Depressive symptoms risk factors in nursing staff during the second COVID-19 pandemic wave

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Παράγοντες κινδύνου καταθλιπτικής συμπτωματολογίας στο νοσηλευτικό προσωπικό κατά τη διάρκεια της COVID-19

Περίληψη στο τέλος του άρθρου

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Introduction: The work of nurses, over time, has played a key role in the well-being and health of societies. Nursing has been recognized as a very challenging and stressful profession. Many studies have shown a statistically significant positive correlation between nurses' job stress and the development of depression.

Aim: The aim of this study was to explore the depressive symptoms risk factors in nursing staff during the second COVID-19 pandemic wave.

Material and Method: The Beck Depression Inventory (BDI) was used in a sample of 230 nurses of a General Hospital of Athens, Greece.

Results: Eighty-point-nine percent of the participants were women, the total sample's mean age was 49.0(40.0-54.0) years, 60.4% were married, 47.3% had bachelor's degree only, and the 62.7% were working at surgery sector. As for the health history-related, personal, or family, characteristics, 26,7% of the research subjects had a chronic disease, and 41.9% had person in the family with a chronic disease as well as 7.7% had been felled sick by COVID-19. In terms of the depressive symptoms level, only the 5.1% of the responders had moderate/severe depressive symptoms. The univariate logistic regression analysis, in terms of the variables that were involved in the predictive model was significant (*P*≤.05) for the, personal, chronic disease presence (OR 3.65, 95% CI 1.07-12.48, P=.039), the presence of person(s) in the family with a chronic disease (OR 7.54, 95% CI 1.59-35.85, P=.011), and the history of COVID-19 illness (OR 5.63, 95% CI 1.32-23.98, P=.020). With respect to the multivariate logistic regression analysis, the presence of personal chronic disease, and the history of COVID-19 illness were statistically significant (OR 6.97, 95% CI 1.18-41.25, P=.033, and OR 10.88, 95% CI 1.03-114.56, P=.047 respectively).

Conclusions: In the present study it was found that, during the second wave

of COVID-19, only 5.1% of nursing staff had moderate/severe depressive symptoms. However, other related studies with a larger sample size suggest that this percentage is higher. To better address the mental health needs of nursing staff in pandemic situations, more emphasis should be placed on the mental health needs of staff with chronic health problems, as well as the relevant needs of health professionals who will become ill from pandemic infectious agents.

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Introduction

In December 2019, a novel coronavirus, which named afterwards by the International Committee on Taxonomy of Viruses (ICTV) as "Severe Acute Respiratory Coronavirus-2" (SARS-CoV-2), was presented in Wuhan, China, and spread in few months in all nations.[1-3]

Depressive disorders, which are usually portraited by "persistent low mood, loss of interest and enjoyment, neurovegetative disturbance, and reduced energy, causing varying levels of social and occupational dysfunction",[4] also include several symptoms.[4]

Nurses' work, diachronically, has played a key role in the wellness and health of societies.[2] The nursing profession has been recognized as a very difficult one, involving a lot of stress. In the clinical context, nurses are tasked with most of the patient care, a fact that results in nurses experiencing high levels of stress. Also, research[5] has shown a statistically significant positive correlation between nurses' job stress and the occurrence of depression.[6]

With the advent of the coronavirus disease 2019 (COVID-19) pandemic, where nurses already had to deal with many problems that affected the quality of their work and their mental health, they were also burdened with caring for the large number of patients hospitalized with COVID-19.[2] According to Li et al.,[7] during the SARS-CoV-2 pandemic, healthcare professionals were faced with critical situations that could increase the risk of physical and psychological stress, as well as the risk of psychological disorders such as anxiety, panic or emotional disturbances.[2,8]

Aim

The exploration of depressive symptoms risk factors in nursing staff during the second COVID-19 pandemic wave.

Research questions

1. What are the frequencies of the sociodemographic and health history-related (gender, age, marital status, children number, work experience, personal chronic disease presence/absence, person(s) in the family with a chronic disease status, education level, working sector, days off in the last month, way of going to work, rotating shifts presence/absence, COVID-19 news watching time per day, direct involvement in COVID-19 response, history of COVID-19 illness) and the depressive symptoms of the nursing staff?

2. Is there a linear relationship between the log odds of gender, age, marital status, children number, work experience, personal chronic disease presence/absence, person(s) in the family with a chronic disease status, education level, working

sector, days off in the last month, way of going to work, rotating shifts presence/absence, COVID-19 news watching time per day, direct involvement in COVID-19 response, history of COVID-19 illness and the depressive symptoms of the nursing staff?

Materials and Methods

Study design

The present study was of a cross-sectional research design.

Setting

The research was conducted in a general hospital of a large capital city. Ethics approval was provided by the hospital's scientific committee.

Research subjects

The study participants were nurses and nursing assistants.

Recruitment

Two hundred and thirty nurses and nurse assistants were conveniently approached by the study team at their workplace, from November 2020 to April 2021. The sample size was estimated implementing the Hosmer & Lemeshow, of 1989, recommendation in Garson[9] that there should be at least 10 cases per independent variable, and of Field's[10] rule of thumb that "the bigger the sample size, the better".[10] Since the measurement tool was anonymous, participants were not required to give their consent.

Data collection

For the data gathering, the Beck Depression Inventory (BDI)[11,12] was utilized. The main researcher distributed the inventory privately to the responder himself/herself or to the various nursing departments of the hospital and then, in a second time, went to collect them.

Measurements

The parameters that were measured were relevant to:
- *Sociodemographic/health history-related characteristics:* gender, age (years), marital status, children number, work experience (years), personal chronic disease, person/s in the family with a chronic disease, education level, working sector, days off in the last month, way of going to work, rotating shifts, COVID-19 news watching time per day, direct involvement in COVID-19 response, COVID-19 illness, and
- *Depressive characteristic:* Level of depressive symptoms (minimal, mild, moderate, or severe)

Instrumentation – procedures

For measuring the sociodemographic/health history-related characteristics, appropriate questionnaire items were used. The items were defined by a panel of experts, asking primarily objective information, and thus they were subjected only to validity investigation. Considering that the items/questionnaire development panel members had a high expertise in the field of mental health, the validity method that was applied was the face validity one.

Data analysis

Because there was no observation for the severe category of the depressive symptoms classification, based on the Beck Depression Inventory (BDI)[11,12] score ("minimal level of depressive symptoms": score range of 0–9, "mild": 10–18, "moderate": 19–29, and "severe": 30–63),[13] the depressive symptoms variable from a four categories variable (minimal, mild, moderate, severe) was modified to a two categories one (minimal/mild, and moderate/severe).

Statistical analysis

Descriptive and inferential statistical analysis took place by using the IBM SPSS 28 software package.

In the context of descriptive analysis, the frequencies of the sociodemographic/health history-related characteristics and of the depressive characteristic were calculated.

Respecting the inferential statistical analysis, univariate logistic regression analysis for the depressive symptoms presence risk factors was performed.

In terms of the multivariate regression analyses, the "enter" variable selection method was utilized and 5% probability criterion was set for the variables to enter the model.

Results

Descriptive

Regarding the sociodemographic characteristics, 80.9% of the participants were women and the total sample's mean age was 49.0(40.0-54.0). Sixty-point-four percent were married, 47.3% had bachelor's degree or non-higher education diploma only, and the 62.7% were working at surgery sector.

As for the health history-related, personal, or family, characteristics, 73.3% of the research subjects had a chronic disease, and 41.9% had person in the family with a chronic disease as well as 7.7% had been felled sick by COVID-19.

In terms of the depressive symptoms level, only that 5.1% of the responders had moderate/severe depressive symptoms.

All the descriptive results are shown in detail in

Inferential

The univariate logistic regression analysis, in terms of the variables that were involved in the predictive model was significant ($P \leq .05$) for the, personal, chronic disease presence (OR 3.65, 95% CI 1.07-12.48, P=.039), the presence of person(s) in the family with a chronic disease (OR 7.54, 95% CI 1.59-35.85, P=.011), and the history of COVID-19 illness (OR 5.63, 95% CI 1.32-23.98, P=.020) (Table 2).

With respect to the multivariate logistic regression analysis, the presence of personal chronic disease, and the history of COVID-19 illness were significant (OR 6.97, 95% CI 1.18-41.25, P=.033, and OR 10.88, 95% CI 1.03-114.56, P=.047 respectively) (Table 2).

Table 1. *Demographics, health history-related, and depressive characteristics of the nursing staff during COVID-19 pandemic.*

Characteristics	N	Results*
Sociodemographic/health history-related		
Gender	(230)	Women=80.9%; Men=19.1%
Age (years)	(223)	49.0(40.0-54.0)
Marital status	(230)	Married=60.4%; Single=30.0%; Divorced=6.5%; Widower=1.7%; Cohabitation=1.3%
Children number	(223)	0-1=51.6%; 2-6=48.4%
Work experience (years)	(228)	26.0(13.0-32.0)
Personal chronic disease	(225)	No=73.3%; Yes=26.7%
Person/s in the family with a chronic disease	(227)	No=58.1%; Yes=41.9%
Education level	(226)	Undergraduate degree= 47.3% Secondary education=28.3% Postgraduate degree=24.3%
Working sector	(220)	Surgery sector=62.7%; Other sector=11.8% COVID-19 clinic/Intensive care unit=10.9% Pathology sector=10.5% Emergency department/Outpatient clinics=4.1%
Days off in the last month	(229)	0-8=87.8%; 9-15=12.2%
Way of going to work	(230)	By car=56.5%; By public transport=33.9%; By foot=9.6%
Rotating shifts	(230)	Yes=72.6%; No=27.4%
COVID-19 news watching time per day	(219)	<Half an hour=66.2%; ≥Half an hour=33.8%
Direct involvement in COVID-19 response	(226)	No=51.8%; Yes=48.2%
COVID-19 illness	(220)	No=92.3%; Yes=7.7%
Depressive		
Level of depressive symptoms	(212)	Minimal=70.8% Mild=24.1% Moderate=5.2%

Results are %, Median (Interquartile range)

Table 2. *Univariate and multivariate logistic regression analysis for the presence of depressive symptoms determining factors and a two categories Minimal/Mild or Moderate/Severe depressive symptoms variable.*

Univariate analysis			Multivariate analysis	
Variable	**OR (95% CI)**	**P**	**OR (95% CI)**	**P**
Personal chronic disease (presence)	3.65 (1.07-12.48)	.039	6.97(1.18-41.52)	.033
Person/s in the family with a chronic disease (presence)	7.54(1.59-35.85)	.011		
Education level				
Secondary education	Reference category			
Undergraduate degree	1.47 (0.28-7.85)	0.65		
Postgraduate degree	2.44 (0.43-13.89)	0.32		
Days off in the last month (9-15)	3.03(0.75-12.29)	0.12		
Way of going to work (by public transport)	0.41(0.09-1.94)	0.26		
Rotating shifts	0.49(0.14-1.66)	0.25		
COVID-19 news watching time per day (≥half an hour)	1.15(0.33-4.08)	0.83		
COVID-19 illness	5.63(1.32-23.98)	.020	10.88(1.03-114.56)	.047

Discussion

The present study investigated the level of depressive symptoms in nursing staff during the second wave of COVID-19.

The major finding of this research, was the fact that only a small percentage of nursing staff (5.2%), had moderate/severe depressive symptoms.

Relatively similar results were obtained by the study of Pathiraja et al,[14] in which it was found that moderate/severe/very severe depression was present in 11.39% of nurses involved in the care of COVID-19 patients. In this study, the measurement tool that was used was the Depression Anxiety and Stress Scale (DASS) by Lovibond et al..[15]

In addition, low/mild levels of depression were attributed to the study by Tsubono and Ikeda,[16] which was conducted on 28 nurses working in a COVID-19 unit, where the measurement tools used to measure depression, the QIDS self-report by Fujisawa et al,[17] and TMDP by Shiwaku et al.[18] yielded scores below the midpoint of their range (with mean score peak 5.5 -in May 2021- and 12.7 -in December 2020- respectively), as well

as the study by Myrtha et al.[19] on a sample of 74 nurses, where the Depression Anxiety and Stress Scale (DASS) by Lovibond and Lovibond[20] for depression yielded a score of 5.32±5.47 with a maximum value of 16.

However, a different result from the above studies was found in the study by Bhandari et al.,[21] where 51.4% of nurses providing care to patients with COVID-19 during the second wave of the pandemic (December 2020 to March 2021)[22] had moderate/severe/very severe depression, in which the measurement tool was again the Stress Scale (DASS) by Lovibond et al..[15] Also, from the study by Pachi et al.,[23] which was conducted in a sample of 660 nurses, regardless they worked in a COVID-19 unit/clinic, during the second half of March 2021, where 21.1% had moderate/severe depressive symptoms. One explanation for the different results of the Pachi et al. study,[23] which also used the Beck Depression Inventory (BDI),[11,12] from the current study, could be that its sample was larger and more representative. The possible good organization of the hospital in which the present study was conducted could be an alternative explanation.

An intermediate result from the above studies was extracted from the study by Côté et al.[11] on a sample of

1708 nurses and nursing assistants (licensed practical nurses) and using the nine-item Patient Health Questionnaire (PHQ-9) measurement tool by Kroenke et al.,[12] where the 26.7% of the participants had moderate/severe depressive symptoms.

The second most important finding of the present study was that the presence of personal chronic disease and the history of COVID-19 infection, by multivariable logistic regression analysis, were found to be predictors for the presence of moderate/severe depressive symptoms (OR 6.97, 95% CI 1.18-41.25, P=.033, and OR 10.88, 95% CI 1.03-114.56, P=.047 respectively). This finding is in relative agreement with the study by Burstyn and Holt,[24] conducted among nurses and physicians, which found that the belief that one was infected with COVID-19 was associated with both anxiety and depression. However, this belief was more strongly associated with a history of pneumonia symptoms than with contact with patients diagnosed with COVID-19.

The findings of the study by Napoli et al.[25] were different, where multivariate logistic regression analysis yielded that female and new in the profession nurses that cared for patients with COVID-19 were at greater risk of reporting higher levels of stress and major depressive symptoms (OR 2.75 and 4.12 respectively).

Limitations

A major limitation of the present study is the small sample size, the extraction of data from only one large hospital in a large city, thus lacking representativeness, as well as other variables that may influence the levels of depressive symptoms (such as economic factors, etc.).

Conclusions

In the present study it was found that, during the second wave of COVID-19, only 5.1% of nursing staff had moderate/severe depressive symptoms. However, other related studies with a larger sample size suggest that this percentage is higher.

Also, in the present study it was found that higher levels of depressive symptoms were experienced by nurses who had a chronic illness, had COVID-19 and had a family member with a chronic serious illness.

To better address the mental health needs of nursing staff in pandemic situations, more emphasis should be given on the mental health needs of staff with chronic health problems, as well as the relevant needs of health professionals who will become ill from pandemic infectious agents

ΠΕΡΙΛΗΨΗ

Παράγοντες κινδύνου καταθλιπτικής συμπτωματολογίας στο νοσηλευτικό προσωπικό κατά τη διάρκεια της COVID-19

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Εισαγωγή: Η εργασία των νοσηλευτών, διαχρονικά, έχει διαδραματίσει καθοριστικό ρόλο στην ευεξία και την υγεία των κοινωνιών. Η νοσηλευτική έχει αναγνωριστεί ως ένα πολύ δύσκολο και στρεσογόνο επάγγελμα. Πολλές έρευνες έχουν δείξει στατιστικά σημαντική θετική συσχέτιση μεταξύ του εργασιακού στρες των νοσηλευτών και της εμφάνισης κατάθλιψης.
Σκοπός: Σκοπός της παρούσας μελέτης ήταν η διερεύνηση των παραγόντων κινδύνου καταθλιπτικής συμπτωματολογίας στο νοσηλευτικό προσωπικό κατά τη διάρκεια του δεύτερου πανδημικού κύματος της COVID-19.
Υλικό και Μέθοδος: Χρησιμοποιήθηκε το ερωτηματολόγιο Beck Depression Inventory (BDI) σε δείγμα 230 νοσηλευτών και βοηθών νοσηλευτών ενός Γενικού Νοσοκομείου της Αθήνας.

Αποτελέσματα: Το 89% των συμμετεχόντων ήταν γυναίκες, η μέση ηλικία του συνολικού δείγματος ήταν 49,0 (40,0-54,0) έτη, το 60,4% ήταν παντρεμένοι, το 47,3% είχε μόνο βασικό πτυχίο τριτοβάθμιας εκπαίδευσης και το 62,7% εργαζόταν στον χειρουργικό τομέα. Όσον αφορά τα προσωπικά ή οικογενειακά χαρακτηριστικά, όπως επίσης τα χαρακτηριστικά που σχετίζονται με το ιστορικό υγείας, το 26,7% των υποκειμένων της έρευνας είχε χρόνια ασθένεια και το 41,9% είχε άτομο στην οικογένεια με χρόνια ασθένεια, καθώς επίσης το 7,7% είχε νοσήσει από COVID-19. Όσον αφορά το επίπεδο των καταθλιπτικών συμπτωμάτων, μόνο το 5,1% των ερωτηθέντων είχε μέτρια/σοβαρά καταθλιπτικά συμπτώματα. Η μονομεταβλητή ανάλυση λογιστικής παλινδρόμησης, όσον αφορά τις μεταβλητές που συμμετείχαν στο προγνωστικό μοντέλο, ήταν σημαντική (P≤0,05) για την προσωπική παρουσία χρόνιας νόσου (OR 3,65, 95% CI 1,07-12,48, P=0,039), την παρουσία ατόμου στην οικογένεια με χρόνια νόσο (OR 7,54, 95% CI 1,59-35,85, P=0,011) και το ιστορικό νόσησης από COVID-19 (OR 5,63, 95% CI 1,32-23,98, P=0,020). Όσον αφορά την πολυμεταβλητή ανάλυση λογιστικής παλινδρόμησης, στατιστικά σημαντικά ήταν η παρουσία προσωπικής χρόνιας νόσου και το ιστορικό ασθένειας από COVID-19 (OR 6,97, 95% CI 1,18-41,25, P=0,033, και OR 10,88, 95% CI 1,03-114,56, P=0,047 αντίστοιχα).

Συμπεράσματα: Στην παρούσα έρευνα βρέθηκε ότι κατά τη διάρκεια του δεύτερου κύματος της COVID-19 μόνο το 5,1% του νοσηλευτικού προσωπικού είχε μέτρια/σοβαρά καταθλιπτικά συμπτώματα, Ωστόσο, από άλλες σχετικές μελέτες με μεγαλύτερο δείγμα προκύπτει ότι το εν λόγω ποσοστό είναι μεγαλύτερο. Για την καλύτερη αντιμετώπιση των αναγκών ψυχικής υγείας του νοσηλευτικού προσωπικού σε καταστάσεις πανδημίας θα πρέπει να δίδεται μεγαλύτερη έμφαση στις ανάγκες ψυχικής υγείας του προσωπικού με χρόνια προβλήματα υγείας, όπως επίσης στις σχετικές ανάγκες των επαγγελματιών υγείας που θα νοσήσουν από πανδημικούς μολυσματικούς παράγοντες.

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