Research

Depression and Post Traumatic Stress Disorder experienced by emergency room nurses during the COVID-19 emergency detected through the "Screening Questionnaire for Disaster Mental Health", a survey conducted in a Local Health Service in Northern Italy

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Abstract

Introduction: Nurses are at high risk of developing a psychiatric disorder as a result of exposure to stressful and/or traumatic events experienced in the workplace. Specifically, they may develop long-term depression or post-traumatic stress disorder (PTSD). The spread of the COVID-19 pandemic has exposed nurses to stressful working conditions. The aim of this study was

to investigate the effects of mental and physical stress on nurses who provided assistance in the Emergency Room (ER) of Piacenza Hospital during the COVID-19 pandemic.
Methods: A sample of 43 nurses working in the ER from 8 March to 3 May 2020 was enrolled. Each nurse was asked to fill in a form containing socio-demographic data and the "Screening Questionnaire for Disaster Mental Health" (SQD). The study was approved by the Ethics Committee of the Area Vasta Emilia Nord.
Results: The SQD-D sub-scale results showed that 38 out of 43 nurses (88%) had "less likely to be depressed" and the remaining 5 (12%) had "more likely to be depressed".
Regarding the likelihood of developing PTSD, SQD-P sub-scale results, 29 nurses (67%) little possibility to be affected, 8 nurses (19%) classify themselves as moderately affected, and finally 6 nurses present as severely affected.
The Cronbach's alpha for the scale was 0.80, for the SQD-P was 0.73 and for the SQD-D it was 0.68.
The correlations between age and SQD and between years of service and SQD were not statistically significant.
Conclusions: The study showed that some nurses are at high risk of developing depression or PTSD in stressful work situations such as those caused by COVID-19. These data can be used to suggest preventive measures such as psychological support.

Keywords: COVID-19, Depression, Nurses, Post-traumatic stress disorder, Stress

Introduction

The term stress was first defined in 1936 as a nonspecific response of the body to any demand made on it[1]. Stress is thus a normal reaction to daily pressures, but it can become pathological when it disrupts the individual's daily functioning[2]. Continued exposure to a stressful experience leads toward the onset of multiple symptoms on the physical, mental, and emotional levels and the likely future onset of psychiatric disorders[3].

Nurses are at high risk of developing psychiatric disorders such as depression or post-traumatic stress disorder[4–6].

COVID-19 is the disease caused by the SARS-CoV-2 virus or "novel coronavirus", the spread of the virus has epidemiological criteria to be called a "pandemic" by the World Health Organization[7].

During the pandemic, nurses were continuously exposed to stressors such as unknown characteristics of the viral disease, organizational factors, and personal factors[8]. Studies conducted on health care workers engaged in care during the pandemic found that nurses, particularly of the male gender and those with longer daily working hours were more likely to experience a psychiatric disorder[9,10]. A systematic review published in 2021 identifies factors such as young age, lack of work experience, gender, heavy workload, unsafe environments and lack of training as predictors of Post Traumatic Stress Disorder(PTSD)[11] moreover, studies have shown that nurses working on the "front line" in caring for patients with COVID-19 report higher levels of stress, fatigue, deflected mood, anxiety, burnout, and PTSD as opposed to their colleagues providing care on regular wards[11–14].

Starting from the data that emerged from the Italian and international literature, we wanted to observe in the reality of Piacenza, among the first Italian cities to be affected[15], the effects of physical and mental stress, in terms of the probability of onset of depression or PTSD, among the nurses in the Emergency Room (ER).

Methods

Sample characteristics and setting

The sample consists of nurses employed in the ER who worked between 8 March and 3 May 2020. This period was chosen because it appears to be the period most affected by the so-called first wave of the pandemic.

The choice of the setting was made in relation to the type of patient afferent to the ER: in the acute phase and clinically unstable; moreover, the ER, represents the first filter of the hospital network and the health personnel working there are subject to a high workload[16].

The ER was divided into five areas based on the care complexity of the patient cared it. In addition, precisely in conjunction with the development of the pandemic, an additional area called "Pre-Triage" was set up within which the dedicated nurse asks the sick person specific questions regarding epidemiological and clinical criteria in a way that distinguishes and avoids contact between potentially positive and non-positive patients[17].

Data collection tool

The instrument chosen for data collection is the "Screening Questionnaire for Disaster Mental Health (SQD)"[18]. The questionnaire has been validated for the Italian context[19] and is effective in identifying the likelihood of onset of depression or PTSD in individuals who have experienced a traumatic event.

SQD consists of 12 categorically answered (yes/no) questions (D1-D9) about particular mood, appetite, sleep, intrusive thoughts, and memories changes that a subject may have presented.

D1. Have you noticed any changes in your appetite?

D2. Do you feel that you are easily tired and/or tired all the time?

D3. Do you have trouble falling asleep or sleeping through the night?

D4. Do you have nightmares about the event?

D5. Do you feel depressed?

D6. Do you feel irritable?

D7. Do you feel that you are hypersensitive to small noises or tremor?

D8. Do you avoid places, people, topics related to the event?

D9. Do you think about the event when you do not want to?

D10. Do you have trouble enjoying things you used to enjoy?

D11. Do you get upset when something reminds you of the event?

D12. Do you notice that you are making an effort to try not to think about the event, or are trying to forget it?

The SQD questions are then divided into two macro areas: SQD-P referring to PTSD consists of nine questions (D3, D4, D6, D7, D8, D9, D10, D11 and D12); SQD-D referring to depression, consists of six questions (D1, D2, D3, D5, D6 and D10) (18,19).

The final score, obtained from the sum of "Yes" responses, allows for the identification of a high or low probability of developing PTSD or long-term depression. In particular, for the SQD-P scores between 9 and 6 indicate possible PTSD, scores between 5 and 4 indicate subjects moderately affected and scores between 3 and 0 indicate subjects with little possibility of PTSD. For the SQD-D scores between 6 and 5 indicate subjects more likely to be depressed and scores between 4 and 0 indicate subjects less likely to be depressed[18,19].

The Italian version of the SQD had good psychometric properties. In particular, the Chronbach's alpha of the scale was 0.86, 0.79 for the SQD-P sub-scale and 0.76 for the SQD-D sub-scale[19].

In addition to the SQD, the questionnaire consisted of a socio-demographic section in which the professionals' age and years of service were collected.

Data collection period

Questionnaires were administered in paper form in the ER from January 22, 2021 to January 31, 2021 .

Statistical Analysis

Sociodemographic data, data relating to years of service and age of participants were divided into classes and frequencies were calculated. Median and interquartile range (IQR) were also calculated.

The SQD data were analysed by grouping the subcategories (SQD-P and SQD-D) and reporting absolute values and percentages regarding the probability of developing depression or PTSD. Median and IQR were also calculated for the SQD-P and SQD-D scores.

In addition, Cronbach's alpha was calculated for the SQD-P sub-scale, for the SQD-D sub-scale and for the overall SQD.

Due to the presence of at least one expected frequency ≤ 5, Fisher's exact test was performed to assess possible correlations between SQD scores and age or years of service.

Ethical statement

The research was conducted in accordance with the ethical principles of medical research involving human subjects of the Declaration of Helsinki and Good Clinical Practice.

The study was approved by the Area Vasta Emilia Nord Ethics Committee on 15/12/2020 under code 946/2020/OSS/AUSLPC.

Subjects were provided with full information about the study prior to enrolment and were asked to sign a consent form after ensuring that they were adequately informed.

Data collection procedure

The researchers personally delivered the questionnaires to the nurses on duty until they reached all professionals afferent to the ER. Subjects were allowed sufficient time to fill out the questionnaires, and they were collected on the same day. In this way, a higher percentage of adherence was achieved.

Results

The sample consisted of 43 nurses, socio-demographic data are shown in Table 1.

The median for age was 31 years (29.0-37.0) and the median for years of service was 8 (5.0-10.5).

The SQD-D results showed that 38 out of 43 nurses (88%) had "less likely to be depressed" and the remaining 5 (12%) had "more likely to be depressed".

Regarding the likelihood of developing PTSD, SQD-P results, 29 nurses (67%) little possibility to be affected, 8 nurses (19%) classify themselves as moderately affected, and finally 6 nurses present as severely affected.

The median for the SQD-P sub-scale was 2 (1.0-4.5) and for the SQD-D it was 2 (1.0- 3.0).

The Cronbach's alpha for the scale was 0.80, while the alpha for the SQD-P was 0.73 and for the SQD-D it was 0.68.

Given the small number of participants, to assess the possible correlations between SQD scores and the socio-demographic variables, several classes of age and of years of service were combined in order to increase the number of subjects for each class. Age was divided into 2 classes, one from 18 to 30 years, consisting of 18 participants, and the other from 31 years and older, consisting of 25 participants. Years of service, instead, were grouped into one class from 0 to 8 years, consisting of 24 participants, and in another from 9 or more years, consisting of 19 participants.

Table 1. Socio-demographic data (N=43).

	Range	Frequency	Percentage
Years of service	0-10	32	74%
	11-20	7	16%
	21-30	3	7%
	31-40	1	2%
Age	20-30	18	42%
	31-40	18	42%
	41-50	3	7%
	51-60	4	9%

The correlations between age and SQD scores and between years of service and SQD did not yield statistically significant results, in particular for SQD-P and age and SQD-P and years of service the p-value was 0.90 and 0.64 respectively, whereas for SQD-D and years of service and SQD-D and years of service the p-values were 0.29 and 0.38 respectively (Tables 2, 3, 4 and 5).

Table 2. Correlation between age and SQD-P scores. p calculated with Fisher's exact test (N=43).

Age class	Little possibility of PTSD (N, expected and %)	Moderately affected (N, expected and %)	Possible PTSD (N, expected and %)	Total
1	13 12.10 44.83%	3 3.30 37.50%	2 2.50 33.33%	18 18.00 41.86%
2	16 16.90 55.17%	5 4.70 62.50%	4 3.50 66.67%	25 25.00 58.14%
Total	29 29.00 100%	8 8.00 100%	6 6.00 100%	43 100%
			p-value	0.90

Table 3. Correlation between age and SQD-D scores. p calculated with Fisher's exact test (N=43)

Age class	Less Likely to be depressed (N, expected and %)	More likely to be depressed (N, expected and %)	Total
1	17 15.90 44.74%	1 2.10 20.00%	18 18.00 41.86%
2	21 22.10 55.26%	4 2.90 80.00%	25 25.00 58.14%
Total	38 38.00 100%	5 5.00 100%	43 43.00 100%
		p-value	0.29

Table 4. Correlation between years of service and SQD-P scores. p calculated with Fisher's exact test (N=43).

Year of service class	Little possibility of PTSD (N, expected and %)	Moderately affected (N, expected and %)	Possible PTSD (N, expected and %)	Total
1	17 16.20 58.62%	3 4.50 37.50%	4 3.30 66.67%	24 24.00 55.81%
2	12 12.80 41.38%	5 3.50 62.50%	2 2.70 33.33%	19 19.00 44.19%
Total	29 29.00 100%	8 8.00 100%	6 6.00 100%	43 43.00 100%
			p-value	0.64

Table 5. Correlation between years of service and SQD-D scores. p calculated with Fisher's exact test (N=43)

Age class	Less Likely to be depressed (N, expected and %)	More likely to be depressed (N, expected and %)	Total
1	22 21.20 57.89%	2 2.80 40.00%	24 24.00 55.81%
2	16 16.80 55.26%	3 2.20 80.00%	19 19.00 44.19%
Total	38 38.00 100%	5 5.00 100%	43 43.00 100%
		p-value	0.38

Discussion and Conclusions

The literature highlights that the increased workload and unexpected situations with which the care professional interfaces expose him or her to the development of psychiatric disorders[4–6].

The pandemic caused by SARS-CoV-2 and the gradual development of the disease has been a strong traumatic event for everyone, which undoubtedly leaves an aftereffect on the frontline professional[8–10,14].

The instrument used in the study to collect data has shown good validity as a screening measure for PTSD in previous research work[18,19]. The Cronbach's alpha of the whole scale was good, for the SQD-P subscale it was acceptable and for the SQD-D subscale it was questionable[20]. Despite the small number of participants, with the exception of the SQD-D subscale (0.76 vs. 0.68), these results overlap with those obtained in the validation of the Italian version of the tool.

Age and years of service do not seem to affect the risk of developing depression or PTSD, but the sample is very small and therefore not representative.

In accordance with what has been cited in the literature[13,21], the data from this study highlight that there is a risk of PTSD and depression among professionals who have operated in the COVID-19 emergency, in fact around 33% of participants had a moderate or severe possibility of being affected by PTSD and 12% had possibility to be depressed.

The literature identifies as risk factors that have reduced levels of robustness and responsiveness to stressful events, anxiety as a single phenomenon or associated with length of service and insufficient PPE[22].

This study underlines how a portion of the nursing team demonstrates that they are particularly stressed as a result of the COVID-19 pandemic.

The literature recognizes that the stress experienced by nurses during medical emergency, could trigger PTSD symptoms favoring suicidal ideation and suicide[23,24].

Some studies also draw attention to the long-term consequences that the COVID-19 pandemic will have on the mental health of professionals[23,25].

The results of this research have allowed us to get a clear picture of the stress level of the health workers in the Piacenza ER. Thanks to the support of the literature, we know the consequences that can occur in case of continuous exposure to stressors[12,13,25,26].

In particular, the literature reports how PTSD and related symptoms could impact health care workers' lives on a personal, professional, and relational level, decreasing their empathy and affecting their relationship with patients, negatively affecting the quality of care[27].

Limitations of this study include the data collection period, which began several months after the end of the first wave. Further limitation are the type of study, monocentric, and the sample size, which is not representative of the population of Italian health care professionals. Furthermore, the socio-demographic data collected do not allow for an accurate description of the participants and do not allow for correlations to be made.

In conclusion, the data from the study and the literature on the topic make us think about the preventive measures to be taken aimed at minimizing the incidence of harmful mental health consequences for professionals[12,21,23,25].

Healthcare institutions need to invest in psychological support programs and the development of resilience-building strategies to minimize the incidence of PTSD in healthcare workers while maintaining the quality of patient care.[12,21,23,25]

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