

Original Article

Post-Traumatic Stress in Primary Health Care Workers during Covid-19 In Athens

Eirini Nannou, RN, MSc

Department of Nursing, Primary Health Care Center of Salamis, Greece.

Agoritsa Koulouri, RN, RMHN, MSc, MHSc, PhD

Head Nurse, Department of Nursing Primary Health Care Center of Salamis, Greece

Agapi Polymenidou, RD, MSc

Radiographer, Primary Health Care Center of Salamis, Greece

Correspondence: Nannou Eirini, Address: Venetsianou 3 Salamina, Attica, Greece Email: irene_nannou@hotmail.com

The work was carried out in the Primary Health Care Centers at the prefecture of Attica

Abstract

Background: The SARS-Covid-19 pandemic is one of the deadliest pandemics of recent years worldwide. All countries were tested more than ever, and health workers tried to cope with the increased demands of an unprecedented situation. They were exposed to factors that increase the risk of PTSD more than ever before. Primary Health Care helped significantly in the pandemic by decongesting Secondary hospitals.

Aim: The aim of this study was to estimate the rate of post-traumatic stress in Primary Health Care workers during the Covid19 pandemic. No other study to date has targeted community health professional during pandemic.

Methodology: A cross-sectional comparative study included 210 healthcare workers in Primary Health Centers in Athens. Data collection was done by completing online questionnaires. The research tools used were the DSM-5 PTSD self-report. We also collected data regarding the demographic, clinical and job characteristics of the participants. All participants provided informed consent to participate in the study. For the statistical analysis and the presentation of the results, the statistical package SPSS v. 22.0.

Results: In the present study, post-traumatic stress was found on the PC-PTSD-5 scale with a score of > 3 in 22.4% and > 4 in 15.2% of the studied population. On the GAD scale, mild, moderate, and severe anxiety disorder was found in 22.9%, 17.1%, and 20% of the participants respectively.

Conclusions: Post-traumatic stress and anxiety affected significantly Primary Health Care workers. Our findings identify factors associated with the highest level of psychological impact that can be used to design psychological interventions to improve the mental health of healthcare workers following the outbreak of the Covid-19 pandemic.

Keywords: post-traumatic stress, generalized anxiety disorder, Primary Health, pandemic, Covid-19.

Introduction

The SARS-Covid-19 corona virus pandemic is undoubtedly one of the deadliest pandemics of recent years with over 4 million deaths worldwide. The health systems of all countries were tested more than ever, and their workers regardless of sector and specialty tried to cope with the increased demands of an unprecedented situation.

The increased need to provide health care to those who fell ill with Covid-19 in just 18 months claimed the lives of 115,000 health workers (World Health Organization, 2021). Due to its rapid transmission, the Corona virus outbreak not only raised public health concerns but also caused enormous psychological stress (Xiang *et al.*, 2020) among healthcare workers.

According to the US National Center for Mental Health (2015), PTSD can occur at any time after a traumatic event and change a person's life forever. It occurs after exposure to traumatic events such as war attacks, car accidents, and physical abuse.

Examining the existing literature, it is found that cases of psychological burden such as generalized anxiety disorder, post-traumatic stress disorder (PTSD), and depression have been observed again in the past in frontline professions after catastrophic events (Berninger *et al.*, 2010; Haugen, Evces & Weiss 2012; Chen *et al.*, 2020). Such occupations include police officers, firefighters, rescue workers, and health workers (Tak *et al.*, 2007).

Infectious disease outbreaks are known to have psychological effects on healthcare workers as well as the general population. Notable examples of PTSD in healthcare workers were the psychological consequences of the 2003 SARS and Ebola (Tam *et al.*, 2004; Grace *et al.*, 2005; McAlonan *et al.*, 2007; Wu *et al.*, 2009; Lehmann *et al.*, 2015;). In many areas affected by SARS, PTSD-related symptoms were present in the population. In Hong Kong, SARS survivors reported symptoms related to a post-traumatic stress disorder, anxiety, and depression (Wu, Chan & Ma, 2005). The severity of PTSD symptoms was associated with the progression of quarantine (Hawryluck *et al.*, 2004). A study reported PTSD in 44.1% or even 4 years after discharge from the hospital in SARS patients (Hong *et al.*, 2009).

During the Covid-19 pandemic healthcare workers worldwide were equally exposed to factors that increase the risk of PTSD more than ever before. A large number of critically ill patients, the high mortality and morbidity rates of the virus as well as the fear of getting themselves or their families sick were some of them. Staff in Secondary Hospitals across Europe suffered a huge mental burden with consequences for themselves and their environment (Hummel *et al.*, 2021).

Primary Health Care (PHC) was also an important weapon in dealing with the pandemic, with the main purpose of decongesting secondary hospitals. According to the World Health Organization (WHO), primary care has played an important role in the response to COVID-19 through early diagnosis, helping vulnerable people cope with their anxiety about the virus

and reducing the demand for hospital services (World Health Organization, 2020).

Aim of the Research: This study aim was conducted to detect post-traumatic stress in Primary Health Care Workers during Covid-19 in Athens. A comparison of findings was also carried out.

Methodology

The study was carried out from December 2021 to February 2022 on employees of Health Care Centers in Athens. We used the "Google forms" platform to create an anonymous online questionnaire regarding the demographic, clinical and job characteristics of the participants.

Study setting and sample: Participants were health workers in Health Centers of the prefecture of Attica during the Pandemic period. The data were collected from 1st and 2nd Health Regions in the prefecture of Attica, from December 2021 to February 2022. It was initially estimated that with a sample of 200 participants in the study would give 95% power to conduct a linear regression, with the dimensions of the scales measured in the study as a dependent variable, at a significance level of 0.05 and for power sizes of 0.15 or greater. The final sample was 210 healthcare workers from Athens. Approval was received from the Administrations of the 1st and 2nd Health Regions with No. Prot. 4924/01-10-2021 and 72235/18/12/21 respectively, as well as by the coordinators of the Health Centers that participated in the research. All ethical rules were followed and informed consent was obtained from all participants.

Data Collection Tools: In the present study the following two scales were used:

The DSM-5 PTSD Self-Report Questionnaire (PC-PTSD-5) was developed by Prins *et al* (2016), and was designed to identify individuals with possible PTSD in primary care. It is a 5-question assessment designed to identify individuals with possible PTSD. Those who have been positively assessed are required to undertake further assessment preferably with a structured interview.

Its assessment consists of 5 questions and is designed to identify individuals with possible PTSD. Those who have been positively assessed are required to undertake further assessment preferably with a structured interview.

Score

The measurement begins with a question designed to assess whether the respondent has

had any exposure to traumatic events. If a respondent answers in the negative, the PC-PTSD-5 is completed and given a score of 0. If a respondent indicates a positive history of trauma (having experienced at least one traumatic event in their lifetime) then they are prompted to answer five additional questions yes / not about how the trauma has affected him in the last month. Preliminary results from validity studies suggest a cutoff of 3 on the PC-PTSD-5 (eg, respondent answers "yes" to 3 of 5 questions about how traumatic events have affected them in the past month) is optimal positive for possible PTSD. Sensitivity optimization minimizes false negatives of the tool Using a threshold of 4 is considered effective. Efficiency optimization balances false positives and false negatives (Prins *et al*, 2016)

Translation and cross-cultural adaptation of the PC-PTSD-5 scale was carried out with the WHO steps: First, one or two translators translated the original English questionnaire into the Greek target language. The translators had a clear understanding of the questionnaire and the population that will use it. This increases the likelihood that the instrument will be translated appropriately and the language used in the translated document closely matches the language of the target group. A bilingual team (expert team) then reviews the translation, looking for any inconsistencies between the English language and the translated document. Issues related to maintaining the integrity of the questionnaire were resolved, in terms of semantic, conceptual and technical equivalence in the Greek language (World Health Organization, 2009). Cronbach's alpha internal consistency reliability for all questions of the scale was found to be equal to 0.804 units.

The Generalized Anxiety Disorder GAD 7 self-report scale was developed by Spitzer *et al*, (2006) with an educational grant from Pfizer Inc. It consists of 7 questions that assess whether the respondent feels nervous or anxious, whether can control anxiety, whether worries about various things, whether he can relax easily, whether he is anxious, whether he feels irritated and finally whether he has a feeling of fear for something horrible.

Each question has four possible answers on a 0-3 Likert scale, where 0 corresponds to "not at all", 1 corresponds to "sometimes", 2 corresponds to "more than half the days", 3 corresponds to "almost every day". The total score can be from 0 to 21 points. As the score increases, so does the

severity of the stress. Scores of 5, 10, and 15 are taken as cutoffs for mild, moderate, and severe anxiety, respectively. When used as a screening tool, further evaluation is recommended when the score is 10 or higher. Using a cutoff score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for Generalized Anxiety Disorder. It is moderately good at screening for three other common anxiety disorders—panic disorder (sensitivity 74%, specificity 81%), social anxiety disorder (sensitivity 72%, specificity 80%), and post-traumatic stress disorder (sensitivity 66%, specificity 81%). The internal consistency index (Cronbach's α) for the scale was found to be equal to 0.950 units. It is noted that values higher than 0.70 are considered satisfactory.

Linear regression analysis with stepwise linear regression analysis was used to find independent factors related to the variables under study, from which the dependence coefficients (β) and their standard errors (standard errors=SE). All tests performed were two-sided and statistical significance was set at the $\alpha=0.05$ level. For the statistical analysis and the presentation of the results, the statistical package SPSS v. 22.0.

Limitations of the study: The present research had some limitations that did not allow our results to fully reflect the prevailing reality. Initially, the sample of employees was a sample of convenience and indeed from the area of the prefecture of Attica. The large number of movements of health personnel from the Health Centers to the Secondary Hospitals for the needs of the pandemic was an obstacle to the reduction of the results to the entire population. Possibly the results would have been different if health professionals from all over Greece were involved in the sample. Also, the research data was collected through electronic questionnaires due to the lockdown, with the result that there is doubt about the reliability of the answers. Nevertheless, the answers given contained errors that correspond to reality. There were also limitations in the sample in terms of specialties, even though an attempt was made to maintain homogeneity. Unfortunately, this was not entirely possible due to the online nature of the survey.

Results

A total of 210 health workers from Primary Health Care Centers of Attica participated in the present study. Demographic and professional characteristics show that 75.2% of the

participants were female and 55.2% were over the age of 41. Regarding their level of education, 46.7% had a university education, while at the same time 41.4% of the participants stated that they had received post-graduate training. Regarding their profession, 41% of the participants were nurses, while 23.3% were doctors. Also, 20.5% of the participants stated that their work experience does not exceed 5 years, while 17.1% of the participants stated that they have 16-20 years of work experience. Finally, regarding whether they have contracted Covid-19, as can be seen in **Table 1**, 16.7% of the participants stated that they had contracted the disease, 43.3% of the participants stated that they had been quarantined, while at the same time, 31% of the of participants stated that they had been in close contact with a confirmed case.

On the PC-PTSD-5 Primary Care Posttraumatic Stress Screening Scale, with a cutoff of 3, 22.4% of participants scored above this value, indicating

possible PTSD. Using a cutoff of 4, 15.2% of participants scored above this value, indicating PTSD (**Table 2**).

Participants who have been infected with COVID-19 and those who have been quarantined or have been in contact with a confirmed case, present a statistically significantly higher score on the PC-PTSD-5 scale indicating how they cope with significantly higher levels of post-traumatic stress.

On the GAD-7 scale, 40% of participants experienced minimal anxiety disorders, 22.9% mild, 17.1% moderate, and 20% of participants experienced severe anxiety disorders (**Table 3**).

Significant positive correlation was found between participants on the PC-PTSD-5 score, and the GAD-7 Anxiety Severity Scale (p -value<0.001). Participants who experience more anxiety disorders also present higher levels of post-traumatic stress (**Table 4**).

Table 1. Demographic characteristics of the participants.

		N	%
Sex/Gender	Woman	158	75.2
	Man	52	24.8
Age	20-30 age	31	14.8
	31-40 age	63	30.0
	41-50 age	57	27.1
	51-60 age	49	23.3
Level of education	61 and above	10	4.8
	Secondary	25	11.9
	Technological	87	41.4
Further education/Training	University	98	46.7
	Master's Degree	87	41.4
	Doctorate	27	12.9
Profession/ School	None of the above	96	45.7
	Medicine	49	23.3
	Nursing	86	41.0

	Midwifery	12	5.7
	Health Visitor	13	6.2
	Social server	2	1.0
	Radiographer	20	9.5
	Medical Laboratory Technologist	4	1.9
	Laboratory Assistant	2	1.0
	Physiotherapist	9	4.3
	Other	13	6.2
In which HD belong your HC?	1st HD	120	57.1
	2nd HD	90	42.9
	≤ 5 years	43	20.5
	6-10 years	26	12.4
	11-15 years	33	15.7
Working experience	16-20 years	36	17.1
	21-25 years	28	13.3
	26-30 years	26	12.4
	31 and above	18	8.6
The Health Center where you work is Covid 19 reference centre?"	No	98	46.7
	Yes	112	53.3
Have you contracted the virus Covid 19?	No	160	76.2
	Yes	35	16.7
	I don't know	15	7.1
Have you been set quarantined for any reason. according to Covid-19 pandemic?	No	119	56.7
	Yes	91	43.3
	I don't know	0	0.0
Have you come into close contact (high risk exposure) with a confirmed case without personal protection measures at your job?	No	120	57.1
	Yes	65	31.0
	I don't know	25	11.9

HC: Health Center, HD: Health District

Table 2. Score above 3 and 4, based on the PC-PTSD-5 questionnaire

		N	%
PC-PTSD-5 score	≤ 3	163	77.6
	> 3	47	22.4
PC-PTSD-5 score	≤ 4	178	84.8
	> 4	32	15.2

Table 3. Participants' GAD-7 Generalized Anxiety Disorder Rating Scale

		N	%
GAD-7 Anxiety Severity Scale-categorical	0–4: minimal anxiety	84	40.0
	5–9: mild anxiety	48	22.9
	10–14: moderate anxiety	36	17.1
	15–21: severe anxiety	42	20.0

Table 4. Correlation factor between the score of the participants in the scale of the PC-PTSD-5 score and their score in the scale GAD-7.

		PC-PTSD-5 score
GAD-7 Anxiety Severity Scale	R	0.71
	p-value	<0.001

Discussion

The purpose of this study was to investigate post-traumatic stress and generalized anxiety disorder in health personnel of the Health Centers of Athens during the Covid-19 pandemic. Moreover there was a comparison between reference Health Centers and non-reference Health Centers.

The present study agrees with Li *et al.*, (2020) in which no significant difference was noted between the two groups of Covid and non-Covid hospital workers. This may be due to the

tendency for better psychological preparedness and resilience when the spread of the pandemic is already known, compared to uncertainty during the earlier stages of the pandemic.

22.4% of the workers in our study had a PC-PTSD-5 score greater than 3 units and 15.2% greater than 4 units. Our above finding is consistent with a study conducted in five Western countries that found that only 13.2% of participants had a positive PTSD score of more than 3 units (Bridgland *et al.*, 2021).

On the PC-PTSD-5 scale, the health workers working in the 1st Health Region had a higher burden, possibly due to the increased number of cases they were called to deal with due to the geographical distribution of cases. Predictors of post-traumatic stress disorder in our research are those who have been ill, those who have been quarantined, or have been in contact with a confirmed case without personal protection measures. Our findings are consistent with both previous research (Hawryluck *et al.*, 2004; Reynolds *et al.*, 2008; Um *et al.*, 2017; Lee *et al.*, 2018) during the SARS, MERS, and H1N1 outbreak and with newer investigations of the Covid-19 pandemic (Kang *et al.*, 2020; Bryant-Geneviev *et al.*, 2021).

Analysis of GAD 7 results revealed that 17.1% and 20% of participants had moderate and severe anxiety respectively. It was observed in those workers who have fallen ill, have been quarantined, or have been in contact with a confirmed case without personal protection measures. The male gender and young age under 40 combined with the 1st Health Region showed to influence its existence to a considerable extent.

Acknowledgments: The authors would like to thank the participants who took an interest in the study and contributed to fulfilling the present study's aim. There was no funding for this research.

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