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A national survey on the peritraumatic effects of the COVID-19 pandemic on South African teachers: A cross-sectional study

Simangele Mayisela
Department of Psychology, Faculty of Humanities, University of the Witwatersrand, Johannesburg, South Africa
simangele.mayisela@wits.ac.za
Tshepo Tlali
Department of Psychology, Faculty of Humanities, University of Johannesburg, Johannesburg, South Africa
Sibusiso Mkwananzi
Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa
Phindile Mayaba
Discipline of Psychology, College of Humanities, University of KwaZulu-Natal, Pietermaritzburg, South Africa

The effects of COVID-19 have resulted in peritraumatic stress experiences within various groups, including teachers. With this study we aimed to determine the prevalence of peritraumatic stress and the factors associated with each level of PTSD among teachers in South Africa. A cross-sectional study was conducted in South Africa among teachers using an online survey. A sample consisted of a total of 1,008 primary and secondary teachers responded to the COVID-19 peritraumatic distress index and the occupation-specific survey. Descriptive and multinomial logistic regression analyses were used to analyse the data. There was evidence of high levels of distress associated with the COVID-19 pandemic among teaching professionals in South Africa. Therefore, there is a need to create mental health awareness among teaching professionals and to create systems that support the uptake of psychological services among the members of this population.

Keywords: children; COVID-19; Department of Basic Education; peritraumatic distress; post-traumatic stress disorder; school; South Africa; teachers

Introduction and Background

Globally the education sector has been affected by the 2019 coronavirus disease (COVID-19) pandemic which emerged in November 2019 in Wuhan, China (World Health Organization, 2020). South Africa has not been spared from this pandemic. From 3 June 2020, at the conception of this study, COVID-19 has spread rapidly around the world infecting 6,568,239 people, and resulting in 387,957 deaths (John Hopkins University of Medicine, 2020; Worldometer, 2020). In South Africa, 37,525 people were infected and 792 COVID-19 deaths reported by 3 June 2020 (John Hopkins University of Medicine, 2020; SA Corona Virus Portal, 2021). At the point of data collection for our study, in November 2020, the SA Corona Virus Portal (2021) recorded 759,658 infections and 20,671 deaths due to COVID-19. The pandemic disrupted curriculum delivery in school education globally. With social distancing and lockdowns, it has been difficult for the teachers to deliver the curriculum.

COVID-19 is a respiratory disease caused by the zoonotic (transmitted between animals and people) coronavirus that attacks the lungs (SA Corona Virus, 2020; World Health Organization, 2020). In general, the coronavirus has debilitating physiological and mental health effects, which are even worse on individuals living with chronic illnesses such as diabetes, high blood pressure and human immunodeficiency virus (HIV). The lockdowns and social restrictions, which were necessary for abating the spread of the viral infection, disrupted all the systems including the economic, health and education. Even though the effects of the virus on children (apart from anxiety and other psychosocial challenges) were not known at the time, researchers were globally working around the clock to find and produce a vaccine against COVID-19 (Kashte, Gulbake, El-Amin & Gupta, 2021) to prevent a total breakdown of systems, with millions of people losing their lives, and mental health devastation affecting people of all ages.

Basic Education Sector Response COVID-19

To prevent the spread of the virus, a hard national lockdown was imposed for 21 days and these regulations were changed over time, depending on the number of then current COVID-19 infection cases (Staff Writer, 2020). The national lockdown resulted in premature school closure with no clear indication of when schools would reopen (Macupe, 2020). The effects of COVID-19 and the national lockdown were seen not only in those who have been directly infected but also in the psychological, social, and economic well-being of society (Labuschaigne & Staunton, 2020). Jobs were lost, people lost loved ones, many families ran out of basic needs such as food and running water, and there was a prolonged school closure (Labuschaigne & Staunton, 2020). All these challenges impacted society, including teachers, in different ways.

In South Africa, the Minister of Basic Education announced that schools were to resume on 1 June 2020 after 11 weeks of closure from school holidays and the lockdown period (Department of Basic Education [DBE], 2020c). The schools were gradually reopened, with Grade 7 and Grade 12 learners starting on 1 June 2020 (DBE, Republic of South Africa [RSA], 2020a). Considering the Department of Education's difficulties to roll out a

home-based curriculum due to the gross socio-economic inequality and lack of access to electronic devices and the internet for underprivileged children, who were in the majority, reopening the schools seemed to be a prudent move. Furthermore, home confinement for children in isolation had other health risks such as poor diet, lack of physical activity and mental health challenges due to a lack of socialisation with children of the same age (Wang, G, Zhang, Zhao, Zhang & Jiang, 2020). The safety of many children during home confinement was questionable as the structures of their homes did not allow them to be indoors during the day, thus they spent most of their time playing outdoors unsupervised, exposed to danger and maltreatment. However, the Minister's back-to-school approach was criticised by the teacher unions, parents, and education experts alike, because it was regarded as rushed and ill-considered. One of the concerns was the timing of schools opening which coincided with COVID-19 infections increasing exponentially during the winter (eNews Channel Africa [*eNCA*], 2020). Furthermore, school management teams (SMTs), teachers and school governing bodies (SGBs) reported anxieties around children's ability to comply with the health and safety regulations (Bunnell, Davidson & Ruggiero, 2018) due to a lack of basic hygiene such as limited access to running water, school waste bins, functioning latrines and personal protective equipment (PPE), which may have increased infection in schools (*eNCA*, 2020). These concerns compelled the South African government to postpone the reopening of schools to 8 June 2020 in anticipation of all concerns being addressed (DBE, 2020b). While some schools made efforts to meet the COVID-19 compliance, not all schools were equipped with safety measures for both teachers and learners. Some schools had inadequate classrooms, water shortages, and shared ablution facilities, which made it difficult to meet the expected COVID-19 protocol standards.

Peritraumatic Distress

As much as the COVID-19 pandemic has affected health care professionals (Fiorillo & Gorwood, 2020; Pfefferbaum & North, 2020), teaching professionals have been equally affected. Due to the ravaging effects of COVID-19, there was a high likelihood of teaching professionals experiencing peritraumatic distress, which is defined as the "emotional and physiological distress experienced during and/or immediately after a traumatic event and is associated with the development and severity of posttraumatic stress disorder (PTSD) and related psychological difficulties" (Bunnell et al., 2018:8). Some studies found that the symptoms of peritraumatic distress were like those of post-traumatic stress as they included psycho-emotional symptoms such as depression and anxiety, mood changes, irritability, hypervigilance, lack of sleep, social withdrawal, fatigue, and cognitive difficulties (Boden, Zimmerman, Azevedo, Ruzek, Gala, Abdel Magid, Cohen, Walser, Mahtani, Hoggatt & McLean, 2021). Because COVID-19 is an airborne and a life-threatening disease that could cause death within 2 weeks of infection (also highly contagious through human contact), the experience of living through this pandemic seemed to be traumatic. Ozamiz-Etxebarria, Berasategi Santxo, Idoiaga Mondragon and Dosil Santamaría (2021) further suggest that the teaching adjustment to the COVID-19 pandemic, abrupt school closure, and other factors related to the pandemic were associated with increased depression and stress among Spanish teachers.

Narisawa, Nishi, Okubo, Noguchi, Hamazaki, Yamashita and Matsuoka (2021) investigated the association between peritraumatic distress and PTSD in acute coronary syndrome (ACS), and they found evidence of the appearance of PTSD in 3 to 21% of ACS sufferers after 3 to 18 months since onset. Among many other studies, Chartier, Delhalle, Baiverlin and Blavier (2021) found a significant association between peritraumatic distress symptoms of parents and children. Therefore, understanding peritraumatic distress as defined by physiological, emotional, and cognitive responses occurring during and immediately after COVID-19-related trauma is imperative for making recommendations on the needs of the teaching professionals in South Africa and beyond (Brunet, Weiss, Metzler, Best, Neylan, Roger, Fagan & Marmar, 2001).

It is also important to consider the psychosocial context in which the pandemic finds the specific population (Abad, Da Silva, De Paiva Teixeira, Antonelli-Ponti, Bastos, Mármora, Campos, Paiva, De Freitas & Da Silva, 2020). Therefore, the bioecological view is necessary when seeking an understanding of the peritraumatic distress experienced by South African teachers, hence the working conditions and the availability of resources to control the further transmission of the virus in schools was considered as meso-factors. Furthermore, in the analysis, preexisting personal and micro-psychosocial factors associated with age, race, and gender, family size, number of children were considered in making comprehensive meaning of the survey results.

A plethora of South African legislative underpinnings for teacher wellness and health support has come into existence since the dawn of the democratic dispensation in 1994. Teachers are covered in legislation aimed at the general South African workforce, in legislation aimed at public servants, and legislation aimed at providing support to teachers. The DBE's National Policy on HIV, sexually transmitted infections (STIs) and TB for learners, educators, school support staff and officials in all primary and secondary schools in the basic

education sector (DBE, RSA, 2017) mandates the provision of support for teachers living with chronic illnesses. In the foreword of this policy, the Minister of Education, Mrs Angie Motshega, indicates that the "DBE must 'ensure that our valued teachers have the means to protect themselves from these diseases, and are supported to lead healthy lifestyles through improved Employee Health and Wellness Programmes'" (Kruger & Jacobs, 2019:193). Furthermore, the South African Council for Educators (SACE) Act (RSA, 2000) provides regulations that underpin healthy relationship between educators, learners, and parents, which are supported by the consultative SGB governance approach and procedures of the South African Schools Act (RSA, 1996) that enhance a climate of wellness among teachers, learners and parents. The DBE also initiated the Personnel Administrative Measures (DBE, RSA, 2016) which laid the basic conditions for an equitable workload (Kruger & Jacobs, 2019). This policy should be in focus as the normally contested "equitable workload" under normal circumstances, interpersonal tensions are likely to rise as many teachers get laid off duties due to COVID-19 symptoms.

We trust that findings from this study will bring teachers' support needs back in focus and serve as a reference for the DBE on the necessity for psychosocial support needed by teaching professionals, who play a crucial role in the educational and economic growth of the country, in the wake of COVID-19. With this study we aimed at determining the peritraumatic distress prevalence and the factors associated with the three levels of the peritraumatic distress categories among teachers in South Africa. The research questions in this study were: What proportion of teaching professionals were affected by the peritraumatic stress as a result of the COVID-19 pandemic in South Africa?
What factors are associated with the peritraumatic distress levels among teachers in South Africa?

Methodology

Study Design

An online survey (cross-sectional study) was conducted among teachers in South Africa to determine their level of peritraumatic distress as a result of COVID-19 across all provinces between September and November 2020. The online survey allowed equal participation of teachers in the different provinces.

Study Site, Population, and Sampling

The study was conducted in South Africa where the population of teachers included public and private school teachers. However, according to the School Realities Report of 2019, the public education system accounts for 91% (407,001 teachers) of the total population of teachers nationally (DBE, RSA, 2020a). Therefore, the study sample was restricted to teachers in public schools alone.

The sample size was determined using the formula (Cochran, 1963):

$$n = \frac{Z^2_{\alpha/2} pq}{d^2}$$

where Z is 1.96 at 95% confidence interval, d is the precision for the given confidence interval of 0.05, p is the optimum prevalence rate of psychological distress of the outcome to be investigated set at 50%, and $q = 1\text{-}p$. The minimum sample size was 384 and as approximately 20% (78) of the sample was catered for non-responses, the targeted sample size was 462. Since the study was conducted across all the provinces in South Africa, there was a high uptake of the survey and a total of 1,008 participants responded to the survey. However, the distribution of the study participants across most provinces was not representative of the teacher population in each province except for the Limpopo province. This discrepancy may be attributed to COVID-19-related challenges that obstructed the sampling process and the study timing, which was towards the end of the year. Specifically, the survey was done in 3 months (September–November 2020) when teachers were busy with end-of-year exams.

Efforts were made to ensure that samples were representative of the teacher population in all provinces through the distribution method of the survey. The survey link was distributed through WhatsApp and via electronic mail (email) by sharing a SurveyMonkey link of the questionnaire. Links were sent by provincial union representatives and contacts in different provinces with varying levels of influence and network ranges. We suspect that the contact in Limpopo had much higher levels of social capital and influence to convince people to open and respond to the survey questions sent via the link. The participants in Limpopo were more responsive to their union representatives sending them the survey link. The people in the Limpopo province have a high regard for government officials (more so than in other provinces) and they may also have taken anything related to COVID-19 very seriously. Stress levels of teachers in provinces beyond Limpopo were generally higher making it difficult to focus on anything besides school-related issues.

Also, as many families across South Africa lost loved ones due to COVID-19 at the end of 2020, morale among teachers may have been very low and teachers may have felt swamped with online tasks to complete. Any additional online activities, including the completion of an online survey to find information about the general health among individuals may not have been regarded urgent. It was indeed a very difficult time to participate in

anything – let alone surveys or anything that did not pertain to preserving life.

Instruments

A three-section questionnaire was used in this study. The first section focused on the participants' sociodemographic factors, namely, age, gender, race, marital status, highest qualification, and the participants' current province. The second section consisted of the COVID-19 peritraumatic distress index (CPDI) measured on a 5-point Likert scale with 24 items. The scale ranges from 0 to 4 (0 = never, 1 = occasionally, 2 = sometimes, 3 = often, and 4 = most of the time). This self-reported questionnaire generally enquired about the altered individual's mental state in the last week, changes in preoccupation with COVID-19, and changes in mood, thoughts, psychosomatic symptoms, and social behaviour. This yielded a CPDI that ranged from 0 to 96 (Qiu, Shen, Zhao, Wang, Xie & Xu, 2020) in response to the effects of COVID-19, and it has been confirmed as a satisfactory index to measure psychological distress with a reliability coefficient of 0.63 (Costantini & Mazzotti, 2020). The internal consistency of the CPDI was verified by psychiatrists from the Shanghai Mental Health Centre and Cronbach's alpha was found to be 0.95 ($p < 0.001$) (Al-Hanawi, Mwale, Alshareef, Qattan, Angawi, Almubark & Alsharqi, 2020). This questionnaire was easily comprehensible and developed for rapid completion. The questionnaire was slightly modified from the original CPDI with some questions added to form a third section which was tailored for the teachers in the South African context. The modification included questions such as; "My school has sanitisers that I use", "I use a facemask always at school and in class", "It is possible to practice social distancing at school", and, "Our school has COVID-19 cases." This was done to investigate some of the occupation-specific challenges that participants may have faced due to COVID-19. We verified the internal consistency of these additional questions and found a Cronbach's alpha value of 0.62 ($p < 0.01$). This meant that the items had acceptable levels of reliability but did not share very high covariance.

The questionnaire and information sheet were uploaded onto the SurveyMonkey application and distributed to teachers through the Department of Education and teacher unions such as the South African Democratic Teachers' Union (SADTU), the Professional Educators' Union (PEU), and the SACE. Reminders to teachers to complete the survey were sent through the district offices and schools that were randomly selected.

Ethical Considerations

The study was conducted by two educational psychologists registered with the Health Professions Council of South Africa, a registered counselling psychologist, and an epidemiologist. Ethical clearance for this study was granted by the Human Research Ethics Committee of the University of the Witwatersrand (protocol number: H20/07/25). Approval for the study was also obtained from the DBE. Participants were informed that participation was voluntary, and that they could withdraw without penalty at any point. Furthermore, confidentiality and anonymity were ensured as participants completed the questionnaire online and no personal identifying information, such as names and addresses, was required. The study posed no foreseeable psychological or emotional harm to the participants. The participants were provided with the contact information of national institutions that provide psychosocial services to address any anxieties and distress related to schools reopening during the COVID-19 pandemic.

Data Analysis

The data from SurveyMonkey were downloaded and exported to Excel, cleaned and coded, and then imported into SPSS 27 and STATA 15 software for statistical analysis. Descriptive statistics were used to summarise categorical and continuous variables. To compute the CPDI, participants' responses (i.e., 0, 1, 2, 3, 4) to the 24 questions were summed and the scores ranged from 4 to 94. This was followed by a classification of the CPDI to obtain the levels of distress. Similar to previous studies (Al-Hanawi et al., 2020; Megalakaki, Kokou-Kpolou, Vaudé, Park, Iorfa, Cénat & Derivois, 2021; Qiu et al., 2020; Talevi, Pacitti, Socci, Renzi, Alessandrini, Trebbi & Rossi, 2020), a score between 0 and 28 indicated low distress, between 29 and 51 indicated moderate distress, and a score ≥ 52 indicated severe distress.

To explore peritraumatic distress among teachers upon returning to school during the COVID-19 pandemic, univariate, bivariate and multivariate analyses were conducted. The bivariate relationship between sociodemographic factors and PTSD were examined using the Chi-squared test (for categorical variables) as well as the *t*-test or Wilcoxon test (for normally distributed and skewed numerical variables, respectively) at the 5% significance level. Additionally, peritraumatic distress and occupational-specific stress levels were determined across provinces to establish in which provinces teachers were affected more severely by PTSD due to the COVID-19 pandemic than others. These provincial comparisons of the peritraumatic distress and occupational-specific stress scores were tested using the Chi-squared and Kruskal Wallis tests at the 5% significance level.

Finally, determinants of peritraumatic distress levels (low, moderate and severe) and occupational-specific stress were established through multinomial logistic regression. The

advantages of using regression analysis include the ability to determine independent predictors of outcomes in the evaluation and correctly establish the associations between various independent factors and the outcomes while adjusting for confounding effects.

Results

The total number of teachers who participated in this study was 1,008, of which 21% reported Limpopo as their current province. The participants' socio-demographic profile is displayed in Table 1. Among all the participants, 32% were male and 68% female. Most participants (43%) were between 51 and 65 years of age and the mean age of participants was 46.7 (±9.92) years. A large portion of the sample were Africans (66%) and married (57%). The highest qualifications held by most of the participants were bachelor's degrees and advanced diplomas (34%), honours degrees and postgraduate diplomas (28%), and national diplomas and advanced certificates (27%).

Table 1 Socio-demographic profile of the teachers (n = 1,008)

Socio-demographic variables	*n*	%
Age		
21–35 years	186	18.5
36–50 years	388	38.5
51–65 years	434	43.1
Mean±*SD*	46.7±9.92	
Gender		
Male	321	31.9
Female	685	68.1
Race		
African	671	66.2
Coloured	122	12
Indian	50	4.9
White	150	14.8
Other	20	2.0
Marital status		
Single/Never married	224	21.9
Cohabiting	46	4.5
Married/Civil union	601	58.9
Separated/Divorced	82	8
Widowed	63	6.2
Highest qualification		
Grade 11	1	.1
Grade 12 (Matric)	41	4.4
Higher certificate	20	2.1
National diploma & advanced certificate	248	26.5
Bachelor's degree & advanced diploma	321	34.3
Honours degree & postgraduate diploma	263	28.1
Master's	41	4.4
PhD	2	.2
Province		
Eastern Cape	170	17
Free State	38	3.8
Gauteng	167	16.7
KwaZulu-Natal	94	9.4
Limpopo	210	21
Mpumalanga	63	6.3
Northern Cape	64	6.4
North West	43	4.3
Western Cape	149	14.9

Table 2 displays the prevalence of psychological symptoms of the CPDI scale. Ninety per cent of the participants indicated that they felt more nervous and anxious than usual, and 93% had anxiety about the possibility of themselves or their family being infected with the coronavirus. Sixty-one per cent of the participants had bought many masks, medication, sanitisers, gloves, and/or other home supplies. About 99% of the participants felt sympathetic to COVID-19 patients and their families. Eighty-four per cent almost always felt tired, even exhausted, and 52% had felt dizziness, back pain, or chest discomfort since the outbreak of COVID-19. Fewer participants (< 50%) reported other physical symptoms and loss of social functioning. Notably, 62% of the participants believed the COVID-19 information from all sources without any validation, while 43% did not believe in negative news about COVID-19 and were not doubtful about the good news.

Table 2 Prevalence of psychological symptoms of the CPDI scale

Questions		Never	Occasionally	Sometimes	Often	Most of the time
		n(%)	*n*(%)	*n*(%)	*n*(%)	*n*(%)
1)	Compared to usual, I feel nervous and anxious.	103(10.1)	133(13.1)	391(38.4)	187(18.4)	205(20.1)
2)	I feel insecure and bought a lot of goods, such as medication, sanitizer, gloves, masks and/or other home supplies.	104(10.2)	141(13.9)	234(23)	247(24.3)	291(28.6)
3)	I can't stop myself from imagining myself or my family being infected and feel terrified and anxious about it.	69(6.8)	135(13.3)	273(26.8)	215(21.1)	325(32)
4)	I feel empty and helpless no matter what I do.	261(25.6)	143(14)	323(31.7)	150(14.7)	141(13.9)
5)	I feel sympathetic to COVID-19 patients and their families. I feel sad about them.	10(1)	39(3.8)	73(7.2)	263(25.9)	631(62.1)
6)	I feel helpless and angry about people around me.	239(23.5)	142(14)	327(32.2)	160(15.7)	148(14.6)
7)	I am losing faith in the people around me.	328(32.3)	151(14.9)	285(28.1)	137(13.5)	115(11.3)
8)	I collect information about COVID-19 all day. Even if it's not necessary, I can't stop myself.	195(19.2)	218(21.5)	255(25.1)	159(15.6)	189(18.6)
9)	I will believe the COVID-19 information from all sources without any evaluation.	392(38.5)	149(14.6)	233(22.9)	117(11.5)	127(12.5)
10)	I would rather believe in negative news about COVID-19 and be doubtful about the good news.	582(57.2)	165(16.2)	182(17.9)	34(3.3)	54(5.3)
11)	I am constantly sharing news about COVID-19 (mostly negative news).	483(47.6)	159(15.7)	180(17.8)	77(7.6)	115(11.3)
12)	I avoid watching COVID-19 news and stories on social media, since I am scared to do so.	467(46.1)	131(12.9)	232(22.9)	86(8.5)	97(9.6)
13)	I am more irritable and have frequent conflicts with my family.	455(45)	200(19.8)	225(22.2)	79(7.8)	53(5.2)
14)	I feel tired and sometimes even exhausted.	161(15.9)	141(13.9)	326(32.1)	174(17.2)	212(20.9)
15)	Due to feelings of anxiety, my reactions are more sluggish.	265(26.1)	162(16)	348(34.3)	141(13.9)	99(9.8)
16)	I find it hard to concentrate because I'm worrying about getting the coronavirus.	274(27)	183(18)	287(28.2)	135(13.3)	137(13.5)
17)	I find it hard to make any decision.	372(36.5)	178(17.5)	310(30.5)	88(8.6)	70(6.9)
18)	During this COVID-19 outbreak, I feel dizzy, have back pain, or chest discomfort.	489(48.2)	159(15.7)	233(23)	74(7.3)	59(5.8)
19)	During this COVID-19 outbreak, I feel stomach pains, bloating, or other stomach discomforts.	525(51.6)	168(16.5)	193(19)	76(7.5)	55(5.4)
20)	I feel uncomfortable when communicating with others about COVID-19.	573(56.3)	146(14.4)	193(19)	50(4.9)	55(5.4)
21)	Recently, I rarely talk to my family.	575(56.7)	119(11.7)	156(15.4)	95(9.4)	69(6.8)
22)	I struggle to sleep because I always dream about myself or my family members being infected by the coronavirus.	568(55.9)	133(13.1)	199(19.6)	61(6)	55(5.4)
23)	I lost my appetite.	640(63.1)	141(13.9)	188(18.5)	30(3)	16(1.6)

Questions		Never	Occasionally	Sometimes	Often	Most of the time
		n(%)	*n*(%)	*n*(%)	*n*(%)	*n*(%)
24)	Since the COVID-19 outbreak, I have constipation or frequent urination.	573(56.3)	161(15.8)	167(16.4)	67(6.6)	50(4.9)

In addition to the questions of the CPDI Scale, South African teachers' occupation-specific and behavioural response questions about the COVID-19 pandemic were added to the survey (cf. Table 3). Although almost two-thirds of the participants indicated that they had bought many masks, medication, sanitisers, gloves, and/or other home supplies, about 98.9% used sanitisers, most of which (98%), it seems were provided by their schools. The majority of the participants always used a face mask at school and in class (98.7%) and washed their hands more than five times a day (97.5%). Sixty-nine per cent worked in schools that had reported COVID-19 cases. About 85% of the respondents were afraid that they could contract the coronavirus at school, while 55% reported having lost interest in teaching since the COVID-19 outbreak. Notably, 94% of the participants supported the option of alternating between contact and online teaching and felt that it could assist in reducing the spread of the coronavirus; however, this was not statistically significant. About 93% of the participants had changed their diet to include more fruit and vegetables compared to their diet before the outbreak of the COVID-19 pandemic.

Table 3 Teacher's responses to additional occupation-specific questions

Questions		Never	Occasionally	Sometimes	Often	Most of the time
		n(%)	*n*(%)	*n*(%)	*n*(%)	*n*(%)
25)	I have a sanitizer that I use.	11(1.1)	32(3.2)	56(5.5)	177(17.5)	736(72.7)
26)	My school has sanitizers that I use.	20(2)	25(2.5)	55(5.4)	143(14.1)	771(76)
27)	I use a face mask always at school and in class.	3(0.3)	17(1.7)	34(3.4)	134(13.2)	825(81.4)
28)	It is possible to practice social distance at school.	75(7.4)	107(10.6)	231(22.8)	154(15.2)	447(44.1)
29)	Our school has COVID-19 cases.	319(31.5)	295(29.2)	251(24.8)	94(9.3)	53(5.2)
30)	Going to school in the morning is difficult.	360(35.6)	115(11.4)	317(31.3)	90(8.9)	130(12.8)
31)	I am afraid I will contract the coronavirus at schools.	153(15.1)	122(12)	357(35.2)	125(12.3)	256(25.3)
32)	I have lost interest in teaching.	458(45.3)	122(12.1)	265(26.2)	76(7.5)	91(9)
33)	I wash hands more than five times a day.	25(2.5)	93(9.2)	151(14.9)	208(20.5)	538(53)
34)	Alternating contact and online teaching can assist in reducing the spread of the coronavirus.	66(6.5)	73(7.2)	272(26.9)	160(15.8)	442(43.6)
35)	I eat more fruit and vegetables than I used to before the COVID-19 pandemic.	72(7.1)	148(14.6)	254(25)	187(18.4)	354(34.9)

The mean (standard deviation) CPDI score was 40.63 (17.42). About 25% of the participants showed low levels of distress, while 48% (n = 118) were mild to moderately distressed, and only 27% were severely distressed due to the COVID-19 pandemic (cf. Figure 1).

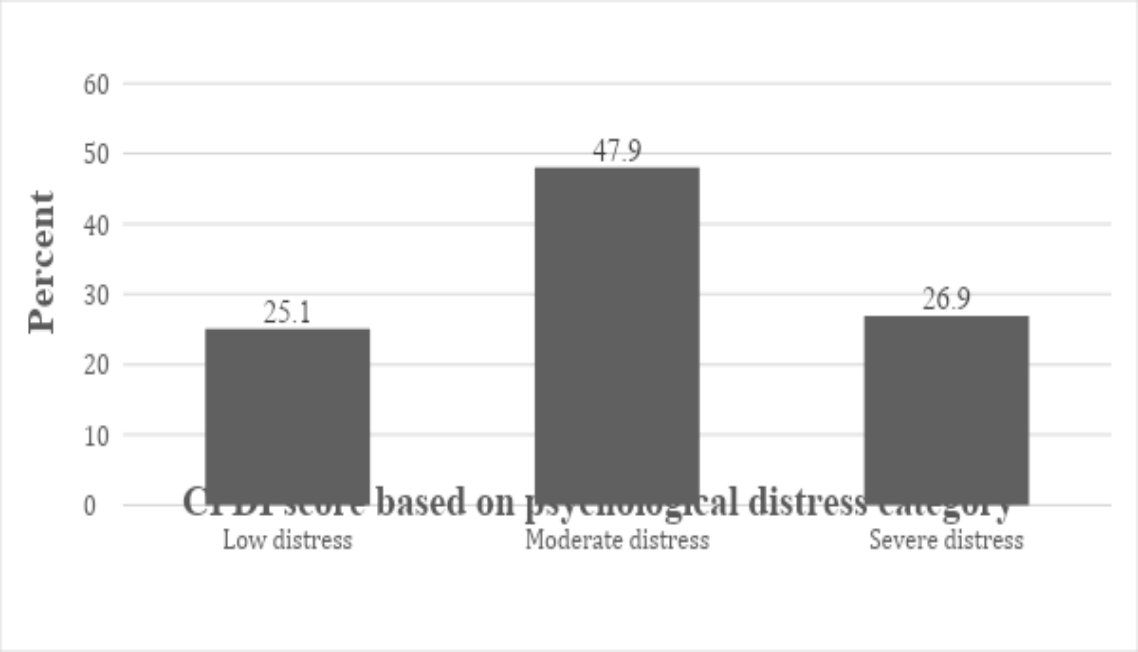

Figure 1 Prevalence of psychological distress among teachers (0–28 = low distress, 29–51 = moderate distress, ≥ 52 = severe distress)

Table 4 shows the bivariate statistics of differences across the three categories of peritraumatic distress. More female teachers were moderately (49%) and severely (29%) distressed than male teachers, and this was significantly different (p-value < 0.0001). The peritraumatic distress increased in severity with an increase in age as older teachers were severely distressed. Moderate distress was more common among teachers from Gauteng (55%) and the Free State (55%), while severe distress was more common among teachers from the Eastern Cape (36%).

Table 4 Bivariate descriptive statistics (n = 1,008)

Variables	Low distress	Moderate distress	Severe distress	*p*
Gender				0.001**
Male	104(32)	147(30)	70(26)	
Female	148(22)	337(49)	200(29)	
Age (median; IQR)	48; 40–54	49; 40–54	50; 42–54.5	0.000***
Race				
Black	168(25)	334(50)	169(25)	
Coloured	37(26)	61(43)	43(31)	0.601
Indian	12(24)	21(41)	18(35)	
White	37(24)	71(47)	42(28)	
Educational level	7; 6–8	7; 6–8	7; 6–8	0.000***
Marital status				0.190
Single/Never married	55(25)	106(47)	63(28)	
Cohabiting	11(24)	23(50)	12(26)	
Married/Civil union	160(27)	287(48)	154(26)	
Separated/Divorced	13(16)	48(59)	21(26)	
Widowed	14(22)	24(38)	25(40)	
Number of children (median; IQR)	3; 1–4	2; 1–4	2; 1–4	0.000***
Household size (median; IQR)	4; 3–5	4; 3–6	4; 3–6	0.000***
Province				
Eastern Cape	28(16)	80(47)	62(36)	
Free State	8(21)	21(55)	9(24)	
Gauteng	40(24)	92(55)	35(21)	
KwaZulu-Natal	26(28)	37(39)	31(33)	
Limpopo	61(29)	108(51)	41(20)	0.001**
Mpumalanga	22(35)	31(49)	10(16)	
Northern Cape	18(28)	30(47)	16(25)	
North West	7(16)	23(53)	13(30)	
Western Cape	40(27)	56(38)	53(35)	

Note. Educational levels were measured by National Qualifications Framework (NQF) levels. The levels on Table 4 are: 6 = diploma & advanced certificate, 7 = bachelor's degree & advanced diploma, and 8 = honours degree & postgraduate diploma. *p < 0.05; **p < 0.01, ***p < 0.001. IQR = Interquartile range.

Table 5 shows the results for the multinomial logistic regression. The moderate and severe adjusted models show that the predictors of peritraumatic distress included gender, household size and province. Specifically, women were 1.73 times (95%CI: a-b) and 1.98 times (95%CI; a-b) as likely to report moderate and severe distress compared to men. Also, as the household size increased by one person, the likelihood of moderate distress increased by 9% (relative risk ratio [RRR] = 1.08 (95%CI: a-b) and the likelihood of severe distress increased by 11% ((RRR) = 1.11 (95%CI: a-b)). Compared to teachers in the Eastern Cape, teachers in Limpopo, Mpumalanga and the Western Cape respectively had a 43% (RRR = 0.57; 95% CI:a-b), 58% (RRR = 0.42; 95%CI:a-b) and 44% (RRR = 0.56; 95%CI:a-b) lower likelihood of moderate distress. Finally, compared to teachers in the Eastern Cape, teachers in Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga and the Northern Cape respectively had a 59% (RRR = 0.41; 95%CI:a-b), 48% (RRR = 0.42; 95%CI:a-b), 73% (RRR = 0.27; 95%CI:a-b), 83% (RRR = 0.17; 95%CI:a-b) and 57% (RRR = 0.43; 95%CI:a-b) lower likelihood of severe distress.

Table 5 Univariate and adjusted multinomial regression results

Explanatory variables in model	Univariate multinomial regression	Adjusted multinomial regression	Explanatory variables in model	Univariate multinomial regression
	Moderate distress	Severe distress		Moderate distress
	RRR(*p*-value)	RRR (*p*-value)	RRR (*p*-value)	RRR (*p*-value)
Gender (Male)	1(reference)			
Female	1.611(0.003**)	2.0079(0.000***)	1.733(0.002**)	1.986(0.001**)
Age	0.999(0.927)	1.007(0.433)	0.994(0.546)	1.004(0.675)
Race (Black)	1(reference)			
Coloured	0.829(0.413)	1.155(0.563)	0.934(0.812)	1.006(0.985)
Indian	0.880(0.733)	1.491(0.303)	1.095(0.831)	1.427(0.427)
White	0.965(0.874)	1.128(0.629)	1.178(0.566)	1.077(0.817)
Educational level	0.957(0.344)	1.011(0.835)	0.972(0.346)	1.044(0.466)
Marital status (Single/Never married)	1(reference)			
Cohabiting	1.084(0.840)	0.952(0.915)	1.431(0.419)	1.295(0.611)
Married/Civil union	0.931(0.710)	0.840(0.421)	0.915(0.692)	0.729(0.208)
Separated/Divorced	1.916(0.066)	1.410(0.388)	1.778(0.131)	1.216(0.647)
Widowed	0.889(0.755)	1.559(0.244)	0.687(0.360)	1.071(0.871)
Number of children	1.049(0.207)	1.049(0.264)	1.067(0.256)	1.068(0.297)
Household size	1.071(0.042*)	1.062(0.112)	1.085(0.092)	1.114(0.041*)
Province (Eastern Cape)	1(reference)			
Free State	0.919(0.857)	0.508(0.207)	1.107(0.840)	0.712(0.550)
Gauteng	0.805(0.454)	0.395(0.004**)	0.818(0.507)	0.405(0.008**)
KwaZulu-Natal	0.498(0.046*)	0.538(0.077)	0.471(0.040*)	0.518(0.088)
Limpopo	0.620(0.078)	0.304(0.000***)	0.572(0.051)	0.271(0.000***)
Mpumalanga	0.493(0.046*)	0.205(0.000***)	0.420(0.021*)	0.165(0.000***)
Northern Cape	0.583(0.145)	0.401(0.207)	0.625(0.232)	0.426(0.052*)
North West	1.150(0.773)	0.839(0.736)	1.169(0.754)	0.914(0.867)
Western Cape	0.490(0.018*)	0.598(0.097)	0.558(0.079)	0.737(0.378)

Note. *$p < 0.05$; **$p < 0.01$, ***$p < 0.001$.

Discussion

With this study we aimed to determine the peritraumatic distress prevalence and the factors associated with each category among teachers in South Africa. The results reveal that 48% of the teachers indicated mild to moderate levels of peritraumatic distress while 27% of the teachers reported severe levels of peritraumatic distress. This shows that COVID-19 had a significant effect on the psychological well-being of teachers, albeit to differing degrees. The findings of this study are consistent with those in Ozamiz-Etxebarria et al.'s (2021) study on depression and anxiety among Spanish teachers, in which increased levels of these symptoms were found. This is in line with most studies that investigated the prevalence and incidence of peritraumatic distress in the general population. Studies by Alkhamees, Alrashed, Alzunaydi, Almohimeed and Aljohani (2020); Dubey, Biswas, Ghosh, Chatterjee, Dubey, Chatterjee, Lahiri and Lavie (2020); Megalakaki et al. (2021), Ngoc Cong Duong, Nguyen Le Bao, Thi Lan Nguyen, Vo Van, Phung Lam, Pham Gia, Anuratpanich and Vo Van (2020); and G Wang et al. (2020), respectively show elevated levels of peritraumatic distress in general populations in China, Vietnam, Saudi Arabia and France during and after COVID-19 lockdowns. To varying degrees, the findings of the abovementioned studies echo Cooke, Eirich, Racine and Madigan's (2020) assertion that psychosocial and peritraumatic symptoms are attenuated or amplified by demographic variables such as age and gender, or by methodological variables. We found that the levels of distress varied by gender, age, education level, the number of children, and province in the bivariate analysis, while associations were seen between peritraumatic stress and gender, household size, and province at regression level.

The results of this study indicate a marginally statistically significant relationship between the participants' gender and peritraumatic distress at $p = 0.01$. The majority of the female participants reported having experienced moderate to severe distress other than their male counterparts. These findings are comparable to many studies that have found that the female gender is associated with higher scores in the impact of event scale-revised (IES-R), suggesting that they are most susceptible to moderate to severe psychological distress (Megalakaki et al., 2021; Ngoc Cong Duong et al., 2020). Ozamiz-Etxebarria et al. (2021) found that female teachers reported higher levels of distress compared to their male counterparts. This finding could be explained by the fact that the teaching profession in South Africa is predominantly

feminised both at primary and secondary school levels (Taole & Wolhunter, 2022). In addition, most teachers are mothers who tend to worry more, especially amid the COVID-19 pandemic, and we found that 85% of the teachers were mothers with at least one child. Similar findings by Chartier et al. (2021) and Losada-Baltar, Jiménez-Gonzalo, Gallego-Alberto, Pedroso-Chaparro, Fernandes-Pires and Márquez-González (2021) show that mothers reported higher levels of peritraumatic stress during lockdown than fathers. The high levels of distress among teachers who are mothers could be a result of worrying about the possibility of their children contracting the virus and also the challenges they face with having to care for their children during the pandemic. Bıkmazer, Kadak, Görmez, Doğan, Aslankaya, Bakır, Tarakçıoğlu, Kaya, Gümüş, Esin, Karayağmurlu, Adak, Yaylacı, Güller, Tanır, Koyuncu, Serdengeçti, Ermiş, Kaçmaz, Gülşen, Doğru, Al Bayati, Üstündağ, Gökler, Özyurt, Baykara, Ekinci, Başgül, Görmez, Emiroğlu, Türkçapar and Öztürk (2021) found that families with children younger than 18 years old worried more and experienced heightened distress, anxiety and depression. In most families, mothers carry the burden of the care and well-being of their children, therefore, without the necessary mediating psychological and social support during the COVID-19 lockdown, most mothers felt isolated and alone (Landi, Pakenham, Boccolini, Grandi & Tossani, 2020). Social support for mothers and families plays a crucial role in the management of stressful events. A study by Chartier et al. (2021) supports the assertion that the functionality and efficiency of social support have been severely affected by COVID-19, leaving many individuals to experience heightened anxiety and depression in isolation.

Furthermore, the results reveal that the participants' experience of peritraumatic stress was more related to age. As participants' age increased, so did the likelihood of experiencing peritraumatic stress. More older teachers had experienced severe distress than younger participants. Although the age variable did not have any effect in the adjusted model, older adults have been reported to have an increased risk of developing COVID-19-related adverse medical outcomes compared to young people (Verity, Okell, Dorigatti, Winskill, Whittaker, Imai, Cuomo-Dannenburg, Thompson, Walker, Fu, Dighe, Griffin, Baguelin, Bhatia, Boonyasiri, Cori, Cucunubá, Fitz John, Gaythorpe, Green, Hamlet, Hinsley, Laydon, Nedjati-Dilani, Riley, Van Elsland, Volz, Wang, Wang, Xi, Donnelly, Ghani & Ferguson, 2020). Such emerging information about COVID-19 among adults can result in the development of peritraumatic distress (Losada-Baltar et al., 2021).

Household size is another variable that was found to be associated with peritraumatic stress among teachers. This may be explained by the fact that as the lockdown was implemented, staying at home with children became stressful as parents had additional responsibilities to take care of children in such circumstances. Parents had to deal with their children's emotional and psychological states of distress, worry, anxiety, agitation, boredom, sadness and frustration on a daily basis, which increased the likelihood of the parents' developing PTSD. Furthermore, the strict lockdown restrictions may have deprived parents of access to help usually offered by the extended family. The findings agreement with those in the work by Griffith (2022) and Orgilés, Morales, Delvecchio, Mazzeschi and Espada (2020), who found that most parents were exposed to an increased risk of parental burnout (including experiencing decreased sleep and somatic complaints) and reported the feeling of being incompetent parents. In contrast, a study by Sénécal and Martin (2020) found that during lockdown, bigger families provided families with a bubble of protection and became a place of safety where the risks of exposure to the virus were minimised.

At provincial level, moderate peritraumatic stress was more common among teachers from Limpopo while severe peritraumatic stress was more common among teachers from the Eastern Cape. It is important to note that participants from the Limpopo province were proportionally represented in this study. The multinomial regression analysis showed that Gauteng, Limpopo and Mpumalanga had a significant number of teachers at higher risk of psychological distress due to a myriad of factors such as higher levels of pollution, population density, lack of access to green areas, and tall buildings (Wang, C, Pan, Wan, Tan, Xu, Ho & Ho, 2020). In support of C Wang et al.'s (2020) findings, Dubey et al. (2020) and Qiu et al. (2020) found that given the lethal communicability of COVID-19, migrants, refugees, and slum-dwellers were at a heightened risk of contracting and spreading the disease due to the scarcity of safe and affordable water supply, lack of basic hygiene, as well as neglect and segregation. This finding warrants a further study to investigate the association between rural-dwelling and depression.

While this study was a success in detecting COVID-19-related peritraumatic distress among South African teachers, there were some shortcomings. We missed an opportunity to find the link between peritraumatic distress and living with other underlying conditions such as hypertension, as was done in other studies (Onder, Rezza & Brusaferro, 2020). More importantly, for intervention purposes, refined data on the proportion of teachers in various quintiles (quintiles 1 to 5) and phases (Foundation, Intermediate and Senior Phase) affected by the pandemic would have been of great use to the DBE. Nonetheless, this study has provided a baseline for future studies to understand

COVID-19-pandemic-related peritraumatic distress among teaching professionals in South Africa.

Conclusion

Teaching professionals in South African public schools experienced high levels of distress associated with the COVID-19 pandemic. More distress was evident in female than in male teachers. Moreover, the prevalence of distress was also found to be higher in older teaching professionals than in the younger cohort. Teachers in provinces that reported high numbers of COVID-19 infections experienced more distress than teachers who worked in provinces that reported fewer cases of COVID-19 infections. In addition, teaching professionals who were mothers were more likely to experience high levels of distress than teachers who did not have children.

The study findings form the foundation to create awareness and extend mental health support to teaching professionals. Teaching professionals in South Africa require psychological services from mental health institutions, especially those who are female, mothers, and older. Access to such services will alleviate teachers' psychological distress with minimal interference to their performance. It should be reflected that teachers' mental health should have been prioritised during the pandemic as great demands have been made of teachers to adjust to hybrid teaching processes due to adherence to the COVID-19 pandemic protocols. The DBE needs to cascade mental health support to teachers, which will automatically address any future resurgence of COVID-19-related PTSD.

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Authors' Contributions

As the primary investigator (PI), SM conceptualised the research, wrote the proposal, applied for ethical clearance, collected data, worked with the team to analyse and interpret the data, wrote the report, edited the drafts and produced the final manuscript. TT contributed mainly on some parts of the literature review, interpretation of the results and the conclusion and references. SM contributed to the introduction of statistical data, methodology; results and discussion. PM contributed in the first phase of the statistical analysis and collaborated in the writing of the methodology – specifically the results section of the article.

Notes

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