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Prevalence of depressive symptomatology among nursing students during the COVID-19 pandemic

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Key words: COVID-19, Nursing Students, University, Depression, Mental health, Pandemic
Parole chiave: COVID-19, Studenti infermieristica, Università, Depressione, Salute mentale, Pandemia

Abstract

Background. *COVID-19 and the policies to contain it have been a social problem and public health emergency for people in Italy in 2020. The aim of the study is assessing the prevalence of depression symptoms among nursing students from the University of Palermo during the COVID-19 pandemic.*
Materials and methods. *The study employed a cross-sectional study design. On April 2020, a survey was performed including all the nursing students of the University of Palermo. The survey was structured into two parts. The first part consisted in the collection of socio-demographic information, the second in the administration of the QIDS-SR16 questionnaire. A multivariable logistic regression model was used to elaborate the results and adjusted Odds Ratios are presented.*
Results. *The sample consisted of 525 students (70.3% female). The probability to have a moderate/severe/very severe depressive symptomatology is significantly associated with the following variables: "Female gender" (aOR 1.96), "Low perceived economic status" (aOR 2.32), "Low perceived health status" (aOR 2.30) and "To be a smoker" (aOR 2.24).*
Conclusions. *The global pandemic and the efforts to contain it represent a unique event and offer the opportunity to advance our understanding of how to provide mental health care focused on online psychoeducation and psychotherapy programs for young students.*

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Introduction

The newly identified novel coronavirus, SARS-CoV-2, was first reported in China in late 2019 (1). The virus belongs to the same family as SARS (which is a zoonotic infections originated from snakes, bats, and pangolins at the Wuhan markets) and as Middle East respiratory syndrome coronavirus (MERS-CoV) (2). The virus has rapidly spread across the globe leading to millions of infected people and deaths, especially among the elderly and the vulnerable (3). In Italy, the first phase of the epidemic was charaterized by a strongly localized transmission, thanks also to the preventive public health measures of "social distancing", initially limited to some restricted areas and gradually extended to the whole country from 11 March 2020 (4). The picture of the spread has changed drastically since May 2020, when there was a collapse in new cases as a result of the strict measures taken to control the epidemic ("lockdown"). However, with the beginning of the autumn-winter season, Italy, like other European countries, found itself facing a slow and progressive worsening of the COVID-19 epidemic: at the moment of writing this paper, the positivity rate is almost 4% with more than 4,000,000 cases and 123,000 deaths (4). The spread of the disease and the impact on people and health leads to a common response which is fear of the unknown (5). What could happen can be overwhelming in the general population, causing mental health symptoms like post-traumatic stress disorder and depression (5).

COVID-19 and the policies to contain it represent a true social problem because of the virus transmitting rapidly; the isolation of the cases, the identification of their contacts, and their isolation have become the most important strategy (6). Fear and anxiety about a new disease and what could happen can be overwhelming and cause mental health symptoms in general population (6). Social distancing, among public health actions, triggers a range of psychological problems, such as depression, especially in young adults who need more socialization (7). The suspension of face-to-face teaching activities by the universities has led students to move away from their social environment. Particularly for nursing students, a category with a high awareness of health and disease, this can have an impact on depression, anxiety and stress (8). If we consider the University context, there is little attention paid during basic nursing education to emergency response, and faculty members report feeling poorly prepared to teach students about this topic (9). During the emergency, nursing students found themselves in the role of spectators and not in the role of actors in the care of patients with COVID-19 (10). Due to the COVID-19 pandemic, face-to-face courses and internships in clinical settings have been conditioned by social distancing recommendations and, although the COVID-19 pandemic does not change the enrolment status and registration process of nursing students in pre-service, their experiences, their sense of belonging are inevitably affected and many of them may not be able to complete their internships, and particularly clinical internships (5, 6, 11, 12). In fact, the main purpose of the internship is the development of skills, identity and professional belonging and, secondly, the internship experience represents a pre-socialization to the world of work (5, 6, 11, 12).

The aim of the present study is assessing the prevalence of, and the risk factors associated with, depression symptoms and examining the associated factors in a cohort of nursing students at the University of Palermo during the COVID-19 pandemic in Italy.

Materials and methods

On April 2020, while Italy recorded almost 140,000 cases of COVID-19, a

survey was provided to all the nursing students of the University of Palermo (all the three years of course) who released their informed consent. In the first section of the questionnaire, (a) the personal information, relating to the course of study undertaken, (b) the perception of their economic and health status, and (c) their voluptuous habits were requested. The second part of the questionnaire was represented by the Quick Inventory of Depressive Symptomatology Self-Report Questionnaire (QIDS-SR16), a self-report tool that allows evaluating the severity of depressive symptomatology by administering 16 items with four possible answers to which a score ranging from 0 to 3 is attributed. The QIDS-SR16 is derived from the 30-item Inventory of Depressive Symptomatology (IDS), which has been used for many years at the University of Texas Southwestern Medical School (13).

Questions in the QIDS-SR16 include: sleep disturbances (initial, middle, and late insomnia or hypersomnia), sad mood, decrease/increase in appetite/weight, concentration, self-criticism, suicidal ideation, interests, energy/fatigue, psychomotor agitation/retardation. Based on the final score the subjects are assigned to one of the following categories: 0-5: no, 6-10: mild, 11-15: moderate, 16-20: severe and ≥21: very severe depressive symptomatology.

For all the qualitative variables, absolute and relative frequencies have been calculated; categorical variables were analyzed by Pearson's Chi-square test (χ^2). Multivariable logistic regression was performed, considering "depressive symptomatology moderate-severe-very severe" as a dependent variable, in order to evaluate the role of the other variables of the questionnaire. The statistical significance level chosen for all the analyses was 0.05. The results were elaborated using the STATA statistical software, version 14 (14). Results are expressed as adjusted Odds Ratio (aOR) with 95% Confidence Intervals (95% CI). This study was approved by the Ethical Committee of the University Hospital Paolo Giaccone of Palermo, Minutes No. 03/2020 (13) of March 16, 2020.

Results

100% of the first-year and 100% of the second-year students, once received the questionnaire, agreed to complete it. Only 97.3% of the third-year students agreed to complete it, because 5 students refused to participate. Table 1 shows the descriptive characteristics of the sample. The sample consisted of 525 students (70.3% were female) and the mean age was 21.8 years (±3.83). 37.5% reported attending the first year, 35.3% the second year and 27.2% the third year of study. 19.2% reported a low economic status, whilst 91.4% a medium-high health status. 23.4% are smokers and 4.2% former smokers. In accordance with the results of the scores obtained from QIDS-SR16 test, we can say that just over half of the sample (51.3%) does not exhibit depressive symptomatology. Different severity levels of depressive symptomatology occur with less frequency: mild (29.3%), moderate (14.3%), severe (3.6%) and very severe (1.5%). Regarding the bivariate analysis (see Table 2), statistically significant differences were found for the following variables: "gender", "perceived health status", "perceived economic status" and "do you currently smoke?". 21.4% of female students have moderate, severe or very severe depressive symptoms compared to 14.7% of male students. To the question: "Do you currently smoke?" 28.4% of smokers report moderate-severe-very severe depressive symptoms, compared to 16.7% of non-smokers. 31.7% of those interviewed who perceive a low economic status have moderate-severe-very severe depressive symptoms compared to 16.5% of those who perceive a medium-high

Table 1 - Description of the sample.

		N	%
Gender	Male	156	29.71
	Female	369	70.29
Country of birth	Italy	520	99.05
	Other	5	0.95
Year of study	First	197	37.52
	Second	185	35.24
	Third	143	27.24
Perceived economic status	Medium-high	424	80.76
	Low	101	19.24
Perceived health status	Medium-high	480	91.43
	Low	45	8.57
Do you currently smoke?	No	402	76.57
	Yes	123	23.43
Depressive symptomatology	None	269	51.24
	Mild	154	29.33
	Moderate	75	14.29
	Severe	19	3.62
	Very severe	8	1.52
Age	21.83 (SD ± 3.83)*		

*mean (Standard Deviation)

Table 2 - Bivariate associations between depressive symptomatology and the questionnaire variables. Used Used Pearson's Chi-square test.

		Depressive symptomatology					
Variables		None (%)	Mild (%)	Moderate (%)	Severe (%)	Very severe (%)	*p-value*
Gender	Male	96 (61.54)	37 (23.72)	15 (9.62)	5 (3.21)	3 (1.92)	0.025
	Female	173 (46.88)	117 (31.71)	60 (16.26)	14 (3.79)	5 (1.36)	
Year of study	First	100 (50.76)	59 (29.95)	30 (15.23)	7 (3.55)	1 (0.51)	0.906
	Second	97 (52.43)	55 (29.73)	23 (12.43)	6 (3.24)	4 (2.16)	
	Third	72 (50.35)	40 (27.97)	22 (15.38)	6 (4.20)	3 (2.10)	
Perceived economic status	Medium-high	233 (54.95)	121 (28.54)	54 (12.50)	10 (2.36)	7 (1.65)	<0.001
	Low	36 (35.64)	33 (32.67)	22 (21.78)	9 (8.91)	1 (0.99)	
Perceived health status	Medium-high	257 (53.54)	137 (28.54)	65 (13.54)	16 (3.33)	5 (1.04)	0.001
	Low	12 (26.67)	17 (37.78)	10 (22.22)	3 (6.67)	3 (6.67)	
Do you currently smoke?	No	213 (52.99)	122 (30.35)	51 (12.69)	12 (2.99)	4 (1.00)	0.041
	Yes	56 (45.53)	32 (26.02)	24 (19.51)	7 (5.69)	4 (3.25)	

Table 3 - Multivariable logistic regression. Adjusted Odds Ratio are presented. Each independent variable is adjusted for all the other independent variables. Based on 525 observations.

Independent variables		Depressive symptomatology moderate-severe-very severe		
		aOR	95% CI	*p-value*
Gender	Male	1		
	Female	1.96	1.13-3.39	0.017
Country of birth	Italy	1		
	Other	1.76	0.25-12.45	0.573
Year of study	First	1		
	Second	0.87	0.50-1.51	0.620
	Third	0.90	0.50-1.60	0.710
Perceived economic status	Medium-high	1		
	Low	2.32	1.40-3.86	0.001
Perceived health status	Medium-high	1		
	Low	2.30	1.16-4.56	0.017
Do you currently smoke?	No	1		
	Yes	2.24	1.36-3.70	0.002
Age	As the unit increase	1.04	0.99-1.10	0.131

economic status. 35.6% of those interviewed who perceive a low state of health have moderate-severe-very severe depressive symptoms compared to 17.9% of those who perceive a medium-high health status.

Table 3 shows the aOR where each independent variable has been adjusted for all other independent variables. The analysis shows that the probability to have a moderate/severe/very severe depressive symptomatology (dependent variable) is significantly associated with the following independent variables: “Female gender” (aOR 1.96, 95% CI: 1.13-3.39), “Low perceived economic status” (aOR 2.32, 95% CI: 1.40-3.86), “Low perceived health status” (aOR 2.30, 95% CI: 1.16-4.56) and “To be a smoker” (aOR 2.24, 95% CI: 1.36-3.70).

Discussion

We assessed the prevalence of depressive symptoms and examined associated factors in a cohort of nursing students from the University of Palermo during the COVID-19 pandemic in Italy. The evidence suggesting that university students are more vulnerable to mental health problems and psychological distress has increased public concern in many societies (15-17). All schools have been closed to curb the outbreak and protect students from COVID-19 until the epidemic is under control. In line with previous studies, students facing long-term isolation at home and using online learning are prone to a series of emotional stress responses (18). Nursing students are affected to a greater extent because they spend much of their time on stage and clinical placements (19).

The study involved 525 nursing students (70.3% female and 29.7% male) who responded to a questionnaire including the QIDS-SR16. The data collected show that almost half of the sample under examination shows depressive symptomatology, comparable to a previous study conducted at the same university in nursing students before the pandemic (11). Decreasing percentages for the severity of depressive symptomatology occur, respectively, with the categories mild (29.3%), moderate (14.3%), severe (3.6%), and very severe (1.5%). The study shows that the probability of having a moderate/severe/very severe depressive symptomatology is significantly associated with gender, perceived health status, perceived economic status, and smoking (Table 2 and Table 3). If we compare such results with those of two other studies on the same argument (11, 12), we do not see a critical difference among them. From the bivariate analysis (Table 2), a statistically significant gender-related difference emerges, in fact 21.4% of female students have moderate, severe or very severe depressive symptoms compared to 14.7% of male students. In fact, according to the data emerging from the multivariate logistic regression (Table 3), females have a 1.96 times greater risk than males of being suffering from depressive disorder (moderate, severe, really severe). The literature agrees with this result (20, 21); depression is not even, it affects women twice as much as men and the difference begins with adolescence, while in childhood and pre-puberty boys and girls are equally affected (22). In our study, bivariate analysis and multivariate logistic regression also show that perceived economic status is another important risk factor associated with depression. As it emerges from the literature, a perceived low economic status predisposes to a greater risk of developing depressive symptoms (aOR 2.32), given that low socioeconomic status or worsening socio-economic circumstances are inherently stressful (23-24). Research suggests that the adverse effects of economic hardship on both mental and physical health and functioning are evident at young ages and persist across all the lifespan (11, 12, 21). Another important social determinant of depression appears to be a low perceived health status; in fact, the analysis shows that the probability of developing depressive symptoms is significantly associated with the variable "low perceived health status" (aOR 2.32), and the same result was also found in a previous study (21). In turn, the depressive state, whether chronic or recurrent, could lead to a deterioration in the quality of life and limitations in daily activities, worsening, as in a vicious circle, the state of health. A review recently published in Current Sports Medicine Reports confirms the importance of physical activity and its connection with mental health (25-26). Finally, from the bivariate analysis and the multivariate logistic regression it emerges that smoking is another factor strongly associated with the possibility of developing depressive symptoms; Multivariate logistic regression shows that nursing students who smoke are more likely to develop moderate/severe/very severe depressive symptoms (aOR 2.24) than those who do not smoke. Individuals turn to smoking for symptom relief and this suggests that depression symptoms can lead to smoking (27-29). The results emerged with our study suggest a high prevalence of depression among nursing students of the University of Palermo. Surely there are important tools to prevent and treat a depressive state, an aspect that is not immediately thought of when talking about the benefits of physical exercise in connection with mental health. Practicing regular physical activity decreases the risk of suffering from depression, another important tool is a healthy and balanced diet: in fact, subjects of normal weight compared to those with weight problems generally show milder depressive symptoms (11, 12, 30).

These considerations are useful to initiate a reform of the training courses of nursing schools, with the aim of psychologically supporting students during the pandemic to ensure a certain degree of physical and mental well-being of future public health professionals.

Limitations of the study

The findings in this study are subject to at least three limitations. First, it is a cross-sectional study, that do not allow to draw any conclusions about causal relationships of the results. Second, categories of depressive symptomatology are derived from a self-report questionnaire and might be subject to recall bias. Finally, this study provides a general overview of the nursing students habits and it should not be considered as a complete description of the mental health of nursing students of other Universities. These limitations might affect the representativeness of these findings for all university students and for these reasons, although in line with the literature, our conclusions should not be generalized.

Conclusions

Capturing the mental health outcomes associated with COVID-19 among nursing students is critically important. The global pandemic and efforts to contain it represent a unique and offer the opportunity to advance our understanding of how to provide mental health care focused on online psychoeducation and psychotherapy programs for young students. Our findings serve to alert our attention to yet an impending public health crisis as a result of this pandemic as well as to the increased prevalence and risk factors associated with depression symptoms.

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Conflict of interest: The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.
Authors' contributions: Sandro Provenzano, Omar E. Santangelo, Maria Lampasona and Alberto Firenze conceived, designed, coordinated and supervised the research project. Sandro Provenzano and Omar E. Santangelo performed the data quality control, optimized the informatics database, performed the statistical analyses and evaluated the results.
Sandro Provenzano, Omar E. Santangelo, Francesco Armetta, Giuseppina Pesco, Alessandra Allegro, Maria Lampasona, Luca Pantaleo, Antonio Terranova, Giuseppe D'Anna and Alberto Firenze wrote the manuscript. All authors read and approved the final manuscript.

Riassunto

Prevalenza della sintomatologia depressiva tra gli studenti di infermieristica durante la pandemia da COVID-19

Background. La pandemia da COVID-19 e le politiche per contenerlo sono stati un problema sociale e un'emergenza di sanità pubblica per la popolazione italiana nel 2020. L'obiettivo dello studio è valutare la prevalenza dei sintomi della depressione tra gli studenti di infermieristica dell'Università di Palermo durante la pandemia da COVID-19.

Materiali e Metodi. Il disegno dello studio è di tipo trasversale. Nell'aprile 2020 all'intera popolazione degli studenti di infermieristica dell'Università degli Studi di Palermo è stato sottoposto un questionario strutturato in due parti. La prima sezione approfondisce le informazioni socio-demografiche. Nella seconda parte dell'indagine è stato somministrato il questionario QIDS-SR16. È stato utilizzato un modello di regressione logistica multivariabile e vengono presentati gli Odds Ratio aggiustati (aOR).

Risultati. Il campione era composto da 525 studenti (70,3% femmine). La probabilità di avere una sintomatologia depressiva moderata/grave molto grave è significativamente associata alle seguenti variabili: "Sesso femminile" (aOR 1,96), "Stato economico percepito basso" (aOR 2,32), "Stato di salute percepito basso" (aOR 2,30) ed "Essere un fumatore" (aOR 2,24).

Conclusioni. La pandemia globale e gli sforzi per contenerla rappresentano un evento unico e offrono l'opportunità di far progredire la nostra comprensione di come fornire cure di salute mentale incentrate su programmi di psicoeducazione e psicoterapia online per giovani studenti.

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