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Teacher Stress During the First Wave of COVID-19 Infections: An Analysis According to Demographic and Labor Variables

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Abstract: The purpose of this study was to analyze the work situations that education professionals perceived as stressful during the first wave of COVID-19 infections, and their possible variation according to demographic characteristics and working conditions. Empirical, quantitative, ex-post-facto, cross-sectional study was carried out, in which participated 9,058 teachers (86.9% women; M age = 41.08; SD = 8.82) who completed a semi-structured questionnaire of demographic and labor information and a scale of teacher stressors in the context of a pandemic. It was used Multivariate Analysis of Variance (MANOVA) with post hoc Bonferroni contrasts to study the variations in the perception of stress according to demographic and work variables. The MANOVAs indicated significant variations in the perception of stress according to the teachers' gender, age, marital status, having dependents (children and parents), the level of education of the teacher, the employment situation (permanent vs. transitory), teaching seniority, the type of educational management, the number of students in charge and the number of weekly working hours (for all cases, Hotelling's F with p <.001).

Keywords: *COVID-19, demographic variables, labor characteristics, teaching, work stress.*

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Introduction

With the beginning of the COVID-19 pandemic, education professionals have seen the change in several aspects of their work. At first, it was decreed the mandatory confinement by the government authorities, which caused educational institutions to close their doors and teaching to be provided remotely. Faced with this situation, teachers and professors had to move the classrooms to their homes, as well as using various technological resources to transmit knowledge and maintain communication with their students.

From that initial phase on, the new waves of infections meant that social distancing was maintained and it was carried out the reopening of educational institutions under strict protocols. Depending on the number of infected, classes were taught face-to-face, virtual or combined.

The changes that occurred in the work environment and in the content of the work promptly caused confusion, fear and anguish in a significant number of teachers. Studies carried out in different countries around the world reported that these professionals presented high levels of stress, professional burnout, anxiety, and depression during the pandemic, and that these imbalances were associated with multiple psychophysical symptoms (Casimiro Urcos et al., 2020; Klapproth et al., 2020; Ma et al., 2022; Ozamiz-Etxebarria et al., 2021; Pato & Fontainha, 2021; Vargas Rubilar & Oros, 2021). In this same line of research, various studies identified the demands and working conditions that were perceived as threatening, which caused stress by educators in times of COVID-19: (a) changes in time distribution; (b) work overload and the blurred boundaries between work and family/home functions; (c) changes in the work environment, (d) adaptation to technological resources; (e) the uncertainty due to the duration, economic, health and educational consequences that the pandemic could have for the teacher and the students; (f) the link with the educational organization; (g) the low productivity of the students; (h) the communication with the students and with their

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environment; (i) the conflict and role ambiguity; and, (j) loss of control over personal and work decisions, among others (MacIntyre et al., 2020; Pato & Fontainha, 2021; Robinson et al., 2022; Vargas Rubilar & Oros, 2021).

The perception of these factors as stressors could be seen amplified or attenuated due to the effect of different personal and contextual variables. According to Lazarus and Folkman (1986), people are not equally susceptible to circumstances. Sensitivity and vulnerability to stress depend on the intervention of various modulating factors. In this sense, demographic characteristics and working conditions may have played an important role in the way professionals perceived and reacted to potential stressors in the work environment (Estremera Rodrigo, 2017).

In the context of a pandemic, the perception of stress and its relationship with demographic and labor characteristics of teachers have not been sufficiently explored. The few studies that have approached the association between these variables in the Spanish-speaking population have not been entirely consistent in their conclusions. For example, in Peru, Valle Cohaila et al. (2021) concluded that the general stress of university teachers was not associated with the gender or age of the professionals. In this same country, Quispe Victoria and García Curo (2020) reported greater general stress and affectation of work and domestic performance in women, especially in those who had minor children participating in remote classes. The study included teachers from the initial, primary and secondary levels. In Ecuador, an investigation carried out with primary school teachers also revealed higher scores of work stress in women, in married people and in people with dependent children (Párraga-Párraga & Escobar-Delgado, 2020).

For their part, Lizano Lizano and Sánchez Alfaro (2022) observed greater general stress in women, in younger teachers, and in those who lived with older adults under their care, in a sample of university teachers in Costa Rica. The impact of marital status, having small children, workload or seniority were not relevant in this study.

In contrary findings, Calderon Muchcco and Pinedo Tuesta (2020), observed that work stress in Peruvian primary and secondary teachers was lower in those with greater work seniority, and that it was higher in those with an upper workload. These authors did not observe differences by gender.

Ozamiz-Etxebarria et al. (2021), evaluated a sample of Spanish teachers of different educational levels. They reported greater general stress in women and in teachers of the lowest age range (23-35 years), with little employment stability and school age children. They found no differences according to the educational level teachers worked, a finding that coincided with that of Yupari-Azabache et al. (2022) when studying a sample of primary and secondary educators from Peru.

Divergences in results can be due to multiple issues, some of which could be cultural, methodological, or other. Within the methodological field, the way in which stress has been operationalized in the different studies (general stress versus work stress) could have an influence. Further research is required to shed light on these issues.

On the one hand, taking into account the scarce and inconsistent information available on teacher stress, demographic and work variables in the context of the pandemic, and, on the other hand, the importance of knowing the personal and work factors that can enhance the perception of stress and increase the possibility of putting health at risk, this is how this research proposal was developed.

Thus, the objective of this work was to analyze possible differences in the perception of teacher stressors during the first wave of COVID-19 infections, based on demographic and labor variables. As a hypothesis, it is assumed that both demographic characteristics (gender, age, marital status, dependents) and employment characteristics (education level, employment status, professional seniority, type of school management, number of students, workload) have marked a significant difference in the perception of stressors associated with the educational function during mandatory isolation.

The information collected would allow the addition of evidence to outline a possible risk profile that guides the development of strategies to promote mental health in the teaching community. In this way, it would be possible to outline priority actions aimed at professionals who have presented or have been exposed to the most disadvantageous personal and work conditions. To gain a better understanding of how stress has affected educators during the COVID-19 health emergency could be relevant for educational authorities from different fields and jurisdictions. This is especially due to the progress of the pandemic remains uncertain.

Methodology

Research Design

It was carried out as an empirical, quantitative, *ex-post-facto*, cross-sectional study (Calderón Saldaña & Alzamora de los Godos, 2018). Due to the independent variables of this investigation are intrinsically non-manipulable, it was used the systematic assessment as control strategy. This strategy is suitable for quantitative studies that involves extensive samples, and it consists of the application of standarized stimulus to the participant subjects (i.e., measurement scale) (Richaud & Lemos, 2007).

Participants

A total of 9.058 teachers, residing in different Argentine provinces, participated in this study, working in state-managed and/or private educational institutions, in one of the four educational levels, in Special Education or in Youth and Adult Education. The selection of the participants was carried out with a non-random procedure, by calling for volunteers. Table 1 shows the demographic and labor characteristics of the sample.

Table 1. Sociodemographic and Labor Characteristics of the Participants (n=9.058)

Variables	Frequency	Percentage	Mean	Standard Deviation
Gender				
Femenine	7.870	86.90		
Masculine	1.182	13.00		
Other	6	.10		
Age			41.08	8.820
Up to 40 years	4.263	47.10		
More than 40 years	4.795	52.90		
Living With a Partner				
Yes	5.597	61.80		
No	3.461	38.20		
Having Dependents				
Yes	7.139	78.81		
No	1.919	21.19		
Types of Dependents				
Child/Children	5.160	56.97		
Parent/s	698	7.70		
Child/Children and parent/s	914	10.09		
Others	367	4.05		
Not having dependents	1.919	21.19		
Educational Level/Modality of Work				
Initial Education	1.057	11.70		
Primary Education	3.865	42.70		
Secondary Education	2.592	28.60		
Post-secondary Education	349	3.90		
Special Education	573	6.30		
Youth and Adult Education	622	6.90		
Labor Situation				
Permanent	6.025	66.50		
Transitory	3.033	33.50		
Teaching Seniority			12.85	8.390
Up to 10 years	3.435	45.40		
More than 10 years	4.132	4.60		
Management of the Educational institution				
State	7.049	77.80		
Private	1.482	16.40		
Work in Public and Private management schools	527	5.80		
Number of Students in Charge				
1 to 100 students	6.066	66.90		
More than 100 students	2.992	33.10		
Number of Assigned Hours			21.81	13.136
Up to 20 hours weekly	4.744	52.40		
More than 20 hours weekly	4.314	47.60		

Instruments

To investigate the demographic and labor characteristics of the participants, it was used a semi-structured questionnaire, which revealed information on gender, age, marital status, cohabitants in charge, educational level in which they work, employment status, professional seniority, type of institutional management, quantity of students in charge and number of weekly hours of work.

To assess the perception of stress, it was used the Teacher Stressors in Pandemic Times Scale (Oros et al., 2020), which includes 21 items with a Likert response format (1 = *Not at all stressful* to 5 = *Very stressful*). The items are grouped

factorially into five factors: *Work environment and work overload; Use of new technologies, Uncertainty due to the duration and consequences of the pandemic for teachers and students; Organizational aspect of the educational institution;* and*, Relationships with the student's environment, conflict and role ambiguity*. The internal consistency (Cronbach´s alpha) and composite reliability values calculated with the present sample were, respectively: Factor 1 = .85 and .83, Factor 2 = .80 and .80, Factor 3 = .83 and 83, Factor 4 = .81 and .80, Factor 5 = .76 and .75.

Data Collection and Ethical Considerations

The data was collected using an online form due to the research was carried out during the period of social isolation corresponding to the year 2020. Teachers were invited to participate through social networks, email and digital messaging, in some cases with the support of institutional and jurisdictional educational authorities. The evaluation began 46 days after preventive social isolation was decreed in our country, and it was remained active for six consecutive months. The collection process respected the integrity of the subjects. The teachers participated voluntarily and anonymously, giving their consent before answering the questions on the form. No incentives of any kind were provided in exchange for participation. The collected information was treated confidentially, and it was not given access to people outside the study.

Statistical Procedures

The answers provided by the teachers were processed with the statistical program for Social Sciences (SPSS v.19.0). No missing data were recorded at the item level or at the scale level. Atypical cases were tested at both the univariate ($z > 3.29$) and multivariate (Mahalanobis $p < .001$) levels. At the descriptive level, frequencies, percentages and measures of central tendency and dispersion were calculated for each of the factors analyzed. The univariate normality of the dependent variables was estimated using the asymmetry and kurtosis indicators.

To study the differences in the perception of stressors according to demographic and labor variables, MANOVAs were carried out. When applicable, *post hoc* contrasts were also calculated using the Bonferroni method. To determine the size of the effect, it was computed the partial eta squared statistic (η2p), considering the following criteria for its interpretation: .01 (small), .06 (moderate) and .14 (large) (Ellis, 2010).

Due to the disparity in size between some comparison groups, it was carried out a sample matching procedure in order to minimize the probability of committing *Type 1 Error*. Thus, when performing the MANOVAs, subsamples equivalent in number were formed for those demographic or labor variables that presented the greatest disproportion (e.g., gender, dependents, educational level, employment status, type of educational management). The selection of cases for these subsamples was completely random, using the features offered by SPSS.

Results

The atypical data represented 1.76% of the total cases, and they were eliminated, leaving the general sample composed of 8.899 teachers. The skewness and kurtosis values were equal to or less than +/-1, showing a distribution close to normal (see Table 2).

Table 2. Descriptive Statistics of Teaching Stressors

Stressors	Mean	Standard Deviation	Skewness	Kurtosis
Environment and Overload	16.78	5.44	-.37	-.83
New Technologies	12.35	4.17	-.05	-.92
Uncertainty	18.15	4.80	-.53	-.50
Organizational Aspects	12.35	4.44	-.02	-1.01
Relationships and Roles	9.37	3.34	-.07	-.94

The results of the MANOVA indicated that the perception of stressors varies according to the gender of the teachers (Hotelling's F (5, 2258) = 31.55; $p < .001$; η2p= .07). Women obtained significantly higher scores in four of the five types of stressors: *Work environment and work overload; Use of new technologies; Uncertainty due to the duration and consequences of the pandemic;* and*, Relationships with the student's environment, conflict and role ambiguity*.

Likewise, significant differences were observed according to age (Hotelling's F (5, 8893) = 109.11; $p < .001$; η2p= .06). The youngest participants, up to 40 years of age, scored higher in the dimensions of *Work environment and work overload* and *Uncertainty due to the duration and consequences of the pandemic*, while teachers over 40 years of age perceived greater stress related to the *Use of new technologies* and *Organizational aspects of the educational institution.*

The marital status of the participants (living with a partner or alone) also marked significant differences in the perception of stressors (Hotelling's F (5, 6775) = 40.82; $p < .001$; η2p= .03). Teachers who lived with a partner expressed greater stress related to *work environment and work overload* and *use of new technologies*.

The fact of having dependents (Hotelling's F (5, 3770) = 54.09; p < .001; η2p= .07), and the type of people under their care (Hotelling's F (15, 4181) = 4.31; p < .001; η2p= .02), also exerted an effect on the perception of stress. Teachers who had dependents during the months of mandatory isolation presented higher values of stress related to *Work environment and work overload*, *Use of new technologies* and *Relationships with the student's environment, conflict and role ambiguity*. Having dependent children and parents, simultaneously, was the most relevant category. In general terms, teachers who met this condition perceived greater stress related to the *Work environment and work overload*, *Use of new technologies* (tendency toward significance p = .06), *Organizational aspects of the educational institution* and *Relationships with the student's environment, conflict and role ambiguity* (in this case, without significant differences with having only dependent parents).

The educational level in which the teachers worked also had a significant effect on the perception of stressors (Hotelling's F (25, 10137) = 11.21; p < .001; η2p= .03). In general terms, it was observed that the professionals who taught at the secondary level obtained the highest stress scores in most of the dimensions evaluated, followed by the teachers who worked at the primary level (in some cases, without significant differences between them). The increase in the mean stress referred to *Uncertainty due to the duration and consequences of the pandemic* was striking for the group of teachers working in Special Education, whose value was close to that of the primary and secondary levels, without significant differences with them.

Teachers' employment status also emerged as a relevant variable (Hotelling's F (5, 5952) = 38.66; p < .001; η2p= .03). Those educators who were in the permanent category perceived greater stress associated with *Use of new technologies* and *Relationships with the student's environment, conflict and role ambiguity*. The trend was reversed for the stressor associated with *Uncertainty due to the duration and consequences of the pandemic*, in which educators scored higher as transitory.

The perception of stress also varied significantly according to teaching seniority (Hotelling's F (5, 8893) = 62.62; p < .001; η2p= .03). Professionals with less work seniority (up to 10 years) expressed more stress related to *Uncertainty due to the duration and consequences of the pandemic*, while teachers with more years of work (> 10 years) presented greater stress related to the *Employment of new technologies*, *Organizational aspects of the educational institution* and *Relationships with the student's environment, conflict and role ambiguity*.

It was also explored if the type of management of the institution where the teacher worked had any impact on their perception of stress. The data confirmed this conception (Hotelling's F (10, 3046) = 10.37; p < .001; η2p= .03). Teachers who worked simultaneously in state and private management schools showed the highest scores in all stress dimensions; although, in the case of *Use of new technologies*, the differences were not statistically significant. For their part, teachers who worked exclusively in state institutions presented a significantly higher perception of stress than teachers in private institutions, especially regarding *Uncertainty due to the duration and consequences of the pandemic*, *Organizational aspects of the educational institution* and *Relationships with the student's environment, conflict and role ambiguity*.

Finally, the number of students in charge (up to 100 vs more than 100 students) (Hotelling's F (5, 5817) = 69.73; p < .001; η2p= .06) and the number of weekly working hours (up to 20 vs more than 20 hours) (Hotelling's F (5, 8891) = 70.75; p < .001; η2p= .04), also had an impact on the perception of stressors. Teachers who had more students under their care and those who worked a greater number of hours achieved the highest scores in all the dimensions evaluated. Table 3 provides information on the univariate analyses, the means, the error deviations and the *post hoc* contrasts.

Table 3. Univariate Analysis, Means, Error Deviations and Post hoc Contrasts for the Perception of Stressors According to Demographic and labor variables

	Environment, Overload		Use of new Technologies		Uncertainty		Organizational Aspect		Relationships and Role		
Demographic and Work Variables	**M (ED)**	**F**	**M (ED)**	**F**	**M (ED)**	**F**	**M (ED)**	**F**	**M (ED)**	**F**	**n**
Gender											
Feminine	17.15 (.16)	68,32***	12.58 (.12)	85,49***	18.21 (.14)	11,42**	12.42 (.13)	2,26	9,47 (.10)	25,29***	1130
Masculine	15.28		10.97		17.52		12.14		8,75		1134
Age											
Up to 40 years	17.10 (.08)	27.32***	11,77 (.06)	156.9***	18,40 (.07)	21,67***	12,20 (.07)	10.25**	9,36 (.05)	.06	4190
More than 40 years	16,50		12,87		17,93		12,50		9,38		4709
Living With a Partner											
Yes	17.22 (.09)	78.31***	12.46 (.07)	12.51***	18.10 (.08)	1.05	12.33 (.08)	.07	9.37 (.06)	.58	3390
No	16.06		12.11		18.22		12.36		9.31		3391
Having Dependents											
Yes	17.11 (.12)	126.5***	12.55 (.10)	53.49***	18.07 (.11)	.05	12.24 (.10)	2.02	9.41 (.08)	9.14**	1890
No	15.17		11.55		18.10		12.04		9.08		1886
Types of Dependents											
Child/Children	17.51 (.28)	9.42***	12.43 (.22)	2.47+	18.27 (.25)	2.08	12.44_{a} (.24)	3.28*	9.59 (.18)	4.61**	350
Parent/s	16.79_{a}		12.63		18.88		13.08		9.92_{a}		350
Child/Children and parent/s	18.42_{b}		13.18		18.87		13.33_{b}		10.11_{ab}		350
Others	16.45_{ac}		12.45		18.22		12.54		9.24_{c}		353
Educational Level/ Modality of Work											
Initial Education	15.64_{a} (.29)	12.84***	11.99_{a} (.22)	7.30***	17.30_{a} (.25)	16.57***	11.01_{a} (.23)	28.99***	8.66_{a} (.18)	23.86***	340
Primary Education	16.99_{b}		12.97_{b}		18.48_{b}		12.48_{b}		9.68_{b}		340
Secondary Education	18.28_{c}		12.58_{abc}		19.73_{c}		13.88_{c}		10.40_{bc}		340
Post-secondary Education	16.68_{abd}		11.88_{acd}		17.22_{ad}		12.13_{b}		8.92_{ad}		339
Adult Education	15.96_{abde}		12.01_{acde}		18.74_{bc}		12.33_{bd}		8.83_{ad}		340
Special Education	15.61_{ae}		11.25_{ade}		17.30_{ad}		10.37_{a}		7.94_{a}		340
Labor Situation											
Permanent	16.77 (.10)	.51	12.59 (.08)	28.33***	17.89 (.09)	45.14***	12.43 (.08)	.59	9.45 (.06)	4.05*	2980
Transitory	16.87		12.01		18.71		12.34		9.27		2978
Teaching Seniority											4210
Up to 10 years	16.78 (.08)	.00	11.84 (.06)	120.34***	18.28 (.07)	5.34*	12.06 (.07)	36.00***	9.20 (.05)	20.70***	4689
More than 10 years	16.79		12.81		18.04		12.62		9.52		

Table 3. Continued

Demographic and Work Variables	Environment, Overload		Use of new Technologies		Uncertainty		Organizational Aspect		Relationships and Role		
	M (ED)	F	M (ED)	F	M (ED)	F	M (ED)	F	M (ED)	F	n
Educational Management											
State	17.05_a (23)	22.96***	12.41 (.18)	2.55	18.34_a (.21)	28.80***	12.42_a (.20)	27.52***	9.38_a (.15)	29.33***	510
Private	16.26_a		11.98		16.87_b		11.61_b		8.77_b		510
Both	18.46_b		12.55		19.05_c		13.67_c		10.33_c		511
Number of Students											
1 to 100 students	16.30 (.10)	113.1***	12.31 (.08)	4.10*	17.87 (.09)	40.20***	11.75 (.08)	230.1***	9.00 (.06)	173.2***	2910
More than 100	17.78		12.53		18.65		13.48		10.13		2913
Number of Hours											
Up to 20 hours	16.10 (.08)	159.3***	12.07 (06)	44.37***	17.81 (.07)	50.31***	11.74 (.06)	195.6***	8.80 (.05)	293.4***	4671
More than 20 hours	17.54		12.66		18.53		13.04		10.0		4226

Note: Means with different subscripts differ from each other with $p < .05$ in *post hoc* contrasts. + = tendency toward significance (.06).

Discussion

The analysis of the factors that intervene on experiencing psychological discomfort as a result of the COVID-19 pandemic continues being a challenge for the psychological sciences. The purpose of this study was to examine possible differences in the perception of teaching stressors during the first wave of infections according to demographic and labor variables. In order to identify a possible risk profile that would allow directing intervention actions towards the most affected professionals. The results supported the proposed hypothesis. All the demographic and occupational characteristics evaluated showed significant differences in the perception of stress.

Regarding gender, as in the studies by Quispe Victoria and García Curo (2020), Párraga-Párraga and Escobar-Delgado (2020), Ozamiz-Etxebarria et al. (2021) and Lizano Lizano and Sánchez Alfaro (2022), women were more affected than men. The only exception is seen in the facet of *Organizational aspects of the educational institution*, in which teachers of both genders scored similarly. The greatest difference between men and women is seen with regard to *Work environment and work overload*. This may be due to the fact that in our culture, historically, the female gender has been assigned the responsibility of attending to domestic tasks and carrying out care actions (e.g. children, the elderly). In this context, it is understandable that women have perceived as more threatening having to carry out work tasks at home without neglecting the family and domestic chores and, consequently, they have felt more overloaded with work. It is likely that this overload also explains the increase in stress related to the other stressors (i.e. having to master new technologies, face the particular relationships with the student and their environment, perceive conflict and ambiguity with their role).

With regard to age, younger teachers (up to 40 years old) perceived greater stress related to *Work environment and work overload* and were more affected by the feeling of uncertainty. This is likely that many of the educators in this age group did not yet live alone, or were parents of children who required care and support to continue their schooling. If so, these professionals had to share the same physical space and technological resources with other family members during social isolation. This situation probably favored teachers perceive as a source of stress having to work in a place where it was difficult to concentrate and felt overwhelmed by having to perform multiple tasks (i.e. teaching, caring for children, helping with homework, etc.). On the contrary, older teachers (> 40 years old) reported greater stress related to *Use of new technologies* and *Organizational aspects of the educational institution*. In a similar manner, a study conducted in the Philippines during the 2020-2021 school year reported that teachers over the age of 46 reported *Use of new information and communication technologies in teaching* as a stress trigger (Malabad & Mamuag, 2022). Possibly, this can be due to teachers who are over 40 years old have not knowing about the uses of some technological resources, applications and digital platforms. In this direction, a study carried out in Argentina reported that older teachers had more difficulties adapting to the educational conditions of the pandemic and that they had to overcome more obstacles to incorporate technological resources into teaching (Palma-Vasquez et al., 2021). In Italy, it was found that teachers' age correlates positively with computer anxiety, and negatively with self-efficacy in the use of ICTs (i.e., information and communication technology) during lockdown (Bianchi & Caso, 2021). Other studies carried out in Spain during the same period found that educators who were over 41 years of age perceived themselves to be less digitally competent than their younger colleagues (Portillo et al., 2020; Solís García et al., 2021).

Regarding marital status, it was noted that educators who lived with a partner perceived greater stress related to the work environment and work overload and the use of new technologies. A possible explanation for these results can be found in the fact that the pandemic situation forced government authorities to establish mandatory confinement. Thus, people who lived as a couple had to reside permanently and uninterruptedly in the same place. This situation could have generated some discomfort for teachers, given that they had to share housing and technological resources to work, recreate and maintain communication with family and friends. Under these conditions, it is possible that the teachers who lived with their partner felt work overload due to combining work with household chores, and that they perceived that it was difficult for them to work because they did not have the necessary technological resources and a comfortable environment suitable for distance teaching (Ali et al., 2021).

On the other hand, education professionals who had people in charge (i.e., parents and/or children) presented greater stress associated with *Work environment and work overload*, *Use of new technologies*, and *Relationships with the student's environment, conflict and role ambiguity*. These results coincide with what was reported by Párraga-Párraga and Escobar-Delgado (2020), Hidalgo-Andrade et al. (2021), Ozamiz-Etxebarria et al. (2021) and Lizano Lizano and Sánchez Alfaro (2022), who found greater stress in teachers that had children and lived with older adults during the first part of the pandemic. In these cases, teachers had to provide attention and take care of people who depended on them, without neglecting their work obligations. This situation could have caused teachers to feel overwhelmed by the simultaneous demands they received from family and work (Spadafora et al., 2022). In turn, it is likely that this overload caused educators to perceive having to interact to the student's environment and having to assume functions that were the responsibility of other social actors as an additional source of stress.

According to the educational level or modality in which the teachers worked, it was possible to observe that the professionals who taught in Secondary Education obtained higher scores in most of the stressors evaluated, followed by the teachers who worked in Primary Education. In general, Secondary Education teachers have a larger number of students because they teach classes in more than one course and/or educational institution. This aspect possibly resulted

in this group of educators feeling more overloaded with work, overwhelmed by the incorporation of ICTs demanded by the requirements of school authorities and uncertain due to the consequences of the pandemic (Faridah et al., 2021). The fact of working with adolescents perhaps meant having to deal with the apathy of the students and having less support from their environment. As far as Primary Education is concerned, teachers taught literacy and provided training in different fields of knowledge to students who are going through childhood. To do this, they had to adapt teaching to non-attendance, and also had to maintain constant communication with parents to mediate the explanation of school content. It is possible that this has led to a greater perception of stress in the labor factors analyzed (Faridah et al., 2021).

In the case of teachers working in Special Education, it was striking that the perception of uncertainty associated with the pandemic reached values similar to those obtained by educators in Secondary and Primary Education. If it is considered that this modality of the educational system has the purpose of making the right to education effective, ensuring school integration and favoring the social insertion of people with disabilities, it can be understood why the reality imposed by the pandemic has worried these teachers. Fundamentally, this was due to the confinement isolated the students, who had a disability that the students had made them more vulnerable to COVID-19, and because in some cases the students did not have technological resources adapted to their disability to work remotely, among other aspects (Faridah et al., 2021; Simó-Pinatella & Carvalho, 2021; Smith. 2020).

Regarding employment situation, it was noted that educators categorized as transitory experienced greater stress associated with *Uncertainty due to the duration and consequences of the pandemic for teachers and students*. It is possible that having less job stability has generated in these professionals fear of losing their job, confusion about the future and concern about the impact that the health emergency could have on their personal finances. In agreement with this, Ozamiz-Etxebarria et al. (2021) found that Spanish teachers with little stability presented higher levels of stress at the beginning of the 2020-2021 school year. On the other hand, it was observed that teachers who were in the permanent category perceived stress related to the use of new technologies and relationships with the student's environment, conflict and role ambiguity to a greater extent. Similarly, a study conducted during the first year of the pandemic with Greek primary-level teachers found that teachers holding permanent positions had more negative attitudes towards distance learning and perception towards relationships with students, and their parents (Papazis et al., 2022). It could be thought that educators who have achieved job stability are older and have less training in ICTs.

Regarding seniority, it was observed that educators who had fewer years of teaching practice (up to 10 years) indicated *Uncertainty due to the duration and consequences of the pandemic for teachers and students* as a source of greater stress. Educators with less teaching experience are likely to be younger. Consequently, they did not have sufficient professional maturity and expertise to effectively use coping strategies to prevent stressful situations at work (Gil-Monte & Peiró, 1997). On the other hand, it was also noted that teachers who had more work experience (> 10 years) indicated organizational aspect of the educational institution and relationships with the student's environment, conflict and role ambiguity as the most relevant stressors. In general, the educators who have been teaching for a longer time are older individuals (> 40 years old) and they have job stability in formal education. Possibly, this group of educators has presented less flexibility to adapt to the educational conditions imposed by the pandemic. Therefore, they have perceived as more threatening having to respond to the requirements and work guidelines established by the educational authorities. In accordance with the results obtained in the present study, another research carried out in Slovakia found that teachers who were younger and less experienced in the profession reported greater uncertainty due to the changes that education was undergoing due to the pandemic (Loziak, 2021). Another study carried out in Hong Kong found that teachers with less than 10 years of labor seniority experienced greater stress related to the future, and changes in the work environment. While professionals who had practiced the profession for more than 10 years perceived the psychosocial environment (i.e., relationship with students and colleagues) and control over work (i.e., meeting deadlines, regulations, and the control) as more significant (Wong, 2020).

Dealing with school management, it was noted that teachers who worked exclusively in state institutions presented a significantly higher perception of stress than teachers in private institutions, especially regarding to uncertainty due to the duration and consequences of the pandemic, organizational aspects of the educational institution and relationships with the student's environment, conflict and role ambiguity. This may be due to the fact that state schools cater to a greater extent to students who come from less economically advantaged families. Teachers may have been concerned about the impact that the pandemic could have on the lives of their students, given that, during isolation and mandatory social distancing, many students did not have the technological resources and connectivity to study remotely, the parents of the students did not have a stable job and/or had sufficient training to accompany their children's schooling.

On the other hand, it was observed that teachers who taught simultaneously in educational establishments of state and private management reported a greater perception of threat in all the stressors evaluated, although in the case of *use of new technologies*, the differences were not statistically significant. These educators had to adjust their work to the guidelines established by school authorities from different fields, and they had to teach students from different social strata at the same time. Under these circumstances, it is possible that the incorporation of ICTs into teaching has not been perceived as the most threatening stressor.

Finally, teachers who had a higher workload (> 20 hours) and had more students in their charge (> 100 students) achieved the highest scores in all the dimensions evaluated. These results are in the expected direction, since teaching a greater number of students and working more hours per week can increase the perception of stress. In Peru, Calderon Muchcco and Pinedo Tuesta (2020) also found higher levels of job stress in teachers who taught more class hours.

Conclusion

The results of this study allow us to conclude that, during the unpredictable circumstances caused by the expansion of COVID-19, certain personal and contextual variables acted as stress enhancers for teaching staff. Thus, not only let us know that the educational population has been one of the most affected in terms of mental health, but also that certain segments within it have been especially vulnerable to the psychosocial impact of the pandemic. Knowing precisely what personal and work characteristics have marked a radical difference in the stress experience of teachers will allow guidance in mental health prevention and protection processes for this professional group. This would not only be important as a palliative instrument once the risk situation is over, but also as an anticipatory element against possible outbreaks of the virus, or the emergence of other contingencies that could force teachers to drastically modify their tasks and their contexts of action. Health professionals, educational and government authorities from different fields and jurisdictions could take advantage of these results.

Recommendations

It is recommended that future studies on the subject use random selection strategies, such as cluster sampling, which may be feasible in the case of research with a teaching population. On the other hand, it is considered important to continue exploring the impact that the pandemic has had on the labor and well-being of education professionals, investigating not only the risk factors and the aspects that have been affected, but also those resources and strengths that have helped them to overcome adversity. In this line, it would be interesting to collect qualitative information that complements the approach taken in this work.

Limitations

One of the limitations of this work is related to the sampling procedure that, since it is not random, restricts the generalization of the data to the universe of study. Although this limitation may be relatively attenuated by the large sample size and the geographical heterogeneity of the participants, it remains an area for improvement.

The effect size for the general results was between low and moderate, indicating that there are other variables that, without a doubt, may have had a greater impact on the teachers' perception of stress. Among them, it could be considered personality variables, coping styles, own health complications or those of significant others, loss of close friends, and similar factors. The exclusive focus on the impact of demographic and labor variables has provided only a limited view of the phenomenon of interest. It would be opportune to include the assessment of these aspects in studies similar to this one.

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Authorship Contribution Statement

Vargas Rubilar: Conceptualization, data acquisition, interpretation, writing. Oros: Design, data acquisition, analysis, writing.

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