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## Original Research

# Teachers' emotional well-being during the SARS-CoV-2 pandemic with long school closures: a large-scale cross-sectional survey in Northern Italy



R. Keim<sup>a,\*</sup>, G. Pfitscher<sup>a</sup>, S. Leitner<sup>a</sup>, K. Burger<sup>a</sup>, F. Giacomoni<sup>a</sup>, C.J. Wiedermann<sup>b,c</sup>

<sup>a</sup> Südtiroler Sanitätsbetrieb, Azienda Sanitaria dell'Alto Adige, Service of Psychology, Brixen Bressanone BZ, Italy

<sup>b</sup> Department of Public Health, Medical Decision Making and HTA, University of Health Sciences, Medical Informatics and Technology, Hall in Tyrol, Austria

<sup>c</sup> Institute of General Practice, College of Health Care Professions Claudiana Bolzano/Bozen, Italy

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## ABSTRACT

**Objectives:** This study aimed to evaluate the magnitude of emotional burden on teaching staff during the SARS-CoV-2 pandemic in a significantly impacted region. In addition, the correlates of emotional burden were analysed to enable the design of targeted interventions.

**Study design:** This study was a cross-sectional survey.

**Methods:** An electronic survey was administered to the teaching staff at public schools and kindergartens in a specific geographical area. Cross-sectional assessments of pandemic-specific variables were performed using the Pandemic Fatigue Scale, the Depression Anxiety Stress Scale (DASS)-21, the Satisfaction with Life Scale, and the Resilient Coping Scale. DASS-21 results were compared with results from a parallel survey that was representative of the local general population.

**Results:** In total, 3251 teaching staff members participated in the survey. Teachers showed a higher emotional burden for depression, anxiety and stress than the general population during the pandemic. According to a linear regression model, this burden is correlated with the language in which the questionnaires were answered, mistrust towards institutions, specific SARS-CoV-2 anxiety, past infection with SARS-CoV-2, avoidance of information about the pandemic and pandemic fatigue; emotional burden was negatively correlated with measures for life satisfaction, resilience and team atmosphere. Some independent variables were shown to contribute differentially to the variance of depression, anxiety or stress.

**Conclusions:** Emotional distress during the pandemic among teachers is higher than in the general population and correlates with variables that could, at least in principle, be targeted for specific interventions.

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## Introduction

South Tyrol is a province in Northern Italy where native Italian, German and bilingual speakers live together but have a heterogeneous sociocultural background. South Tyrol was severely impacted by the SARS-CoV-2 pandemic. Accordingly, several different restrictive lockdowns were imposed: kindergartens (children aged 3–6 years) and primary schools (children aged 6–11 years) were closed or switched to distant learning between March 2020 and April 2021 for about one-third of the regular operating time. For middle schools (children aged 12–14), high schools (children aged 15–19 years) the duration of school closures was

longer, and for high schools and professional schools (children aged 15–19 years), distance learning and school closures accounted for over half of the regular teaching time. Even before the SARS-CoV-2 pandemic, there was evidence that the teaching profession is often associated with increased stress<sup>1</sup> and that teachers generally have higher levels of depression than the general population.<sup>2,3</sup> During the pandemic, many teachers may have been faced with additional, more specific burdens, including an increased risk of infection while teaching, a feeling of responsibility for the health of the students, significant changes in the daily work routine (online lessons, hygiene routines, increased potential for conflict with parents, students, colleagues, and directors) and a feeling of low self-efficacy.

As the emotional well-being of teachers directly impacts the quality of teaching and the emotional state of the students,<sup>4,5</sup> a survey of the emotional burden on teachers during the pandemic is

\* Corresponding author.

E-mail address: [roland.keim@yahoo.de](mailto:roland.keim@yahoo.de) (R. Keim).

of central importance. To date, in addition to studies on the psychological well-being of teachers during the SARS-CoV-2 pandemic, studies on other population groups have been published, including health workers,<sup>6,7</sup> patients with chronic diseases,<sup>8</sup> college students,<sup>9</sup> undergraduate students,<sup>10</sup> dentists and dental students<sup>11</sup> and the general population.<sup>12–14</sup> These studies show a high level of emotional stress during the SARS-CoV-2 pandemic.

However, the results of previous publications on the extent of depression, anxiety and stress in teachers are inconsistent.<sup>15</sup> An online survey of depression among teachers in China, using a snowball sampling method, showed depression in 57.6% of 871 female teachers and 54.2% of 225 male teachers.<sup>16</sup> According to this survey, younger teachers and those with lower resilience are more vulnerable. In September 2020, a methodologically similar survey of 1633 teachers in the Basque region,<sup>17,18</sup> using the Spanish version of the Depression Anxiety Stress Scale (DASS)-21,<sup>19</sup> showed symptoms of depression in 32.2% of teachers, and an increased level of anxiety and stress was reported in 49.3% and 50.4%, respectively. In addition, this study reported that a greater proportion of female than male teachers experienced depression, anxiety and stress. The study also showed that older teachers had a higher level of emotional burden, which is in contrast to Zhou et al.<sup>16</sup> The divergent results could be because of differences in the selection bias, timing of the survey, implementation of different protective measures in individual countries,<sup>20</sup> perceived social support and autonomy of the teachers,<sup>21</sup> different types of teachers (kindergarten, different school types and university) and/or the questionnaires used.

As a result of these inconsistencies, the present study performed a survey to determine the emotional state (and its correlates) of the teaching staff of the South Tyrolean schools and kindergartens at the end of the 2020/21 school year. The present study used the same instruments to measure the emotional burden as in the Basque region study.<sup>17,18</sup> Further online surveys using the same instruments in the same geographical region (South Tyrol) for the general population took place at approximately the same time; thus, the present study was able to compare results with a local control group.

The main purpose of this study was to estimate the point prevalence of emotional burden during the pandemic, to compare it with the local general population and to determine correlates of emotional distress to enable the implementation of targeted preventive measures. According to prior research, high levels of emotional distress during the pandemic among school and kindergarten teachers were expected compared with the general population. In addition, it was predicted that there would be a significant correlation of depression, anxiety and stress with various endogenous and exogenous variables, such as mistrust towards institutions, chronic disease, coping style, resilience, satisfaction with life, pandemic fatigue, coronavirus anxiety, perceived team atmosphere, function at school, size of the institution, sex, age, sociocultural background, feeling prepared for online teaching, quarantine of their own class, prior infection with SARS-CoV-2 and years of teaching service.

## Methods

### Participants and procedures

All educational staff members (approximately 10,000) at South Tyrolean German, Italian and Ladin kindergartens and schools were invited by email (sent via the local school management) to participate in the online survey. Interested teachers completed the online survey (SosciSurvey) via an electronic link, which was active during the first 2 weeks of June 2021.

The link was accessed 4032 times, of which 3568 participants gave their informed consent and started answering the questionnaire. A total of 3253 participants completed the questionnaire. Two participants were excluded from further data analysis because they were likely answered without reading the questions; therefore, the final statistical analysis refers to 3251 participants, which corresponds to a final response rate of 32.5%.

The local general population control group consisted of a subsample from a larger sample that was selected as a representative local sample from the public statistic institute (ASTAT) in a 2020 survey and who agreed to answer a further questionnaire in June 2021. Complete DASS-21 values were available from 278 participants (mean age = 51.39 years [SD = 15.82], women 55.5%, return rate 43%).

To compare conspiracy and general distrust towards institutions, answers to the same questions from another larger local survey by the public statistics institute ASTAT in May 2021 are available as a control group ( $N = 1360$ , mean age = 52.2 years [SD = 17.78], women 53%, return rate 31%; for details, refer to a study by Lombardo and Gaertner<sup>22</sup>).

### Instruments

In addition to demographic, personal and workplace variables, information about the quarantine of the teacher's own class/group (yes/no), the perceived quality of communication with students, the perceived working climate (5-point Likert scale) and the perceived preparation for online teaching were recorded (4-point Likert scale). To ensure anonymity as much as possible, the age, years of service and size of the institution were recorded in an aggregated form. The items on resilience, specific SARS-CoV-2 fear and conspiracy thinking were taken from the Covid-19 Snapshot Monitoring (COSMO) survey.<sup>23</sup> Conspiracy was split into two factors according to the results of a principal component factor analysis (mistrust towards institutions vs conspiracy thinking). The two factors explained 64.17% of the variance.

Teachers' emotional burden was assessed using the DASS-21 in the German<sup>24</sup> and Italian<sup>25</sup> versions. The questionnaire shows good psychometric properties.<sup>25,26</sup> The classification into different degrees of severity was based on the cut-off values of Lovibond and Lovibond.<sup>27</sup> Pandemic fatigue was measured with the six items from the Pandemic Fatigue Scale (PFS).<sup>28</sup> Life satisfaction was measured using the Satisfaction with Life Scale (SWLS),<sup>29</sup> available in a validated form for the German and Italian languages.<sup>30,31</sup> Coping strategies were recorded with the 4-item Brief Resilient Coping Scale (BRCS),<sup>32</sup> which records the adaptive handling of stressful situations and has been used in various surveys during this pandemic.<sup>9,33</sup> It is important to note that although BRCS is often used in different languages, to our knowledge, it is currently only available in a published and validated form in English. Therefore, the four items were translated by native Italian- and German-speaking colleagues into their respective languages and back-translated on the basis of the colleagues' certified English language skills. The procedure involved a subsequent discussion on the choice of the appropriate terminology for both languages by five members of the Psychological Service Department in Health District Bressanone/Brixen, Italy.

### Data analysis

Prior research suggests that depression, anxiety, and stress might correlate to some extent with exogenous variables, such as age, sex and sociocultural background; thus, the present study included these variables in a linear regression model, so that any eventually confounding contribution of these exogenous variables

was statistically controlled. The variables in the regression model were selected based on prior research showing a correlation with emotional burden and on the assumption that they could be a proxy for targeted prevention programmes. In addition, the ETA coefficients were computed for plausible exogenous and endogenous variables, confirming relatively high correlations for endogenous variables with emotional burden and low correlations for the exogenous variables (for details, see ETA coefficients in Table S10 in the [Supplementary material](#)). For statistical comparison with the control group, the one-sample *t*-test was used when the raw data were unavailable; otherwise, the independent sample *t*-test was computed. Linear regression analysis was used to calculate the correlates of emotional burden. Statistical comparisons of single Likert-scale items were performed using the Wilcoxon test. All statistical analyses were performed using SPSS Version 23. Because of the large sample size, parametric test procedures were used if possible, even when data were not normally distributed. To avoid a  $\beta$  error, the significance level was set at 0.01. A significance level between 0.01 and 0.05 is interpreted as weakly significant.

## Results

[Table 1](#) shows the sociodemographic characteristics of the study participants. In this study, Cronbach's alpha for the DASS-21 scores were as follows: 0.945 (total), 0.901 (depression), 0.826 (anxiety) and 0.901 (stress).

The prevalence of high DASS-21 scores for depression, anxiety and stress among teachers and comparison with the local general population control group is shown in [Table 2](#). The differences between the means of the two groups on the DASS-21 were statistically significant (independent sample *t*-test) for all variables, showing a higher emotional burden for teachers compared with the local general population control group.

### *Descriptive statistics and comparison with other groups for life satisfaction, pandemic fatigue, specific coronavirus anxiety, conspiracy and coping style*

The mean score for teachers on the SWLS was 26.95 (SD = 5.06), which corresponds to a relatively high level of life satisfaction.<sup>30</sup> For teachers, the BRCS total scores were <14 (indicating low resilience coping) in 39.6%, 14–16 in 38.2% (medium resilience coping) and 17–20 (high resilience coping) in 22.3%. Compared with a large German survey,<sup>34</sup> the results from the present study correspond to an overall low level of resilience to handling stress.

The mean value for the PFS is 3.50 (SD = 1.1567). This is lower than the mean value of 3.97 that was reported in the German COSMO survey, dated 1 June 2021<sup>28,35</sup> (one-sample *t*-test:  $t = -22.927$ ,  $df = 3250$ ,  $P < 0.001$ , 95% confidence interval [CI]  $-0.5048$  to  $-0.425$ ). In addition, according to 33.4% of teachers, coronavirus triggers their anxiety, and 42.0% reported that they often or permanently think about coronavirus.

Compared with the local general population control group, teachers showed an increased general distrust towards the institutions; teachers more frequently believe that important things happen that they are never informed about (Wilcoxon  $z = -3.8398$ ,  $P < 0.001$ ), that politicians keep the true motivation of their decisions secret (Wilcoxon  $z = -2.954$ ,  $P = 0.0032$ ) and that citizens are closely monitored by government institutions (Wilcoxon  $z = -4.237$ ,  $P < 0.001$ ). In contrast, teachers less frequently believe that secret organisations have a major impact on political decision-makers (Wilcoxon  $z = 4.237$ ,  $P < 0.001$ ). With regard to the statement that COVID-19 was deliberately introduced into the world, there was a statistical trend for lower ratings with teachers

compared with the general population (Wilcoxon  $z = 1.5483$ ,  $P = 0.01216$ ).

### *Correlates of emotional burden*

To determine the contribution of various predictor variables to explain the overall DASS-21 score and the relative variance in subscores, a linear regression analysis was performed. As a result of some different independent variables for teachers and kindergarten teachers (e.g. perceived communication quality with students, perceived preparation for online teaching, prior experience with online teaching and differences in function profiles at school/kindergarten), an additional separate regression analysis was performed for the two subgroups ( $N = 2533$  and  $N = 718$ , respectively). The variables entered into the regression model, and the results for the total sample are listed in [Table 3](#). The results of the linear regression model for the two subgroups can be found in the [Supplementary material](#).

According to the regression model, participants with higher scores on the SWLS showed a lower level of overall emotional stress, defined as the DASS-21 total score. The same in true for participants who answered the questionnaire in German (vs Italian), who perceived the team atmosphere as good, showed high resilience, low pandemic fatigue, little fear of SARS-CoV-2, lower mistrust towards institutions and reported no past SARS-CoV-2 infection.

In contrast, no significant contribution was found for the type of employment, years of service, resilient coping style or the type of school. A tendency towards a higher total emotional burden was found for women (significant for the dependent variable stress), younger age (significant for stress), chronically ill teachers (significant for anxiety) and those who reported quarantine of their own class. The same variables that explain the DASS-21 total score variance were also significant for the dependent variable depression. A separate data analysis for school and kindergarten teachers shows comparable  $\beta$  values and significant effects for both groups (for details, see the [Supplementary material](#)).

A further linear regression analysis, including school-specific variables, showed no significant contributions for involvement in online teaching ( $\beta = -0.012$ ,  $t = -0.686$ ,  $P = 0.493$ ), the subjective feeling of preparedness for online teaching ( $\beta = -0.003$ ,  $t = -0.192$ ,  $P = 0.848$ ) nor for the perceived quality of communication with students ( $\beta = -0.016$ ,  $t = -0.919$ ,  $P = 0.358$ ) on the variance of the DASS-21 total score. Involvement in online teaching was specifically associated with increased depressive symptoms ( $\beta = -0.047$ ,  $t = -0.2613$ ,  $P = 0.009$ ); however, online teaching had no impact on stress and anxiety symptoms ( $\beta = -0.008$ ,  $t = -0.4713$ ,  $P = 0.638$  and  $\beta = -0.031$ ,  $t = -0.1594$ ,  $P = 0.111$ , respectively). The size of the institution and the specific function at school/kindergarten did not impact the emotional burden on teachers in either schools or kindergartens. The results for the separate regression analysis for teachers and kindergarten staff can be found in the [Supplementary material](#).

## Discussion

There is broad agreement that the SARS-CoV-2 pandemic increases the risk of emotional distress.<sup>33,36,37</sup> The present study confirms high DASS-21 total scores as well as elevated scores for the subscales (depression, anxiety and stress) among kindergarten and school teachers. These results are in line with those of previous studies<sup>3,16,17</sup> but are somewhat more moderate. This could be due to the different recruitment methods and the associated differences in non-response bias. In addition, compared with the study from the Basque region, the different timing of the survey may also

**Table 1**  
Sociodemographic characteristics of study participants.

| Variable  |  | n (%)                |
|---|--|----------------------|
| Age (N = 3251)                                    | <31  | 318 (9.8)            |
|   | 31–40  | 622 (19.1)           |
|   | 41–50  | 1113 (34.2)          |
|   | 51–60  | 1015 (31.2)          |
|   | >60  | 183 (5.6)            |
| Sex (N = 3251)                                    | Female   | 2707 (83.3)          |
|   | Male   | 537 (16.5)           |
|   | Other  | 7 (.2)               |
| Language (N = 3251)                               | German   | 2579 (79.3)          |
|   | Italian  | 672 (20.7)           |
| School (N = 3251)                                 | Kindergarten: 3-5  | 704 (21.7)           |
|   | Primary school 6-11  | 902 (27.7)           |
|   | Middle school 12-14  | 552 (17.0)           |
|   | Professional school 15-19  | 383 (11.8)           |
|   | High School 15-19  | 696 (21.4)           |
|   | Other  | 14 (.4)              |
|   | Function at kindergarten (n = 704)                                   | Kindergarten teacher |
|   | Pedagogic collaborator   | 235 (33.4)           |
|   | Collaborator for integration   | 15 (2.1)             |
|   | Kindergarten teacher for integration                                 | 23 (3.3)             |
|   | Kindergarten teacher with additional responsibilities (coordination) | 107 (15.2)           |
|   | Other  | 10 (1.4)             |
| Number of collaborators at kindergarten (n = 704) | 2  | 79 (11.2)            |
|   | 3–4  | 140 (19.9)           |
|   | >4   | 485 (68.9)           |
| Quarantine of the own kindergarten group          | Yes  | 411 (58.4)           |
|   | No   | 293 (41.6)           |
| Function at school (n = 2533)                     | Teacher  | 1906 (75.2)          |
|   | Collaborator for integration   | 88 (3.5)             |
|   | Teacher for integration  | 150 (5.9)            |
|   | Teacher with additional responsibilities (coordination)              | 358 (14.1)           |
|   | Other  | 31 (1.2)             |
| Number of collaborators at school (n = 2533)      | 1–9  | 227 (9.0)            |
|   | 10–19  | 383 (15.1)           |
|   | 20–50  | 673 (26.6)           |
|   | 51–79  | 449 (17.7)           |
|   | >79  | 801 (31.6)           |
| Quarantine of the own school class                | No   | 1281 (50.3)          |
|   | Yes  | 1266 (49.7)          |
| Years of service (n = 3249) <sup>a</sup>          | <5   | 624 (19.2)           |
|   | 5–15   | 835 (25.7)           |
|   | >15  | 1790 (55.1)          |
|   | Missing  | 2 (0.1)              |
| Employment type (N = 3251)                        | Full time  | 2171 (66.8)          |
|   | Part time  | 1080 (30.2)          |
| Chronic disease (N = 3251)                        | Yes  | 416 (12.8)           |
|   | No   | 2835 (87.2)          |
| Infection with SARS-CoV-2 (N = 3251)              | Yes (mild 49.7%; middle 38.5%; severe 11.8%)                         | 636 (19.6)           |
|   | No   | 2615 (80.4)          |

<sup>a</sup> Missing values for two subjects.

contribute to the differences: in contrast to Santamaria et al.,<sup>17</sup> our survey was carried out at the end of the school year before the long summer holidays. In addition, during the survey period of the present study, the pandemic wave subsided, and vaccination was available.

This cross-sectional survey confirms a significantly higher emotional burden among teachers compared with the general

population. A high level of distress correlates significantly with a previous SARS-CoV-2 infection, higher levels of distrust towards institutions, Italian (compared with German) employees, coronavirus fatigue, lower resilience and lower life satisfaction. Teachers with a chronic disease showed higher levels of anxiety, whereas female teachers were prone to higher stress levels.

**Table 2**  
Mean scores for the Depression Anxiety Stress Scale (DASS)-21 total, depression, stress and anxiety scores, and the proportion of participants with elevated scores above the respective cut-offs for the teaching staff and the local general population control group.

| Category    | DASS-21 score (mean ± SD) |  | t     | Sig. (2-tailed) | Percentage above cut-off score |  |                  |                 |
|-------------|---------------------------|--|-------|-----------------|--------------------------------|--|------------------|-----------------|
|             | Teaching staff (n = 3251) | General population control group (n = 278) |       |                 | Teaching staff (n = 3251)      | General population control group (n = 278) | Exact Chi-square | Sig. (2-tailed) |
| Total score | 21.68 ± 20.74             | 10.72 ± 15.85                              | 10.77 | <.001*          | N/A                            | N/A  |                  |                 |
| Depression  | 6.41 ± 7.69               | 3.33 ± 6.39                                | 7.57  | <.001*          | 26.4                           | 12.2                                       | 27.1             | <.001*          |
| Anxiety     | 4.31 ± 6.16               | 2.39 ± 4.41                                | 6.72  | <.001*          | 21.4                           | 11.9                                       | 14.14            | <.001*          |
| Stress      | 10.97 ± 9.01              | 5.0 ± 6.79                                 | 13.65 | <.001*          | 34.3                           | 9.6  | 40.4             | <.001*          |

N/A for not available, \* means significant at P < .01.

**Table 3**

Linear regression model for the dependent variable Depression Anxiety Stress Scale (DASS)-21 total score, DASS-21 depression, DASS-21 anxiety and DASS-21 stress.

| <b>DASS21 total score</b> |  | $R^2_{adj.}$ |       | $S_{yx}$ | $F$     | $P$    |
|---------------------------|--|--------------|-------|----------|---------|--------|
|                           |  | $B$          | $SE$  | $\beta$  | $t$     | $P$    |
| <b>Predictor</b>          | (Constant)   | 100.808      | 3.927 |          | 25.668  | 0.000* |
|                           | Language   | 5.986        | 0.717 | 0.117    | 8.345   | 0.000* |
|                           | Sex  | -1.826       | 0.782 | -0.034   | -2.336  | 0.020  |
|                           | Age  | -0.686       | 0.342 | -0.035   | -2.005  | 0.045  |
|                           | Type of school   | 0.321        | 0.213 | 0.023    | 1.511   | 0.131  |
|                           | Employment type  | 0.053        | 0.599 | 0.001    | 0.089   | 0.929  |
|                           | Years of service   | -0.225       | 0.451 | -0.009   | -0.500  | 0.617  |
|                           | Team atmosphere  | -1.926       | 0.364 | -0.073   | -5.286  | 0.000* |
|                           | Chronic illness  | -1.766       | 0.843 | -0.028   | -2.095  | 0.036  |
|                           | Infection with SARS-CoV-2  | -1.981       | 0.700 | -0.038   | -2.828  | 0.01*  |
|                           | Quarantine   | -1.207       | 0.555 | -0.029   | -2.173  | 0.030  |
|                           | Mistrust towards institutions  | 0.182        | 0.066 | 0.045    | 2.781   | 0.005* |
|                           | Conspiracy thinking  | -0.189       | 0.135 | -0.023   | -1.401  | 0.161  |
|                           | Live satisfaction  | -0.940       | 0.060 | -0.230   | -15.592 | 0.000* |
|                           | Resilience   | -2.341       | 0.097 | -0.370   | -24.049 | 0.000* |
|                           | BRCS coping style  | -0.091       | 0.118 | -0.012   | -0.775  | 0.44   |
|                           | Pandemic fatigue (PFS)   | 0.361        | 0.046 | 0.121    | 7.813   | 0.000* |
|                           | Coronavirus anxiety (high values corresponds to low levels of anxiety) | -0.744       | 0.060 | -0.178   | -12.434 | 0.000* |
| <b>DASS21—depression</b>  |  | $R^2_{adj.}$ |       | $S_{yx}$ | $F$     | $P$    |
|                           |  | $B$          | $SE$  | $\beta$  | $t$     | $P$    |
| <b>Predictor</b>          | (constant)   | 35.120       | 1.513 |          | 23.219  | 0.000* |
|                           | Language   | 1.071        | 0.276 | 0.056    | 3.876   | 0.000* |
|                           | Sex  | -0.292       | 0.301 | -0.014   | -0.969  | 0.332  |
|                           | Age  | -0.053       | 0.132 | -0.007   | -0.406  | 0.685  |
|                           | Type of school   | 0.154        | 0.082 | 0.029    | 1.884   | 0.060  |
|                           | Employment type  | -0.036       | 0.231 | -0.002   | -0.156  | 0.876  |
|                           | Years of service   | -0.274       | 0.174 | -0.028   | -1.577  | 0.115  |
|                           | Team atmosphere  | -0.605       | 0.140 | -0.062   | -4.314  | 0.000* |
|                           | Chronic illness  | -0.414       | 0.325 | -0.018   | -1.274  | 0.203  |
|                           | Infection with SARS-CoV-2  | -0.596       | 0.270 | -0.031   | -2.210  | 0.027  |
|                           | Quarantine   | -0.528       | 0.214 | -0.034   | -2.468  | 0.014  |
|                           | Mistrust towards institutions  | 0.051        | 0.025 | 0.034    | 2.012   | 0.044  |
|                           | Complottism  | -0.088       | 0.052 | -0.029   | -1.698  | 0.090  |
|                           | Life satisfaction  | -0.452       | 0.023 | -0.298   | -19.493 | 0.000* |
|                           | Resilienz  | -0.728       | 0.037 | -0.310   | -19.409 | 0.000* |
|                           | BRCS coping style  | -0.059       | 0.045 | -0.020   | -1.303  | 0.193  |
|                           | Pandemic fatigue (PFS)   | 0.159        | 0.018 | 0.143    | 8.917   | 0.000* |
|                           | Coronavirus anxiety (high values corresponds to low levels of anxiety) | -0.211       | 0.023 | -0.137   | -9.183  | 0.000* |
| <b>DASS21—stress</b>      |  | $R^2_{adj.}$ |       | $S_{yx}$ | $F$     | $P$    |
|                           |  | $B$          | $SE$  | $\beta$  | $t$     | $P$    |
| <b>Predictor</b>          | (Constant)   | 41.234       | 1.742 |          | 23.669  | 0.000* |
|                           | Language   | 3.564        | 0.318 | 0.160    | 11.202  | 0.000* |
|                           | Sex  | -1.259       | 0.347 | -0.053   | -3.632  | 0.000* |
|                           | Age  | -0.549       | 0.152 | -0.064   | -3.616  | 0.000* |
|                           | Type of school   | 0.146        | 0.094 | 0.024    | 1.553   | 0.120  |
|                           | Employment type  | 0.235        | 0.266 | 0.012    | 0.883   | 0.377  |
|                           | Years of service   | 0.057        | 0.200 | 0.005    | 0.285   | 0.776  |
|                           | Team atmosphere  | -0.926       | 0.162 | -0.080   | -5.728  | 0.000* |
|                           | Chronic illness  | -0.467       | 0.374 | -0.017   | -1.248  | 0.212  |
|                           | Infection with SARS-CoV-2  | -0.409       | 0.311 | -0.018   | -1.316  | 0.188  |
|                           | Quarantine   | -0.482       | 0.246 | -0.027   | -1.956  | 0.050  |
|                           | Mistrust towards institutions  | 0.016        | 0.029 | 0.009    | 0.547   | 0.584  |
|                           | Complottism  | -0.019       | 0.060 | -0.005   | -0.314  | 0.754  |
|                           | Life satisfaction  | -0.306       | 0.027 | -0.172   | -11.450 | 0.000* |
|                           | Resilience   | -1.070       | 0.043 | -0.389   | -24.777 | 0.000* |
|                           | BRCS coping style  | -0.004       | 0.052 | -0.001   | -0.076  | 0.939  |
|                           | Pandemic fatigue (PFS)   | 0.147        | 0.020 | 0.113    | 7.166   | 0.000* |
|                           | Coronavirus anxiety (high values corresponds to low levels of anxiety) | -0.318       | 0.027 | -0.175   | -11.983 | 0.000* |

(continued on next page)

Table 3 (continued)

| DASS21—anxiety   |  | $R^2_{adj}$ |       | $s_{yx}$ | F       | P      |
|------------------|--|-------------|-------|----------|---------|--------|
|                  |  | 0.273       |       | 5.25     | 72.833  | 0.000* |
|                  |  | B           | SE    | $\beta$  | t       | P      |
| <b>Predictor</b> | (Constant)   | 24.455      | 1.319 |          | 18.534  | 0.000  |
|                  | Language   | 1.351       | 0.241 | 0.089    | 5.607   | 0.000* |
|                  | Sex  | -0.275      | 0.263 | -0.017   | -1.047  | 0.295  |
|                  | Age  | -0.084      | 0.115 | -0.014   | -0.728  | 0.467  |
|                  | Type of school   | 0.021       | 0.071 | 0.005    | 0.287   | 0.774  |
|                  | Employment type  | -0.146      | 0.201 | -0.011   | -0.724  | 0.469  |
|                  | Years of service   | -0.009      | 0.151 | -0.001   | -0.056  | 0.955  |
|                  | Team climate   | -0.395      | 0.122 | -0.050   | -3.226  | 0.001* |
|                  | Chronic illness  | -0.885      | 0.283 | -0.048   | -3.127  | 0.002* |
|                  | Infection with SARS-CoV-2  | -0.976      | 0.235 | -0.063   | -4.147  | 0.000* |
|                  | Quarantine   | -0.197      | 0.187 | -0.016   | -1.055  | 0.291  |
|                  | Mistrust towards institutions  | 0.116       | 0.022 | 0.095    | 5.250   | 0.000* |
|                  | Complottism  | -0.082      | 0.045 | -0.033   | -1.810  | 0.070  |
|                  | Live satisfaction  | -0.181      | 0.020 | -0.149   | -8.946  | 0.000* |
|                  | Resilience   | -0.543      | 0.033 | -0.289   | -16.620 | 0.000* |
|                  | BRCS coping style  | -0.028      | 0.040 | -0.012   | -0.711  | 0.477  |
|                  | Pandemic fatigue (PFS)   | 0.055       | 0.016 | 0.062    | 3.573   | 0.000* |
|                  | Coronavirus anxiety (high values corresponds to low levels of anxiety) | -0.214      | 0.020 | -0.173   | -10.663 | 0.000* |

\*Significant at <.01.

The elevated emotional burden among employees with a previous SARS-CoV-2 infection has also been confirmed in other populations.<sup>38</sup> As a consequence, the higher rate of infection with SARS-CoV-2 among school staff compared with the general population (19.6% vs 14%) may also contribute to their higher emotional distress. In addition, teachers also seemed to distrust the institutions more frequently than the local general population control group, which, in turn, is associated with increased emotional stress. It is possible that the pandemic has increased distrust in institutions, especially among those teachers who already felt high emotional stress before the pandemic.

In this study, the sociocultural background, defined as the language in which the questionnaire was answered, is an independent correlate of emotional stress, at least during this pandemic phase. As there are no such sociocultural differences in the local general population control group and Italian as well as German teachers are working and living in the same geographical area, this is likely to be a school/kindergarten-specific peculiarity. In South Tyrol, schools are organised relatively autonomously according to the main teaching language, and most teachers work in a school that corresponds to their first language. Because the impact of the language on emotional distress remains significant after important, potentially confounding, variables (see Table 3) were statistically controlled for, additional, not addressed, variables must be considered in a follow-up investigation. Examples could be differences in class size, organisational models, additional work duties and socioeconomic background of the students.

Avoidance of information about the pandemic is associated with an increased risk of high emotional distress. However, in contrast to other studies,<sup>9,33,39–41</sup> the general coping style does not contribute to the variance in emotional distress. This pandemic probably confronts teachers with specific challenges that cannot be adequately addressed with a general style of coping. On the other hand, those with a high level of resilience feel less depressed, anxious and stressed, which has also been confirmed in other populations.<sup>9,42,43</sup>

As expected and shown in other studies,<sup>44,45</sup> there is a significant negative correlation between life satisfaction and depression, anxiety and stress, whereas people with chronic physical disease show an elevated level of anxiety<sup>8,14</sup> and deserve special attention. The fact that women have higher stress (but not depression or anxiety) levels can best be explained by the double burden of working from home for (younger) women with school-aged

children during the pandemic. The large negative impact of the pandemic on younger age groups has also been shown in other studies during the coronavirus crisis.<sup>46–49</sup> This could be due to a differential negative impact of social distancing and/or a different use of new online media by older and younger study participants.<sup>14</sup> The higher levels of depression in teachers with quarantine experience could be attributed to a greater feeling of responsibility for the spread of the infection in their classes. Another explanation could be that the prolonged social isolation associated with quarantine results in an increased feeling of low self-efficacy during quarantine. Because quarantine was rare in kindergarten, this study only observed the effect of quarantine in school teachers.

The perceived team atmosphere contributes to predicting general emotional stress, while we didn't find any significant effect for the quality of communication with the students, or self-rated preparation for online lessons. This result underlines the importance of the team atmosphere as a resilience factor in the workplace.

The size of the facility, type of employment (full time vs part time) and years of service do not predict the emotional burden. The fact that years of service did not impact emotional burden is in line with prior studies before the pandemic that showed no correlation between burnout and years of service.<sup>50</sup> In contrast to our study, another study showed a higher rate of burnout among part-time employees in prepandemic years.<sup>51</sup> Although burnout cannot be equated with an overall emotional burden as measured in our survey, this divergence could also be compatible with our hypothesis, that educational work is particularly difficult during the pandemic and outweighs the advantage of full-time employment. These results allow the implementation of targeted preventive measures and better preparation for a possible future pandemic.

Limitations

The cross-sectional design of the present study and a lack of longitudinal data does not allow for conclusions on the quantitative direct effects of the pandemic on teaching staff members. The generalisability of the study results in such surveys is always limited because of a potential non-response bias and the resulting concerns about the representativeness of the results. In addition, differences in timing may have a varying impact, especially during a pandemic. These results are a snapshot, and the recording of

changes over time would require a longitudinal study. Nevertheless, this survey confirms, even if interpreted with caution, a high emotional burden on teachers in this particular situation and shows some significant correlates of these burdens.

## Conclusions

This single assessment, cross-sectional study confirms an increased level of emotional stress in teachers compared with the general population and provides important data for the planning and implementation of prevention programmes, especially during a pandemic. Strategies should be targeted towards teachers with a prior infection with SARS-CoV-2, chronically ill teachers, younger and female teachers, and those with quarantine experience. Lower resilience, lower life satisfaction, higher levels of specific coronavirus anxiety, avoidance of information about the pandemic, higher levels of mistrust towards the institutions, and lower ratings for team atmosphere at school are warning signals and population groups with these characteristics should receive special attention for preventive interventions. In the educational system, the socio-demographic background (here defined as Italian vs German) has to be considered as a significant moderator variable with respect to pandemic-specific emotional impact.

Owing to the importance of the emotional well-being of educators for their teaching success, especially during the pandemic, monitoring, psychological prevention measures and support should be implemented and evaluated. This study helps in targeting such procedures to particularly vulnerable subgroups. In the future, longitudinal studies should be performed to provide further valuable information on the predictors and course of emotional stress in teachers.

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### Ethical approval

The study was approved by the Ethics Committee of the Autonome Provinz Bozen on 19 May 2021.

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### Competing interests

The authors have no competing interests to declare.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.puhe.2022.04.006>.

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