Correlation between stress and lifestyle in teachers at some schools in Lima, Peru, during telework in 2020

Dante M. Quiñones-Laveriano[a,*], Martha Sofia Cervera-Ocaña[b,c,1], Lucia Virginia Porro-Diaz[d,2], Karla Josselin Reynel[d,3] and Jhony A. De La Cruz-Vargas[a,d,4]

[a]*Instituto de Investigaciones en Ciencias Biomédicas, Universidad Ricardo Palma, Lima, Peru*
[b]*Facultad de Ciencias Médicas, Universidad César Vallejo, Trujillo, Peru*
[c]*Sociedad Científica de Estudiantes de Medicina de la Universidad César Vallejo, Trujillo, Peru*
[d]*Facultad de Medicina Humana, Universidad Ricardo Palma, Lima, Peru*

Abstract.

BACKGROUND: Stress and unhealthy lifestyle are serious problems in public health and education, particularly due to their significant relevance in the context of the COVID-19 pandemic.

OBJECTIVE: To determine the correlation between stress and lifestyle in teachers at some schools in Lima, Peru, during telework in 2020.

METHOD: This observational, quantitative, analytical, cross-sectional study was conducted in 217 school teachers from Lima. Lifestyle was measured using the FANTASTIC questionnaire; stress was measured using the Teaching Stress Scale (ED-6), comprised of the anxiety, depression, maladaptive beliefs, work pressure and poor coping dimensions. The Spearman correlation between numerical variables, and the difference of the FANTASTIC score according to the categorical variables, were analyzed with the Mann–Whitney U test or Kruskal–Wallis test, as necessary. Multivariable analysis was done with a multiple linear regression model to find raw and adjusted β (βa).

RESULTS: The median of the ED-6 scale was 81 (RI: 64–105). Sixty-four percent of the teachers had a good-excellent lifestyle; 27.2%, regular; and 8.49%, bad-dangerous. The FANTASTIC score had an inverse correlation with ED-6 (β_a: –0.16, 95%; CI: –0.20 to –0.12) adjusted for age and cohabitation with children. Likewise, teachers between 40 and 49 years old (β_a: 2.89, 95%; CI: 0.17 to 5.62) had a better lifestyle; and teachers who lived with children (βa: –5.48, 95%; CI: –7.89 to –3.06), a worse lifestyle.

CONCLUSIONS: As stress increased, the lifestyle quality worsened in teachers at some schools in Lima, Peru, during telework in 2020.

Keywords: Occupational stress, quality of life, tele-education, COVID-19

[1]ORCID: 0000-0001-8228-2993

[2]ORCID: 0000-0002-2791-4780

[3]ORCID: 0000-0002-1921-950X

[4]ORCID: 0000-0002-5592-0504

*Address for correspondence: Dante Manuel Quiñones Laveriano, Jirón Junín 881, Interior C-103, Magdalena del Mar, Lima 15086, Peru. E-mail: dante.quinones@urp.edu.pe, ORCID: 0000-0002-1129-1427.

1. Introduction

In 2019, chronic diseases caused the loss of over 100 million of healthy life years with respect to the year 2000 [1], raising the premature mortality rate and decreasing life expectancy [2]. To prevent these diseases, it is fundamental to adopt a healthy lifestyle through adequate nutrition, physical exercise, social activity, recreation, sleep, and less toxic habits [3, 4].

Currently, the COVID-19 pandemic makes practicing these difficult, since the physical, mental, and psychosocial field of an individual is severely affected by the stress associated to health confinement [5]. In Peru, 70% of workers suffer from work stress, with alarming numbers that are associated with lack of promoting emotional wellbeing through healthy work habits [6]. In the education sector, the teacher's basic regular labor has been one of the most affected by stress [7].

Before the pandemic, teaching in Peru was already known as an occupation with various sources of stress and, in some settings, poorly remunerated. With the arrival of COVID-19, the pre-existing factors of teacher stress accumulated with other new ones associated with telework [8], adding to aggravate technostress. It has been reported that the pandemic has decreased the probability of passion and enthusiasm for work, in addition to generating a pessimistic social atmosphere and generalized anxiety, situations that directly affect work feelings [9] and work stress. The feeling of uncertainty generated by COVID-19 also increased stress by motivating abrupt changes in the teachers' lifestyle [8]. All these factors continue to affect the global health of teachers, especially those who do not have the soft skills of self-regulation and self-efficacy [10] to deal with the challenges of the tele-education modality.

The COVID-19 pandemic also directly influenced the teachers' lifestyles. It has been shown that, during quarantine, some teachers had a reduction in physical activity and a significant increase in weight, while there was also a marked increase in the number of hours of sleep per day [11]. Furthermore, in a self-perception study, a small proportion of teachers claimed to have increased the consumption of harmful substances (alcoholic beverages, cigarettes and / or other drugs) [12]. It has also been reported that teachers have had a greater tendency to sedentary lifestyle [11], due to the more necessity sitting in front of the computer, either for the dictation of classes, review of assignments, or preparation of material for the classes.

Chronic stress is a dangerous state that involves adrenaline and cortisol hormone release, which trigger the fight or flight response. The long-term persistence of stress factors may generate physio pathological and psychological effects [13] which hinder leading a healthy lifestyle. Just as stress affects an inadequate lifestyle, leading a healthy lifestyle may help to relieve and decrease stress [6]. Among the lifestyle factors greatly associated with less stress,

especially work-related, are physical activity, self-care, adequate eating habits and less toxic substance consumption [6]. In the teaching practice, which is perceived as a work [14], it is fundamental to recognize and manage work-related stress, since this has a negative impact in the student's academic, associated with paying little attention, unnecessary reprimands and fostering tedious classes [15].

There is limited research available that analysed the association between stress and lifestyle in the education environment [16–18], with college students as their population and are not carried out in the Peruvian context. From these, it is known that tobacco consumption, exercise, and sleep reduction, are associated with higher levels of stress, especially in unemployed women and with low annual income, in the same manner, the greater part of time dedicated to exercise and sleep is associated with lower levels of stress. In addition, it is known that there is a significant relationship between general health and physical activity, nutrition, tobacco use, safety measures, and gender. However, studies are still required in the context of COVID-19, given its high influence on stress and the lifestyle of teachers.

The importance of this study is based on knowing the relationship between stress and lifestyle among school faculty in circumstances such as the pandemic, in which the temporo-spatial field of telework demands a fast degree of adaptation, develops major psychopathological symptoms, increases stress, decreases mental health [19]. This is important, not only for the quality of life of teachers, but also since they have a great influence on their students, it can be suggested that the expression of good mental health and a healthy lifestyle in teachers will have a positive impact on the health and education of their students. On the other hand, a better lifestyle also generates benefits in the work environment, for example, better states of physical and mental health could lead to increasing productivity during the COVID-19 pandemic [20].

Likewise, the research is carried out in a Peruvian context, where the various educational challenges, as well as the reduced technological investment, the scarce access to rural areas, the lack of training, and the low remuneration of teachers distinguish the stress scenario. This information would be of interest to develop preventive-promotional strategies more focused on the national reality, as well as to be a starting point for research on the same subject in other countries with similar sociodemographic characteristics and educational challenges. The application of

the strategies could improve the productivity and integral health of the teacher, their family environment, and the well-being of the entire teaching community. In addition, this study evaluates other characteristics associated with greater stress in teachers, information that would allow prioritizing the application of these strategies specifically to this higher risk group. The present study also reports the most prevalent stress dimensions, which would influence the more precise search for methods to reduce the level of total stress more efficiently in teachers.

Based on the aforementioned, the objective of this study was to determine the correlation between teacher stress, in each one of its dimensions (anxiety, depression, maladaptive beliefs, work pressure, and bad coping), with lifestyle among teachers in some schools of Metropolitan Lima, Peru during telework in the year 2020.

2. Methods

An observational, quantitative, analytical, cross-sectional study was performed in on teachers of five schools; Virgen de Chapi, María Reina, San Juan Bautista, PNP Félix Román Tello Rojas, and 7259 Víctor Raúl Haya de la Torre, who performed telework in Lima, Peru during the pandemic, in the year 2020. The data were collected between October and December of 2020. The Peruvian educational system was comprised of basic and higher education. Basic education is offered in different modalities: regular, alternative, and special. Regular modality covers Elementary education, primary (directed at boys and girls 6 to 11 years of age), and secondary (age of reference covers 12 to 16 years of age).

The study population was made up of teachers that worked giving virtual classes in educational institutions before mentioned. The number of teachers per school were 32 for 7259 Víctor Raúl Haya de la Torre, 72 for PNP Félix Román Tello Rojas, 27 for María Reina, 26 for San Juan Bautista and 60 for Virgen de Chapi. Of these 288 teachers, 71 (24,6%) decided not to participate, with a total of population of 217 teachers. Since a census study was carried out, a sample was not performed. However, the statistical potential *a posteriori* was calculated for the correlation between the FANTASTIC and ED-6 scores obtained, resulting greater than 99%. We included contracted teachers with an adequate technology resource to fulfill their job through telework.

One of the main variables of the study was the teachers' lifestyle, which was measured applying the FANTASTIC [21] questionnaire (Cronbach's $\alpha = 0.778$) [22]. The FANTASTIC lifestyle questionnaire is a tool that allows evaluating people in primary care, as well as guiding them towards a better quality of life [23]. The obtained results were qualified through a Likert-type scale, from 0 to 100. For a better analysis, we took the mean as the cut-off point to stratify the score in 5 levels:<39 points = "danger exists", 40 to 59 points = "bad", 60 to 69 points = "regular", 70 to 84 points="good" and, 85 to 100 points="excellent". For a better analysis of the results, the levels "danger exists" and "bad lifestyle" were combined in the category "bad-dangerous lifestyle", as well as the levels "good" and "excellent" in the category "good-excellent lifestyle". Another main variable was stress, which was measured using the Teaching Stress Scale (ED-6) in its abbreviated version and validated for a Peruvian context, with Cronbach's α of 0.932 [24]. This questionnaire consisted of 39 items of Likert-type scale, with a value of 1 (completely agree) to 5 (completely disagree), and it was composed of 5 dimensions: anxiety (items 1–10), depression (items 11–17), maladaptive beliefs (items 18–21), work pressure (items 22–34) and bad coping (items 35–39). The co-variables chosen for the correlation in the multivariate model were those related to stress and those with which its relation to the outcome in the bivariate analysis would be evaluated.

The present study was approved by the Research Ethics Committee from the Universidad Ricardo Palma and the directives of the respective educational institutions. All the procedures carried out respected the Helsinki Declaration [25], preserved the integrity and fundamental rights of the patients subjected to the research, and guaranteed the confidentiality of obtained data. The research was developed within the framework of the VII workshop for the thesis dissertation according to methodology and workshop focus [26].

The data collection technique was the online questionnaire, and the data collection instrument was the Google Form designed *ad-hoc* for the study. In this form we included the first part of the questions regarding the population characteristics, such as age, sex, educational level taught, work hours per week, number of students taught, years as a teacher, prior experience in telework, living with children and ages of children with whom they live. Later, the online questionnaires FANTASTIC and ED-6 were carried

out through the corresponding completion by the teachers from the schools mentioned. This information cured and organized through being inserted in a calculation sheet from MS Excel, for its later analysis in the statistical program Stata version 14 and SPSS version 22.

3. Statistical analysis

The quantitative variables were presented in measures of central tendency (mean or median) and measures of dispersion (standard deviation or interquartile range), prior evaluation of value distribution. For the qualitative variables, we used measures of frequency distribution. In the inferential statistic, we analyzed the correlation between numerical variables using the Spearman test. The differences in the FANTASTIC score according to qualitative variables was evaluated using the Mann-Whitney U test and Kruskall-Wallis test (using Dunn's *post hoc* test), according to the number of categories. For the inferential analysis, age was categorized according to young adult (under 40 years old), middle-aged adult (from 40 to 49 years old) and older adult (greater than 49 years of age) [27]. For the multivariate analysis, we used a lineal regression model to find the crude and adjusted β, with their respective confidence interval at 95%, and considering a statistical significance if $p < 0,05$. In this analysis, all co-variables were included that had a value of $p < 0,05$ in the bivariate analysis.

4. Results

A total of 217 teachers with ages of 22 to 65 years were surveyed and studied. Regarding their general characteristics, the predominant sex was feminine at 57,6%, the mean age was $37,99 \pm 9,7$ years. Sixty-four percent teachers had a good-excellent lifestyle, 27,2% regular lifestyle, and 8,49% bad-dangerous lifestyle (Fig. 1). The mean score on the ED-6 scale for teacher stress was 81, while the mean number of children taught was 72. Most teachers, who had a mean working hours per week of 12, had an aged 30 to 39, taught at the primary level, had no tele-work experience prior to the quarantine, and lived with their children, most of them young children. The other teachers' general characteristics are shown in Table 1.

The total score of the FANTASTIC scale presents an inverse correlation with the ED-6 scale score, as
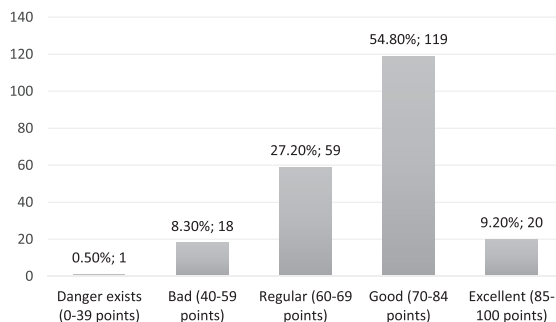

Fig. 1. Lifestyle categories according to FANTASTIC scale in teachers at some schools in Lima during telework in the year 2020.

well as in each of its dimensions (see Fig. 2). In this sense, as the teacher's stress score increases, the lifestyle score decreases, and vice versa. On the other hand, the difference in the medians of the FANTASTIC scores of teachers who lived with children and without children were statistically significant, as well as if they lived with young children. Additionally, the difference in the medians of the teacher's FANTASTIC scores in teachers 40 to 49 years of age were significantly greater in teachers under 40 years of age and greater than 50 years of age were statistically significant (Table 2).

With respect to the lineal regression analysis (Table 3), the bivariate model found a β (CI 95%) statistically significant for the ED-6 Scale score, age, living with children and living with young children. Likewise, in the multivariate model, it was found that for every point that increased in the FANTASTIC score for lifestyle, the stress level in the ED-6 scale decreased by 0.16 points, making this a statistically significant relationship adjusted to age and if they live with young children. In the same manner, teachers that lived with young children presented 5.48 points less compared to those who did not have children, adjusted by the ED-6 scores and age. Lastly, teachers with an age between 40 to 49 years had 2.89 points more in FANTASTIC compared to those under 40 years old, adjusted by the ED-6 scores and if living with young children.

5. Discussion

This work is one of the few studies in inverse correlation that exists between stress and each one of its dimensions, such as anxiety, depression, maladaptive beliefs, work pressure and bad coping, with teacher's lifestyle in some schools of Lima, Peru.

Table 1
General characteristics of teachers at some schools in Lima during telework in the year 2020

Quantitative variables	Median	Interquartile range
Number of children taught	72	(30–100)
Years as a teacher	12	(6–16)
Work hours per week	30	(25–40)
ED-6 scale score	81	(64–105)
Qualitative variables	**Frequency (N)**	**Percentage (%)**
Sex		
Feminine	125	57,6%
Masculine	92	42,4%
Categorized age		
Under 30 years	50	23%
From 30 to 39 years	84	38,7%
From 40 to 49 years	54	24,9%
From 50 years and over	29	13,4%
Education level taught		
Primary	114	52,5%
Secondary	103	47,5%
Prior experience in telework (before quarantine)		
No	185	85,3%
Yes	32	14,8%
Lives with children		
No	71	32,7%
Yes	146	67,3%
Ages of children with whom they live		
Young child (0–11)	96	44,2%
Adolescent (12–17)	53	24,4%
Youth (18–29)	39	18%
Adult (30–59)	6	2,8%

Most of the research developed in our environment are not centered on school teachers, but rather other work groups. Knowing the stress characteristics that these teachers specifically have is important given the recent pandemic situation by which they had to readapt their work, an environment which favors a higher level of stress, affecting their lifestyle as well.

It is of great relevance to study stress and lifestyle in school teachers, given that it could have a greater influence on their students [28], just as teacher's mental health and wellbeing are associated with these same variables in their respective students [29]. This generates a great opportunity to promote a healthy lifestyle in their students. These particularities make the results presented guide the interventions in search of improving the school teacher's lifestyle and stress, including their students. Likewise, it constitutes a starting point to carry out a national analysis, considering those factors related to lifestyle that could be influenced by educational challenges of their own Peruvian context.

In the present research, we obtained that 64% of teachers had a good-excellent lifestyle level, 27,2% a regular lifestyle, and 8,49% had a bad-dangerous lifestyle. A Jordanian study also found that most university professors had good quality of life and mental health levels during COVID-19 lockdown [30]. Pirzadeh et al. [31] carried out a study similar in Isfahan, Iran, in which it was found that most teachers in traditional work modality had a good lifestyle (85,4%), followed by regular lifestyle (13,5%) and a bad lifestyle (1%). The difference in percentage of teachers with a bad lifestyle from both studies may explain based on the study by Gómez [32], who concluded that telework negatively affects teacher's' lifestyle. Likewise, it is fundamental to emphasize that various lifestyle factors have been negatively affected by COVID-19 confinement [33], and that the functions the professors perform have increased with the years, impacting in the meaning of a teacher's role and their health [32]. Recognizing and improving lifestyle in teachers is fundamental for the education process, considering that teachers are less prepared for class and less understanding and tolerant with students when personal problems arise [34].

On the other hand, the median of the ED-6 stress scale of the teachers in the present study was 81. Becerra [35] used the same ED-6 teacher stress scale instrument and obtained similar results. He concluded that most of the teachers had high stress, followed by moderate stress. However, the stress level of our research was higher than the study car-
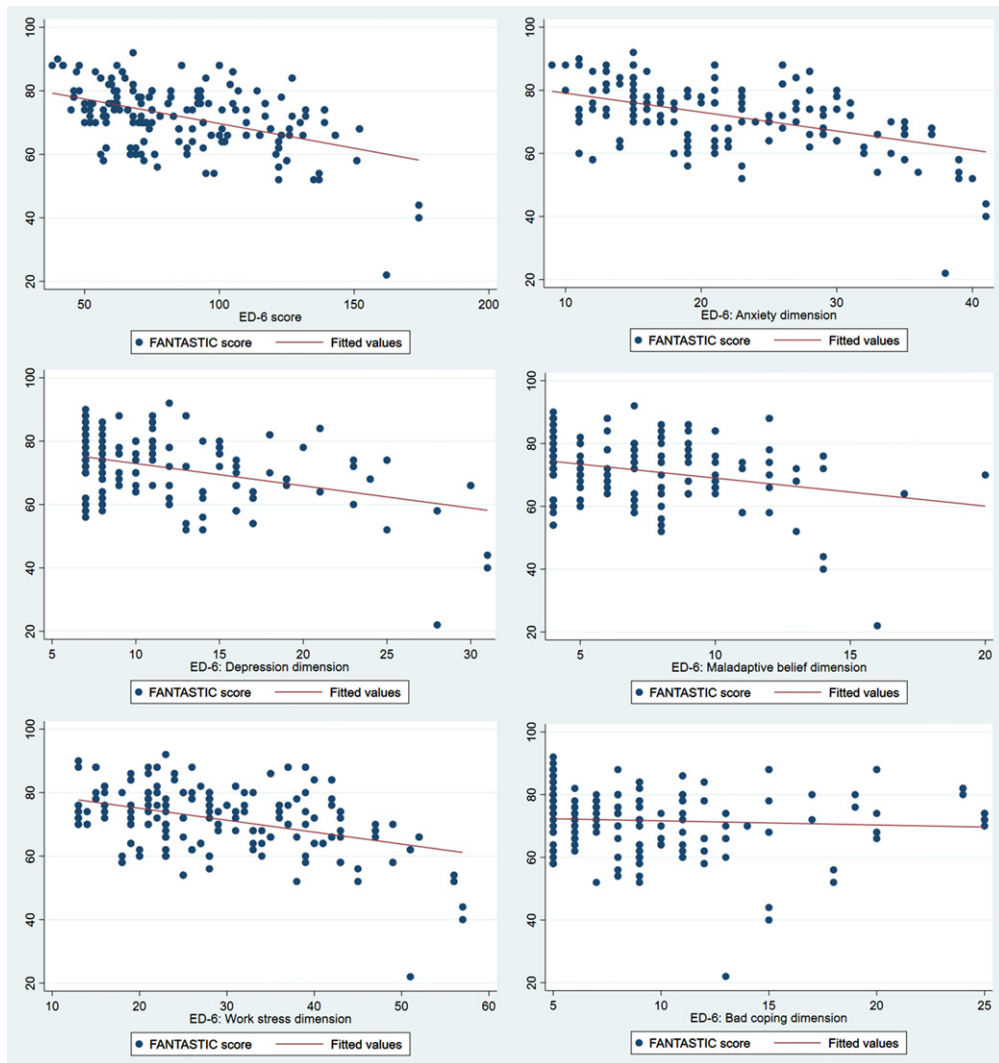
Fig. 2. Diagram of dispersion between the total score of the FANTASTIC lifestyle questionnaire and total score for the teaching stress scale (ED-6), and each one of their dimensions.

ried out in Mexico [36] during a pandemic, which obtained 61.8% of teachers with stress. Both studies had a similar population, however, the measurement and classification instruments of the Ulloa study [36] were different from our study.

In the multiple linear regression, we found that an inverse correlation exists between teacher's lifestyle and stress (β adjusted = –0,16; $p < 0,001$). This correlation has been found also in other populations such as the one in a study carried out in the United States [37], that found an inverse correlation between stress and health lifestyle for female college students (rho = –0.116, $p < 0.01$); or the one of a study with a population sample in China [38], which demonstrated that some aspects of a healthy lifestyle, such as diet

and physical exercise, were associated with mental health and the degree of stress. However, studies that explore this relationship in teachers is scarce. One of these found that there was a significant negative correlation between the mental health and occupational stress in primary and secondary school teachers [39].

This relationship is often related to the work overload that impedes the coping and care of different aspects of a teacher's life, neglecting their physical, mental, and spiritual wellbeing and worsening their lifestyle [40]. This suggests that the relationship that exists between these variables may be bidirectional, and the interventions to improve lifestyle and teacher stress should be simultaneous, especially considering that stress control is necessary given their relationship

Table 2
Correlation and difference in FANTASTIC scores for lifestyle with teacher stress and other co-variables, in teachers in schools in Lima during telework in the year 2020

Numerical variables	Spearman's correlation coefficient	p-value
Teacher stress		
ED-6 Scale score	–0,390	0,001
Anxiety dimension	–0,429	0,001
Depression dimension	–0,279	0,001
Maladaptive belief dimension	–0,234	0,001
Work stress dimension	–0,336	0,001
Bad coping dimension	–0,162	0,017
Other co-variables		
Work hours per week	–0,029	0,671
Number of students taught	–0,057	0,406
Years as a teacher	–0,007	0,916
Categorical variables	Median (interquartile range)	p-value
Sex		
Feminine	70 (66– 78)	0,488**
Masculine	73 (66–78)	
Categorized age		
Under 40 years	70 (64– 78)	0,003*
From 40 to 49 years	75 (70– 80)	
From 50 and over	74 (66– 78)	
Level taught		
Primary	73 (64– 80)	0,698**
Secondary	72 (66– 78)	
Prior experience in telework (before quarantine)		
No	72 (66– 78)	0,423**
Yes	74 (70– 78)	
Lives with children		
No	74 (68– 80)	0,040**
Yes	71 (64– 78)	
Lives with a child in the age category		
Young child (0–11 years)	70 (62– 76)	0,005**
Adolescent (12–17 years)	74 (68– 80)	0,501**
Youth (18–29 years)	74 (68– 80)	0,074**
Adult (30–59 years)	70 (54–78)	0,358**

* Kruskal-Wallis, ** Mann- Whitney U.

Table 3
Lineal regression between the ED-6 score and other variables with total score in the FANTASTIC scale for lifestyle in teachers in some schools of Lima during telework in the year 2020

Variables	Bivariate analysis		Multivariate analysis	
	β (CI 95%)	p-value	β (CI 95%)	p-value
ED-6 Scale score	–0,16 (–0,20 to –0,11)	<0,001	–0,16 (–0,20 to 0,12)	<0,001
Age				
Under 40 years	Ref.	Ref.	–	–
From 40 to 49 years	5,10(2,01 to 8,19)	0,001	2,89 (0,17 to 5,62)	0,038
From 50 years and over	0,13(–3,79 to 4,06)	0,947	–1,93 (–5.50 to 1,64)	0,287
Lives with children				
No	Ref.	Ref.	–	–
Yes	–3,29(–6,09 to –0,48)	0,022	–	–
Lives with young children	–3,47(–6,11 to –0,83)	0,010	–5,48 (–7,89 to 3,06)	<0,001

with lower student performance [15]. Controlling the impact that stress may have on teachers' lifestyles is also essential in times of quarantine, considering that people dedicated to teaching during the pandemic have had a greater tendency to sedentary lifestyle and less physical activity [41]. This is due to being seated most of the day and evoking their time to fulfill their curricular mesh.

On the other hand, the stress dimensions reported an inverse correlation with lifestyle, especially, the anxiety dimension, which showed the greatest correlation, and the depression dimension, which also

showed an important correlation. This also has been seen with great frequency in population studies in adults during the pandemic, for example, in Australia [42], symptoms of depression, anxiety, and stress are significantly correlated with a worse lifestyle. Another study carried out in Malaysia [43] had similar findings, although it was not statistically significant. The anxiety and depression manifestations from teacher stress may be exacerbated by the health and economic situation that teachers lived through during times of the pandemic, affecting their lifestyle in a negative way and predisposing them to a greater risk of physical and mental diseases [44]. This could be understood as a vicious cycle that needs urgent interventions centered in improving teacher stress and lifestyle, with special attention to anxious symptoms of stress, given that these are correlated in a major way with lifestyle in the studied population.

Counseling program execution regarding mental health and healthy lifestyle is fundamental, as well as for the adaptation to the new reality of virtual teaching, to which many teachers are not accustomed to yet. These programs could also be applied in students, given that some began to suffer from anxiety in tele-education, anticipating situations such as not achieving learning in this modality and "feeling" incapacity to face these adaptive challenges that lead to irremediable failure [45]. Controlling their degree of anxiety would allow to increase the effectiveness of learning, considering that these mental problems decrease attention, concentration, and retention, with the consequent deterioration in school performance [46].

The second dimension in teacher stress more correlated with lifestyle is work pressure. A study carried out in Peru [47] also found a negative correlation between work pressure and lifestyle. Regarding this topic, we know that technological stress is a source of work stress associated to work hours that invade personal life and affect a healthy lifestyle, and that the surge of telework during the COVID-19 pandemic have potentiated it. In effect, excessive work pressure, that Flow out into the Burnout syndrome, has been strongly associated with a poorer lifestyle among teachers in the Czech Republic [48]. Additionally, regarding bad coping dimension, it is known that an inverse correlation exists between strategies of bad coping and burnout syndrome [49], and that a negative relationship exists between this syndrome and lifestyle [50].

Otherwise, it was found that teachers between 40 to 49 years and a better lifestyle than those under 40 years old and older than 49 years of age. This could

be due to the habits of young adults are different than those of intermediate adults, especially at the beginning of toxic substance consumption, such as alcohol, tobacco, etc. While older adults have more physiological limitations that prevent them from, for example, physical activity [25]. Regarding this, Pirzadeh et al. [31] also found a significant relationship between a healthy lifestyle and age, however, the mean age of individuals with a healthy lifestyle was $39,8 \pm 4,6$ years, and this mean was less than other groups. The difference in age between both studies may be explained based on the last study developed in a different sociodemographic context, prior to the pandemic, and with a different measurement scale. This should serve to focus the interventions on young adults and the mature ones, who seem to need them the most, without neglecting the teachers in intermediate adulthood.

In the same manner, we found a relationship between living with young children and a less healthy lifestyle. This finding could be explained by Awada et al., who found that school teachers with school-age children at home reported longer hours during telework by COVID-19 [20], which would lead to a more sedentary lifestyle. Besides, in a telework context from work, school teachers must deal with the maternal and paternal responsibilities as well in an active manner during work hours, which could be problematic if we consider that young children are at home also during their school classes. Female teachers could have a greater load in this sense, given the Peruvian heteronormative context in which the woman also must take charge of the maintenance and function of the home [51]. Furthermore, in this context it is common that mothers telework at late hours of the night, delaying bedtime, waking up very early, altering the hours and quality of meals. Now, this does not mean that having a family at home during telework is a source of bad lifestyle, on the contrary, it has been seen that a strong and healthy family relationship is associated to a better lifestyle [52], and can positively impact the quality of diet of children at home [53].

In our study it is also evidenced that 85.3% had no previous experience doing telework, and 14.8% had some type of previous experience. Picón [54], in his study carried out in Paraguay, showed that 56% of the teachers had taken some training course on the use of ICTs applied in education. Similarly, in the Ulloa study [36], 47.7% of public-school teachers had already had previous experience. We can assume that this significant difference in teachers who had

previous experience or not is due to the different education system and/or the possibility of accessing the use of technologies in each country.

Within the study limitations are the teachers from schools studied come from the city of Lima, which is why the results may not be completely generalized to teachers from other schools in different contexts, such as rural communities, where the connectivity may not allow telework in this manner. Likewise, the virtual modality for filling out questionnaires may mean selection bias, since those teachers worse adapted to a virtual environment, and perhaps with greater stress as a result, may reject participating in this study, however, the rate of rejection of this study was low.

Despite this, we affirm that the results obtained in this study were valid and important because they establish a starting point to carry out studies in school teachers at a national level, taking into consideration the correlation found between stress and each one of its dimensions, with the lifestyle of teachers of some schools of Lima during telework. Likewise, its analysis is fundamental to assess the impact that the COVID-19 pandemic had on teacher stress, and which are the characteristics associated to a less healthy lifestyle. This information is useful to propose work strategies focused on health promotion and healthy work environment, which could improve performance, productivity, motivation, and especially, teacher integral health and their relationship with students.

6. Conclusion

It was found that an inverse correlation exists between lifestyle and stress in teachers in some schools of Lima during telework in the year 2020, as well as in each of its dimensions: anxiety, depression, maladaptive beliefs, work pressure and bad coping. Teachers with ages from 40 to 49 years had a greater healthy lifestyle, while those who lived young children presented a less healthy lifestyle. Likewise, we obtained that the median of the ED-6 stress scale was 81, and 64% of teachers had a good-excellent lifestyle level, 27.2% had a regular lifestyle, and 8.9% a bad-dangerous lifestyle.

Ethical approval

The present study was approved by the Research Ethics Committee from the Universidad Ricardo Palma and the directives of the respective educational institutions.

Informed consent

Informed consent was obtained from all participants before conducting the survey.

Conflict of interest

None declared by the authors.

Acknowledgments

Funding

References

[1] Organización Mundial de la Salud [homepage on the Internet]. La OMS revela las principales causas de muerte y discapacidad en el mundo: 2000–2019; 2020. [updated 2020 Dec 9; cited 2021 Sep 10]. Available from: https://www.who.int/es/news/item/09-12-2020-who-reveals-leading-causes-of-death-and-disability-worldwide-2000-2019

[2] Li Y, Pan A, Wang D, Liu X, Dhana K, Franco O, et al. Impact of healthy lifestyle factors on life expectancies in the US population. Circulation. 2018;138(4):345-55.

[3] United Nations [homepage on the Internet]. Enfermedades relacionadas con el estilo de vida: Una carga económica para los servicios de salud; n.d. [cited 2021 Sep 10]. Available from: https://www.un.org/es/chronicle/article/enfermedades-relacionadascon-el-estilo-de-vida-una-carga-economica-para-los-servicios-de-salud

[4] Ugarte P. [homepage on the Internet]. Empresas sanas, trabajadores saludables; 2019 [updated 2019 Dec 12; cited 2021 Sep 10] Available from: https://elperuano.pe/noticia/87499-empresas-sanas-trabajadores-saludables

[5] Palomino-Oré C, Huarcaya-Victoria J. Trastornos por estrés debido a la cuarentena durante la pandemia por la COVID-19. Horiz méd. 2020;20(4):e1218.

[6] Gamarra E. Estilos de vida saludable y estrés laboral en los trabajadores de salud primer nivel atención Micro Red

Contumaza [thesis]. Chiclayo; Escuela de Posgrado de la Universidad César Vallejo; 2020.

[7] Raymundo B. Estrés laboral y salud mental en el contexto de la pandemia COVID-19 en docentes de educación secundaria, Huancavelica - 2020. Huancayo; Universidad Peruana Los Andes; 2021.

[8] Rabaglietti E, Lattke LS, Tesauri B, Settanni M, De Lorenzo A. A balancing act during Covid-19: Teachers' self-efficacy, perception of stress in the distance learning experience. Front Psychol. 2021;12:1404.

[9] Li H, Liu Q, Ma M. How the COVID-19 Pandemic Affects Job Stress of Rural Teachers. 2021. IZA DP. 2021;14366:1-42.

[10] Lee J, Kim E, Wachholtz A. The effect of perceived stress on life satisfaction: The mediating effect of self-efficacy. KISS. 2016;23(10):29-47.

[11] Qadir S, Mirkhan H, Hasan I. Life Style Changes Related to Covid-19 -Quarantine among Academic Teachers of Salahadin University. 2021;25(3):8500-4.

[12] Nemr K, Simões-Zenari M, Almeida VC, Martins GA, Saito IT. COVID-19 and the teacher's voice: self-perception and contributions of speech therapy to voice and communication during the pandemic. Clinics (Sao Paulo). 2021;26(76):e2641.

[13] Cuadros G. Estilo de vida y estrés académico en estudiantes de primero a cuarto año de la Facultad De Enfermería [thesis]. Arequipa; Universidad Nacional de San Agustín; 2014.

[14] Graydon, Joanne et al. 'Is Teaching Work? A Heuristic Study of the Views of Teachers'. 1 Jan. 2020:95-107.

[15] García A, Martínez L, Linares E. Como Afecta El Estrés del Docente, en el Desempeño Académico del Estudiante de UPIBI-IPN. CTES. 2017;4(7).

[16] Badger J, Quatromoni P, Stabile J. Relationship between Stress and Healthy Lifestyle Factors of College Students. Health Behav Policy Rev. 2019;6(1):43-55.

[17] Loureiro E, McIntyre T, Mota-Cardoso R, Ferreira MA. The relationship between stress and life-style of students at the Faculty of Medicine of Oporto. Acta Med Port. 2008;21(3):209-14.

[18] Moriarty T, Bourbeau K, Fontana F, McNamara S, Pereira da Silva M. The Relationship between Psychological Stress and Healthy Lifestyle Behaviors during COVID-19 among Students in a US Midwest University. Int J Environ Res Public Health. 2021;18(9):4752.

[19] Dos Santos B, Scorsolini-Comin F, De Cassia D. Ser docente en el contexto de la pandemia de COVID-19: reflexiones sobre la salud mental. Index Enferm. 2020;29(3):137-41.

[20] Awada, Mohamad et al. Working from Home During the COVID-19 Pandemic: Impact on Office Worker Productivity and Work Experience. 1 Jan. 2021:1171-89.

[21] Aburto M, Monsalves L, Espinaza O. Estilos de vida y su relación con la capacidad aeróbica en estudiantes universitarios sanos de ambos sexos, entre 18 a 25 años pertenecientes a la carrera de kinesiología de la Universidad Católica de la Santísima Concepción en el año 2017 [thesis]. Universidad Católica de la Santísima Concepción; 2017.

[22] Villar López M, Ballinas Sueldo Y, Gutiérrez C, Angulo-Bazán Y. Análisis de la confiabilidad del test Fantástico para medir Estilos de vida saludables en trabajadores evaluados por el Programa "Reforma de Vida" del Seguro Social de Salud (Essalud). Revista Peruana de Medicina Integrativa. 2016;1(2):17-26.

[23] Campos C, Ribeiro G, Da Silva S, Kallás C. Assessment of the lifestyle of university students in the healthcare area using the fantastic questionnaire. International Journal of Cardiovascular Sciences. 2017;30:117-22.

[24] Alvites-Huamaní C. Estrés docente y factores psicosociales en docentes de Latinoamérica, Norteamérica y Europa. Propós Represent. 2019;7(3):141.

[25] Manzini J. Declaración de helsinki: Principios éticos para la investigación médica sobre sujetos humanos. Acta Bioeth. 2000;6(2):321-334.

[26] De La Cruz-Vargas J, Correa-Lopez L, Alatrista-Gutierrez M, Sanchez H. Promoviendo la investigación en estudiantes de Medicina y elevando la producción científica en las universidades: experiencia del Curso Taller de Titulación por Tesis. Educación Médica. 2019;20(4):199-205.

[27] Martín JF. Los factores definitorios de los grandes grupos de edad de la población: tipos, subgrupos y umbrales. Revista electrónica de geografía y ciencias sociales. 2005;9(190).

[28] Henry A. Thorsen C. Teacher–Student Relationships and L2 Motivation. The Modern Language Journal. 2018;102:218-41.

[29] Harding S, Morris R, Gunnell D, Ford T, Hollingworth W, Tilling K, et al. Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? J Affect Disord. 2019;242:180-7.

[30] Almhdawi K, Obeidat D, Kanaan S, Hajela N, Bsoul M, Arabiat A, et al. University professors' mental and physical well-being during the COVID-19 pandemic and distance teaching. Work. 2021;69(4):1153-61.

[31] Pirzadeh A, Sharifirad G, Kamran A. Healthy lifestyle in teachers. J Educ Health Promot. 2012;1:46.

[32] Gómez S, Guarín I, Uribe, S, Vergel L. Prevención de los peligros y promoción de entornos saludables en el teletrabajo desde la perspectiva de la salud pública. Aibi Revista De investigación, administración E ingeniería. 2020;8(1):44-52.

[33] Kolokotroni O, Mosquera M, Quattrocchi A, Heraclides A, Demetriou C. Lifestyle habits of adults during the COVID-19 pandemic lockdown in Cyprus: evidence from a cross-sectional study. BMC Public Health. 2021;21:786.

[34] Harding S, Morris R, Gunnell D, Ford T, Hollingworth W, Tilling K, et al. Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? J Affect Disord. 2019;242:180-7.

[35] Becerra T. Estrés laboral y calidad de vida en tiempos de pandemia en docentes de escuelas con quintil 1 – Cajamarca [thesis]. Cajamarca. Universidad privada Antonio Guillermo Urrelio; 2020.

[36] Ulloa E, De Ávila J. Vista de Respuesta inicial por un grupo de docentes mexicanos al cierre escuelas por Covid-19. Revista del Centro de Investigación de La Universidad La Salle. 2020;14(53):34.

[37] Badger J, Quatromoni P, Morrell J. Relationship between stress and healthy lifestyle factors of college students. Health Behav Policy Rev. 2019;6(1):43-55.

[38] Li X, Tian D, Qin P, Guo W, Lu J, Zhu W, et al. Dietary, physical exercises and mental stress in a Chinese population: a cross-sectional study. BMC Public Health. 2021;21(1):1138.

[39] Ji Y, Wang D, Riedl M. Analysis of the correlation between occupational stress and mental health of primary and secondary school teachers. Work. 2021;69(2):599-611.

[40] Collins S. High School Teachers' Total Wellness and Stress: A Correlational Study. Mississippi State University [thesis]. The University of Georgia. Athens. 2021.

[41] Medina S, Robalino R, Garzón G, Cueva J. Identificación de problemas de salud como efecto del sedentarismo: Un

estudio con personas dedicadas a la docencia durante la pandemia covid19. CCD. 2021;4(1.2):457-69.

[42] Stanton R, To Q, Khalesi S, Williams S, Alley S, Thwaite L, Fenning A, et al. Depression, Anxiety and Stress during COVID-19: Associations with Changes in Physical Activity, Sleep, Tobacco and Alcohol Use in Australian Adults. J Environ Res Public Health. 2020;17(11):4065.

[43] Kang Y, Azahadi M, Nooi S, Halizah N. Sociodemographic, lifestyle, and health factors associated with depression and generalized anxiety disorder among Malaysian adults. J Prim Care Community Health. 2020;11.

[44] Cueva M, Terrones S. Repercusiones de las clases virtuales en los estudiantes universitarios en el contexto de la cuarentena por COVID-19: El caso de la PUCP. Propós Represent. 2020;8(SPE3):588.

[45] Jadue J. Algunos efectos de la ansiedad en el rendimiento Escolar. Estud pedagóg. 2001;(27):111-8.

[46] Lozada-Montañez M, Paes J, James J, Blais F, Gibson A, Booth R, Carter B, et al. Enfermedades relacionadas al estilo de vida en lima, Perú Rev Fac Med Hum. 2017;17(2):32-44.

[47] Ruiz V. Estilo de vida, presión laboral y factores de satisfacción en los docentes de la Universidad Nacional de Educación Enrique Guzmán y Valle - La Cantuta, 2015 [thesis]. Lima. Universidad Nacional de Educación Enrique Guzmán y Valle. Escuela de Posgrado. 2017.

[48] Ptáček R, Vnukova M, Raboch J, Smetackova I, Sanders E, Svandova L, et al. Burnout Syndrome and Lifestyle Among Primary School Teachers: A Czech Representative Study. Med Sci Monit. 2019;25:4974-81.

[49] Carhuachin A. Relación entre las estrategias de afrontamiento y el síndrome de burnout de los docentes de una universidad de Lima Metropolitana [thesis]. Lima. Universidad César Vallejo. 2017.

[50] Vásquez P. Estilos de vida y síndrome de Burnout en el personal del Hospital II - 2 Tarapoto 2017 [thesis]. San Martin. Universidad Nacional de San Martin. 2017.

[51] Hilbrecht M, Shaw S, Johnson L, Andrey J. 'I'm Home for the Kids': Contradictory Implications for Work–Life Balance of Teleworking Mothers. Gender, Work & Organization. 2008;15:454-76.

[52] Wäsche H, Niermann C, Bezold J, Woll A. Family health climate: a qualitative exploration of everyday family life and health. BMC Public Health. 2021;21(1):1261.

[53] Tenjin K, Sekine M, Yamada M, Tatsuse T. Relationship Between Parental Lifestyle and Dietary Habits of Children: A Cross-Sectional Study. J Epidemiol. 2020;30(6):253-9.

[54] Picon G, de Caballero G, Sánchez J. Desempeño y formación docente en competencias digitales en clases no presenciales durante la pandemia COVID-19. ARANDU UTIC. 2021;8(1):139-53.