and the activation of the central nervous system". Also, there are reports, where mindfulness training improves brain connectivity [11]. This would cause an increase in gray matter in the areas of the brain involved in the learning process, memory, and emotion regulation processes [12].

Although Mindfulness is a method that presents positive results, it presents the difficulty of little critical literature in relation to the measurement of stress in clinical simulation and techniques to face the triggering situations. Therefore, the objective of the research is to determine the relationship between the number of Mindfulness sessions on the level of stress versus the clinical simulation methodology in 3rd and 4th level university students of the Nursing career at a private university from Antofagasta, northern Chile.

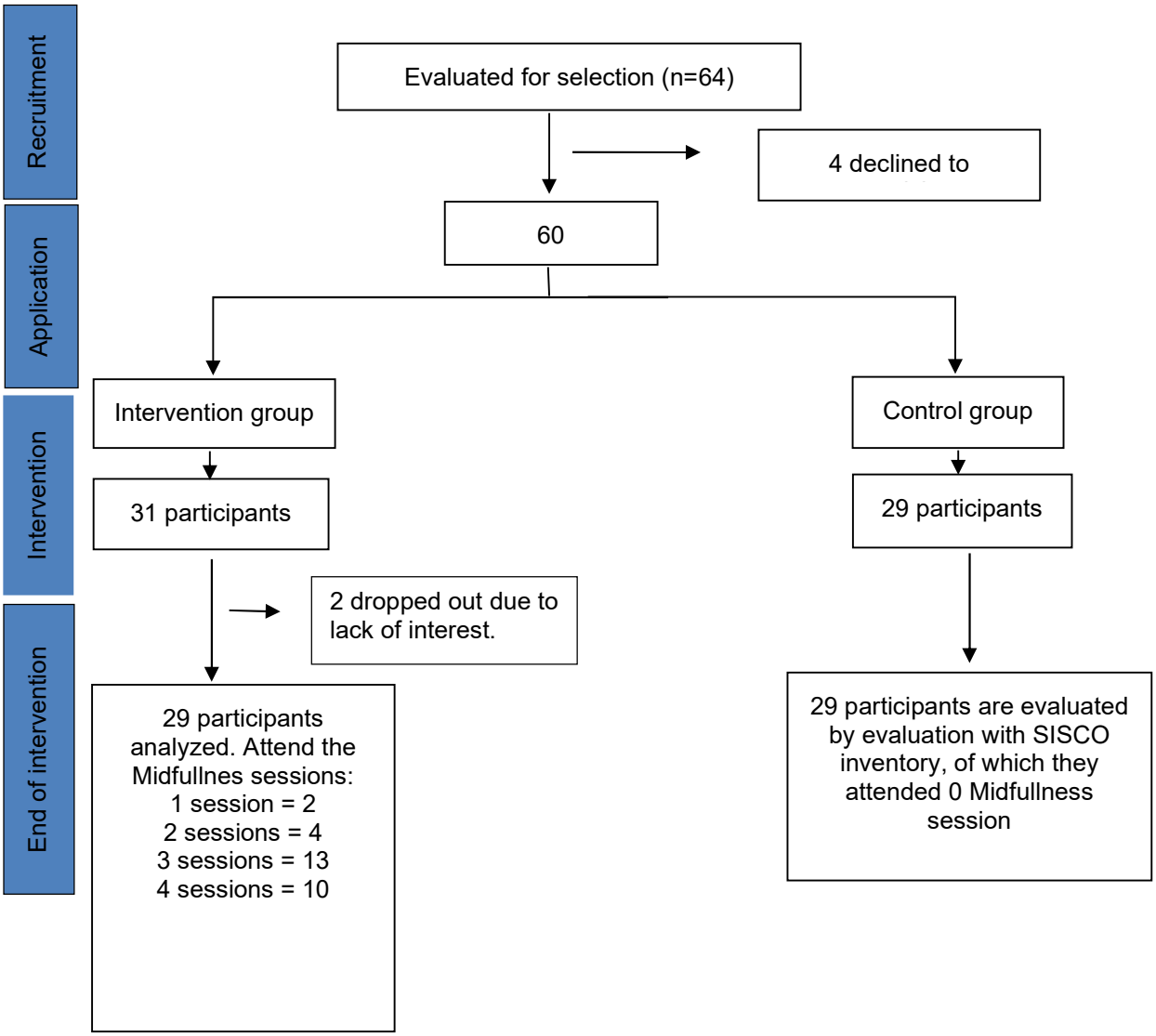
METHODS

The study is quasi-experimental with a static design with two groups with post-intervention measurement. The selection of the sample is obtained during the first semester of 2019, through the enrollment of students who will take the subject "clinical simulation methodology", therefore, this stage is not aleatory. The sample size was 58 people in total, allowing the intervention to be developed with a confidence level of 95% and a significance level of 5%.

The sample was divided into two groups of 29 students (control and intervention). The conformation of the groups was in a natural way, given by the composition of the clinical simulation groups (Figure 1).

The inclusion criteria were being over 18 years old, taking the third or fourth level of the nursing career, being enrolled in clinical simulation methodology subjects, and agreeing to voluntarily sign the informed consent (students had to complete 70% and more of the questionnaire).

Figure 1. Participant selection flow chart



Source: own elaboration from the data.

Stress level

It is evaluated through the SISCO inventory. This measurement is made up of 31 items, distributed into the following components [13]: Stressful situations, physical reactions, psychological reactions, compartmental reactions, and coping strategies. The reliability of the instrument was measured by 2 statistical tests: reliability by halves, giving a result of 0.87 and a reliability in Cronbach's alpha of 0.90.

Sociobiodemographics

The variables considered were the following: sex (male / female), employment status (works yes / no), children (yes / no) and lifestyle (hours of sleep, hours of leisure, hours of physical exercise, and consumption of tobacco (yes / no).

Ethical considerations

This project was authorized by the Macrozone North Scientific Ethics Committee, at Santo Tomás University in the Iquique headquarters, and by the Director of the Nursing Career. The protection of individuals is based on the seven ethical requirements of Mr. Ezekiel Emanuel (social value, scientific validity, fair selection of the subject, favorable risk-benefit ratio, independent evaluation, informed consent, and respect for registered subjects). Besides, it also adheres to fulfillment with current legislation.

Interventions

The sessions developed with the objectives of each of them are detailed below:

a) Session 0: in the first meeting, the introduction to Mindfulness is carried out with the application of these techniques in education and health, reviewing the work methodology for further sessions.

b. Session 1: the goal of the meeting is to know and understand the concept of resilience to face academic stress. After the introduction, a Power Point Presentation (PPT) is exposed in relation to the theme of resilience, with two phrases being read aloud. Then, the students reflected as a group and elaborated a conclusion of the raised topic. Later, they develop a group dialogue and a conclusion of the topic clarifying the terminology and the contribution in the management of academic stress. Finally, the students are invited to perform a daily practice of at least five minutes of conscious breathing on the theme of resilience (delivery of the record sheet to empty the personal experience of the week and to arrange a date for the next session).

c. Session 2: at the beginning of the meeting the students shared their experiences of the week and developed conscious breathing (the student sitting in his chair, with his eyes closed). The objective of the meeting is the identification and recognition of the emotions. Then, with the students fully aware, a PPT is presented with two phrases referring to the subject of emotions. After, a reading takes place aloud and there is a group discussion where emotions are identified, elaborating a conclusion on the topic (20 minutes). Subsequently, exposition of the students, generating a group dialogue and conclusion of the topic, recognizing the importance of being able to identify the emotions, make them conscious, discriminating the positive and negative ones, in order to express them in full consciousness. Finally, an invitation to the students to carry out a daily practice of at least five minutes of conscious breathing connecting the emotions of the moment (delivery of the record sheet to empty the personal experience of the week and agree on the date for the next session).

d. Session 3: at the beginning of the meeting, they shared the experiences of the week and developed conscious breathing (the student sitting in his chair, with his eyes closed). The goal of the meeting is the identification and recognition of stress in situations where they have experienced it, identifying the bodily sensations at the stressful moment. Then, with the students fully aware, there is a presentation in a PPT of three sentences in reference to the theme of emotions. Moreover, the following sequence takes place: reading the text aloud, group discussion, and identifying stress in their academic life (20 minutes). Exposure of the students, recognizing the existence of academic stress, how it develops and the responses to the subject.

Finally, invite the students to develop a daily practice of at least five minutes of conscious breathing, connecting the stressful situations in their student life (delivery of the record sheet to empty the personal experience of the week and agree on the date for the next session).

e. Session 4: at the beginning of the meeting, they share the experiences of the week and develop conscious breathing (the student sitting in his chair, with his eyes closed). The objective of the meeting is the identification and recognition of time as a precious instrument. Then, with students fully aware, the following sequence takes place; two-sentence PPT presentation referring to the benefit of academic load. Reading the text aloud, group discussion, proposing how to manage time in academic life to benefit stress levels (20 minutes). The students expose, by recognizing the importance of achieving a better distribution of time for the benefit of academic activities and as a means to face stress. Finally, an invitation to the students to continue with the practice of mindfulness for personal benefit and also, as a way of perpetuating the positive sensations that they have discovered with the help of the sessions (Application of the stress level scale instrument anonymously, in a time of 10 minutes).

Statistic analysis

For the statistical analysis, a data matrix was developed with the Microsoft Excel 2010 program, exporting it to the IBM SPSS v21 statistical package, in order to obtain a multivariate descriptive and statistical analysis. With the above, the frequency tables are constructed to describe the variables studied.

For data processing, normality tests for the SISCO SHAPIRO - WILKS scale were used. To identify the test to perform parametric or non-parametric analysis. ANOVA, test of homogeneity of variances. TUKEY, to compare pairs of specific groups. T tests, with an Alpha (α) significance level of 5%, the confidence level is 95%.

RESULTS

Sample characteristics

The biosociodemographic characteristics of the general sample show by sex that 81% are women. In relation to the employment situation of the students, 76% declare not to work. The variable presence of children, 4 people responded positively (6%). In the lifestyles, the values according to group are: sleep hours have an average of 6 hours, leisure hours an average of 2.8 hours and exercise an average of 2 hours. In a sample of 58 students (table 1).

Regarding the evaluation of the level of post-intervention stress, the largest number of students present a moderate level of stress. Outstanding in the control group (0 session) 8 students with a deep stress level (table 1).
According to the frequency of attendance at the Midfullnes workshops, the sample behaves as follows: 0 session: 29 students, session 1: 2 students, session 2: 4 students, session 3: 13 students and session 4: 10 students (Table 1).

Table 1. Description of bio-sociodemographic characteristics (n = 58)

		Nivel of stress		
Sex	Total	Mild	Moderate	Profound
Woman	47 (81%)	-	-	-
Men	11 (19%)	-	-	-
Employment situation				
Works	14 (24%)	-	-	-
Does not work	44 (76%)	-	-	-
Lifestyles				
Hours of sleep	$\bar{x}$ 6 hrs. ±1,1	-	-	-
Leisure hours	$\bar{x}$ 2,8 hrs.±1,8	-	-	-
Exercise	$\bar{x}$ 2 hrs. ± 2,6	-	-	-
Nº. of Midfullnes sessions				
0	29	0	21	8
1	2	1	1	0
2	4	0	4	0
3	13	1	11	1
4	10	1	9	0

Source: own elaboration from the data.

Normality tests

The tests of normality to the variables of the SISCO scale are developed in order to identify if it is possible to carry out a parametric analysis or if a non-parametric analysis should be used. For the above, the Shapiro-Wilks test was implemented (table 2). Only the scalar variables, that is, the dimensions of the scale previously mentioned, are subjected to contrast. The number of sessions in which the students attended is an ordinal variable, so its normality will not be evaluated.

In all dimensions, there are no significant differences with a normal distribution. Therefore, parametric tests were used for the comparison of means.

Table 2: Normality test

	Statistical	p- value
Stressful situations	.970	.158
Physical reactions	.974	.259
Psychological reactions	.960	.055
Behavioral reactions	.974	.247
Coping strategies	.982	.539

Source: own elaboration from the data.

Mean difference tests between number of assisted sessions

To compare the means, according to the number of sessions the students attended (given the ordinal nature of the variable in question), the one-factor ANOVA test was performed. First, the test of homogeneity of variances is presented to evaluate the assumption of homoscedasticity

(equality of variances) between the groups. In this analysis, the null hypothesis (Ho) proposes that: All groups have the same level of stress. The alternative hypothesis (Ha) states that: At least one of the groups has a different stress level from the others. In Table 3, it can be seen that in None of the dimensions affected the assumption of equality of variances (p> .05), therefore, the Tukey test was analyzed to compare pairs of specific groups, in those where there is a significant difference.

Table 3. Test of homogeneity of variances

	Levene statistic	p-value
Stressful situations	1.14	.35
Physical reactions	.36	.84
Psychological reactions	2.29	.07
Behavioral reactions	.32	.86
Coping strategies	0.40	.81

Source: own elaboration from the data.

Knowing this, the ANOVA is applied (results are shown in table 4), showing that there is at least one group different from the others in stressful situations (F = 3.323, p = .02), Physical reactions (F = 3.76, p = .01) and behavioral reactions (F = 4.28, p = .00).

The following step is to identify where the significant differences are, comparing each pair of groups according to the variables where there is at least one significant difference.

Table 4. Test of difference of means for SISCO dimensions according to attended sessions

	Number of times attended					F	p
	0	1	2	3	4		
Stressful situations	3.60	2.88	3.19	3.08	3.09	3.23	.02
Physical reactions	3.80	2.75	3.33	3.17	2.89	3.76	.01
Psychological reactions	3.39	3.20	3.40	2.83	2.54	2.53	.05
Behavioral reactions	3.09	2.88	3.00	2.65	2.02	4.28	.00
Coping strategies	3.26	2.67	3.08	2.95	3.08	0.79	.53

Source: own elaboration from the data.

Since the variances are equal (Table 5), Tukey's test is used for these comparisons.

In the case of stressful situations, it is striking that there are no pairs of variables with significant differences. However, those who did not attend any session have a higher average than those who did at least 1.

In the case of the physical and behavioral reactions variables, there are differences between those who attended 0 sessions and those who attended 4. Although this project is inserted in undergraduate and simulation activities, it is possible to project the positive effect that the future working lives of these students may have, since, in real situations, inappropriate or erratic behaviors can trigger unfortunate mistakes when being in charge of people.

In this way, we can conclude that in general in these variables, the main differences are between those who attended 4 sessions and those who did not attend any. No differences were found (for example) between those who attended 0 sessions and those who attended 1,

2 or 3. Therefore, it is important to emphasize that this would be the number of sessions necessary to generate a change in the stress level of the participants.

Table 5. Post hoc comparison tests

Dimension	I	J	Dif. of means (I-J)	p-value
Stressful situations	0	1	.73	.40
		2	.42	.64
		3	.53	.05
		4	.52	.10
	1	2	-.31	.97
		3	-.20	.99
		4	-.21	.99
	2	3	.11	.99
		4	.10	.99
	3	4	-.01	.99
Physical reactions	0	1	1.05	.34
		2	.47	.78
		3	.63	.11
		4	.91*	.02
	1	2	-.58	.90
		3	-.42	.95
		4	-.14	.99
	2	3	.17	.99
		4	.44	.86
	3	4	.28	.91
Behavioral reactions	0	1	.21	.99
		2	.09	.99
		3	.43	.39
		4	1.07*	.00
	1	2	-.13	.99
		3	.22	.99
		4	.86	.55
	2	3	.35	.92
		4	.98	.16
	3	4	.64	.24

Source: own elaboration from the data.

Difference tests of means for other variables

Developing T tests for independent samples in order to identify dimensions in the perception of stress according to different demographic variables. Differences were only found for the gender of people (Table 6).

There are significant differences between genders in stressful situations (p = 0.02), Physical reactions (p = 0.03) and Coping strategies (p = 0.01). In all three cases, it is women who have the highest averages. In this way, they are the ones who perceive greater stressful situations, have greater physical reactions, but have greater strategies to cope with them.

Table 6. Test of difference of means for dimensions of SISCO by gender

	Medias		t	p-valor
	Mujer	Hombre		
Stressful situations	3.43	2.95	2.47	.02
Physical reactions	3.55	2.94	2.26	.03
Psychological reactions	3.19	2.78	1.42	.16
Behavioral reactions	2.80	2.77	.09	.93
Coping strategies	3.24	2.65	2.82	.01

Source: own elaboration from the data.

DISCUSSION

In Latin America, academic stress in the moderate category has a percentage of 67% in the students of the samples used in different studies [2]. In Chile, one of the most recent studies (carried out at the Universidad de los Lagos, south of the country, year 2015), shows that 98% of its students are affected by stress, in health area careers [1].According to some research, the causes of stress are the following: situations in which they are evaluated (examinations and interventions in public) and excessive demand for work and methodological deficiencies [1,2,12,14]. In relation to the results obtained, 79% of the students evaluated in the nursing career present a moderate level of stress.

In order to find possible answers to the problem, López, in 2016, develops a study where the main result is the reduction of exhaustion in its participants after 9 Mindfulness sessions. With the above, the author's research can be related to the background presented in the critical literature, using as a basis the MBSR program (development of 8 sessions to achieve a significant effect on the level of stress) [15]. In the present investigation, the achievement of the effects in the students when participating in 4 sessions (part of the dimensions measured in the SISCO survey), are not significant for all the measured aspects.

The same occurs in the study by the authors Galante et al, who performed 8 weeks of intervention [16]. According to the evidence obtained by Harvard Business School "[..] Mindfulness would achieve in the person being present and aware, moment by moment, regardless of the circumstances" [17], being necessary around 8 sessions to achieve the development of tools to cope with stress.

On the other hand, the study carried out by Asuero et al, in 2013, concludes that the practice of mindfulness promotes self-care behaviors in 94% of the people who practice it [18], assimilating the previously mentioned studies and partially to what was found in this study, showing a significant decrease in stress in the physical and behavioral reactions dimensions.

The achievements obtained in the study developed by Amutio et al, to 43 first- and second-year high school students, in 2015 [19], show in the experimental group a 24% decrease in perceived stress in these students, agreeing with the present research,

where the stress level measurement scale is applied that objectively demonstrates the effect of these techniques on stress.

In 2013, Regehr et al [20], in the meta-analysis concluded that mindfulness interventions are effective in reducing stress in university students.

Finally, considering the sociodemographic point of view, the study carried out on 101 students, by Abarca in 2016, shows that the female sex presents a greater affection of stress in the first years, decreasing as they advance in the curriculum. Being consistent with the results obtained in the research [21].

The limitations of the study are the following:

- The selection of the sample in a non-probabilistic way and the low number of participants, which does not allow the generalization of the results.

- The time of the intervention. Mindfulness techniques workshops had to be limited to 4 weeks in duration, which prevents respecting the learning times that each student needs according to their characteristics.

- The quantitative methodology exclusively limits the range of conclusions and contributions that it may imply in the area of education.

- Post-intervention measurement. For a greater analysis of the effects of the interventions, a pre- and post-intervention would provide greater precision.

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