

Knowledge on the COVID-19 pandemic and the nursing role influence anxiety and depression levels: a descriptive correlational study between nurses and general population

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SUMMARY

Objectives

To perform if the knowledge on the COVID-19 pandemic and the nursing role could influence anxiety and depression levels in nursing and general population participants.

Methods

A descriptive correlational study was conducted. Participants were divided into nursing and general population groups, respectively. General knowledge on the COVID-19 pandemic was assessed and then, thanks to the Hospital Anxiety and Depression Scale (HADS), anxiety and depression levels were also performed.

Results

400 subjects were enrolled in this study. Nurses and general population recorded the similar trend in anxiety levels ($p = .265$). Nurses recorded higher frequency in normal depressive score than general population ($p = .006$). Significant correlations were reported between: anxiety and depression levels ($p < .001$), anxiety levels and the pandemic knowledge ($p = .024$), anxiety levels and the nursing role ($p = .005$), depression levels and the nursing role ($p < .001$).

Conclusions

The pandemic knowledge and the nursing role might be protective factors both in anxiety and depressive disorders.

Key words: anxiety disorder, depression disorder, disease outbreak, nursing role

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Introduction

On 31 December 2019, a new viral pneumonia originating in Wuhan, China, was announced to the World Health Organization ¹. Since the beginning of the pandemic, the number of confirmed cases in the world were 6.991.920 with 403.128 deaths ².

The pandemic brought a rapid and unprecedented changes in daily life, as the cases of soaring viruses, the death toll and the drastic measures to contain the spread of the disease continuing to be impressive. Despite considerable attention to measures identifying infected people and also mental health needs had relatively neglected ³. Already in previous mass tragedies, particularly caused by infectious diseases, general population felt fear and anxiety with a negative impact on the psychological well-being ^{4,5}. In fact, literature reported that in the earliest stage of the pandemic, many psychiatric symptoms were recorded, such as persistent depression, anxiety, panic attacks and even self-harm ⁶, and there were higher levels of depression in people who had themselves or their families and friends in quarantine or suspected of being infected ⁷.

Moreover, numerous evidences stated that both general population⁸⁻¹⁰ and nurses¹¹⁻¹³ experienced panic, disappointment and anger, especially those who had confirmed or suspected SARS-CoV-2 infection; that quarantined people could experience anxiety, boredom, loneliness; and that mental health support should be provided to the needy public. Hence, psychological counseling services quickly spread to provide psychological support to general population¹⁴ every day from 8 to 24¹⁵.

Many questions related to the pandemic without precise answers, such as when it will end and questions related to the methods of treatment; constant exposure to a flow of information on the pandemic and its effects; the decrease in social relationships due to the pandemic; and the drastic measures taken, might adversely affect people's mental health. Symptoms such as anxiety, depression, fear, stress and sleep disorders are most frequently observed during the COVID-19 pandemic¹⁶⁻²¹. A study involving 253 individuals in one of the regions most affected by the COVID-19 pandemic in China reported a 7% incidence of post-traumatic stress symptoms 1 month after the outbreak of the pandemic²².

The aim of the present study was to understand if a good knowledge on the COVID-19 pandemic and the nursing role could influence anxiety and depression levels between nurses and general population groups. Specifically, pandemic knowledge focused on: the transmission process of the SARS-CoV-2 infection, the close contact definition, the main prevention measures to consider important in this period, treatments available in the SARS-CoV-2 infection.

Materials and methods

Design

A descriptive correlational study was conducted. The on-line questionnaire was developed in an anonymous form through the Google function: Google Modules and is administered in the period from 25 April 2020 to 30 May 2020 through some pages and nursing groups present on the following Facebook and Instagram pages: #noisiamopronti, Nurse health professional, Professional nurse, Nurses by passion, NurseTimes, Nurse24.it, Nurse Specialist, Nurseallface, Nursing research, NursesInProgress, Nurses, Active Nurses, Nurses Italy, Nurses supporting health, Nursing Mobility, Nursing Competitions, Informed Nurses (Instagram).

Questionnaire

An "ad hoc" questionnaire was created including three sections. The first part concerned the socio-demographic data collection, particularly:

- gender, as female and male;

- age, divided into 5 classes: from 0 to 20 years, from 21 to 40 years, from 41 to 60 years, from 61 to 80 years and over 80 years;
- the educational level, as: elementary school, middle school, diploma and degree;
- the Region of Italy belonging: whether the north, center or south Italy,
- if the participant was a student or a worker;
- if the participant was a nurse or other, indicating by "general population".

The second part of the questionnaire included a total of 25 items that investigated basic knowledge related to SARS-CoV-2 infection (Appendix I). All the information processed was reproduced from the official website of the Italian Higher Institute of Health, on the internet page reserved for the COVID-19 pandemic²³. Specifically, the basic knowledge was assessed on the method of transmission of the SARS-CoV-2 infection, on the prevention measures to be adopted to contain the pandemic, on the treatments available to date. For each proposed item a Linkert scale was associated with the answers given, attributing the value zero to the correct answers and 1 to the wrong answers.

The third and final section of the questionnaire included the assessment of anxiety and depression levels by administering the Hospital Anxiety and Depression Scale (HADS)²⁴. Participants were asked to indicate how they have been feeling during the COVID-19 pandemic period among the different options presented. The answers were associated with a numerical value, the sum of which totaled a profile for both anxiety and depression. For values between zero and 7 the conditions of anxiety and depression were to be considered normal, for values between 8 and 10 the conditions of anxiety and depression were to be considered borderline, for values between 11 and 21 the conditions of anxiety and depression were considered pathological.

Participants

The questionnaire was administered in an online version. Participation was voluntary and no form of personal restitution of the results obtained was involved. All the information collected had no diagnostic purpose and the results were treated confidentially, guaranteeing complete anonymity, and as such the information acquired cannot in any case be traced back to the natural person who completed the questionnaire.

Data analyses

The collected data were sorted in an Excel sheet and processed with the statistical program SPSS version 20. For the entire first part of the questionnaire concerning the characteristics of the sample collected, all data were grouped by numbers and percentages. For the second part of the questionnaire, data were grouped by

numbers and percentages of correct and incorrect answers given, dividing the participants according to their nursing and general population role. The multiple linear regression model was calculated to verify the existence of any statistically significant differences between the two groups. The levels of anxiety and depression were assessed, considering the 3 subgroups obtained from the sum of the responses obtained, namely: normal, borderline, abnormal. The chi-square test was used to evaluate the differences between two groups of participants. Finally, by adding the basic knowledge values on the SARS-CoV-2 topic, Spearman's correlation was calculated to assess how anxiety and depression levels depended on the participant's role and related basic knowledge. All the inferential statistics values with $p < 0.05$ were considered statistically significant.

Results

A total of 400 subjects participated in this investigation (Tab. I). Of these, 320 were females and 80 males. 4 aged until 20 years, 244 aged between 21 and 40 years, 144 were between 41 and 60 years old, 8 aged between 61 and 80 years. Most of the participants stated that they had a diploma as educational qualification (69.25%) and belonged to one of the Regions of north

of Italy (52.25%). 94% of participants declared that they were workers and among them the 67.75% were nurses. As regards general knowledge assessment on the COVID-19 pandemic between nurses and general population, some questions on the pandemic were given (Appendix I). There were not many statistically significant differences ($p > 0.05$) between the right and wrong answers between the two groups of participants, with the exception of item no.4 ($p = 0.029$), within the definition of "close contact", in which 105 subjects including 83 nurses and 22 general subjects responded incorrectly. Almost all of the participants answered item no.22 in the right way ($p = 0.008$) and therefore "... in case of fever, cough or breathing difficulties or suspected contact with a positive subject to COVID-19" they knew they must stay at home and not to go to the emergency room and to all medical ambulatories but to contact the doctor or family pediatrician or medical guard by phone. Finally, there was a statistical significance in the reduced number of incorrect responses for item no.24 ($p = 0.019$), as the response to the main treatment for COVID-19 which "remained mainly a symptomatic approach, providing supportive therapies".

Additionally, by considering the anxiety and depression levels detecting between the two groups of participants (Tab. II), nurses reported higher normal levels in anxiety disorders (33.75%) than general population (11.25%). However, the anxiety level trend was not statistically significant ($p = 0.265$). As regards the depression levels, there was a statistical significance between the depression values recorded between the nurses and general population ($p = 0.006$). In fact, data reported that only 22 nurses and 22 general population participants recorded abnormal depressive scores comparing to 210 nurses and 78 subjects belonging to general population who registered normal depressive values.

By correlating the levels of anxiety and depression, the state of basic knowledge on the topic and the professional role (Tab. III) there were significant correlations between anxiety and depression levels ($p < 0.001$), between anxiety levels and knowledge on the topic "SARS-CoV-2 infection" ($p = 0.024$), between anxiety levels and the nursing role ($p = 0.005$). Also, depression levels significantly correlated with the nursing role ($p < 0.001$).

Discussion

The aim of the present study was to understand if a good knowledge on the COVID-19 pandemic and the nursing role could positively influence anxiety and depression levels, differentiating them between nurses and general population groups. In the literature, studies comparable to ours for purpose and methodology were not present. Anyway, previous studies have just

TABLE I. Sample characteristics (n = 400).

Characteristics	N	%
Sex:		
Female	320	80
Male	80	20
Age:		
0-20 years	4	1
21-40 years	244	60
41-60 years	144	36
61-80 years	8	2
Over 80 years	0	0
Educational qualification:		
Primary school	5	1.25
Middle school	77	19.25
Diploma	277	69.25
Graduation	41	10.25
Region of Italy:		
North	209	52.25
Centre	106	26.5
South	85	21.25
Profession:		
Student	24	6
Worker	376	94
Role:		
Nurses	271	67.75
General population	129	32.25

TABLE II. Anxiety and Depression scores between nurses and general population.

	Anxiety levels			P-value	Depression levels			P-value
	Normal scores: 0-7 n(%)	Borderline scores: 8-10 n(%)	Abnormal scores: 11-21 n(%)		Normal scores: 0-7 n(%)	Borderline scores: 8-10 n(%)	Abnormal scores: 11-21 n(%)	
	Nurses	135 (33.75%)	69 (17.25%)		67 (16.75%)	0.265	210 (52.5%)	
General population	45 (11.25%)	40 (10%)	44 (11%)		78 (19.5%)	29 (7.25%)	22 (5.5%)	

$p < 0.05$ is statistically significant

TABLE III. Correlations between anxiety and depression levels, the knowledge condition and the working roles of participants.

	Anxiety levels	Depression levels	Knowledge condition	Roles: nurses/ general population
Anxiety levels	----	< 0.001*	0.024*	0.005*
Depression levels	< 0.001*	----	0.720	< 0.001*
Knowledge condition	0.024*	0.720	----	0.642
Nurses/general population	0.005*	<0.001*	0.642	----

$p < 0.05$ is statistical significant

demonstrated important associations between anxiety and depression disorders and COVID-19^{17-21,25}, as anxiety and mood disorders were the most common mental health problems in the general population around the world²⁶.

The present findings reported that the pandemic knowledge and the nursing role influenced depressive conditions ($p = .006$), as nurses recorded more normal scores (52.5%) than general population (19.5%). On the other hand, data recorded no statistical significance between nurses and general population as concern anxiety disorders ($p = .265$). Additionally, significant correlations were found between knowledge and anxiety levels ($p = .024$), nursing and general population role and anxiety levels ($p = .005$), too. The present findings were in agreement to current literature. In fact, a study conducted in China looked at the psychological and mental health impact of the general Chinese population within the first two weeks of the COVID-19 pandemic established the prevalence of psychiatric symptoms and identified the risk and protective factors that contributed to psychological stress²⁷. The respondents' depression, anxiety and stress levels registered 12.2% of participants with a moderate depression and 4.3% with a severe and extremely severe depression. For the anxiety subscale, 20.4% of participants recorded a moderate anxiety

disorders and 8.4% an extremely severe anxiety disorder, respectively. Also the same study investigated knowledge about COVID-19 and highlighted that the most common perceived route of transmission was through droplets (92.1%), followed by contaminated objects (73.7%) and airborne transmission (60.5%). The most common source of health information for COVID-19 came from the Internet (93.5%). Most respondents (75.1%) were very satisfied or fairly satisfied with the amount of health information available. However, this study did not correlate knowledge level with anxiety and depressive disorders, so an ad hoc comparison with our findings was not possible to perform. Furthermore, another study conducted in Turkey investigated depression and anxiety levels during the COVID-19 pandemic. The study also considered the effect on these variables of some factors that might influence them such as age, gender, place of residence, the presence of a chronic disease, a positive COVID-19 friend or relative and a current history for previous psychiatric illness. Data found that women and people living in urban areas, with a COVID-19 patient among friends or relatives, previously or currently undergoing psychiatric treatment and with at least one accompanying chronic disease, were most severely affected²⁸. However, knowledge level on the COVID-19 pandemic was not assessed and discussed. From lit-

erature, in Italy, there were several studies conducted on the psychological impact that COVID-19 had both for nurses^{29,30} and general population^{31,32}, but few investigations focused on association to mental disorders and knowledge to the pandemic³³. For example, the Pagnini et al.³³ study suggested that during the first week of the COVID-19 outbreak in Italy, general population were well informed and had a relatively stable level of worries. This aspect could be in agreement with our findings, however this study did not associate knowledge to anxiety and depression disorders, but it focused on mental well-being challenges associated with more cognitive rigidity and emotional instability.

Research limitations

Data were collected on-line and there was no form of iteration with the participants. The greater shortcoming of this study was the instrument of assessment of anxiety and depression as literature considered the HADS a self-assessment scale developed for detecting states of depression and anxiety in the setting of a hospital medical outpatient clinic. However, it contributed to evidence on anxiety and depression differences between nurses and general populations.

Conclusions

The present study reported that knowledge and the nursing role might be protective factors both in anxiety and depressive disorders. However, future studies with a higher number of subject will be desirable in order to confirm and generalize the data of our observational study which, at least for the Italian reality, could be considered as pilot.

Ethical consideration

All participants voluntary agreed to participate to the on-line survey. The current research has been carried out in accordance with the Code of ethics of the World Medical Association (Declaration of Helsinki).

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Conflict of interest

The authors declare to have no conflict of interest

Author contributions

Conceptualization, methodology, software, validation, data curation formal analysis, writing-original draft preparation and writing-review and editing: VE; data collection: GV and MR. All authors have read and agreed to the published version of the manuscript.

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Appendix I. Items concerned general knowledge on the Covid-19 pandemic

Items

Transmission mode:

Item 1: Some coronaviruses can be transmitted from person to person, usually after close contact with an infected patient, for example between family members or in a healthcare setting. The new Coronavirus responsible for respiratory disease Covid-19 can also be transmitted from person to person through close contact with a probable or confirmed case.

Item 2: The new Coronavirus is a respiratory virus that mainly spreads through close contact with a sick person. The primary route of contamination are the droplets of the breath of infected people, for example through: saliva, coughing and sneezing, direct personal contacts, hands, for example by touching the mouth, nose or eyes with contaminated (not yet washed) hands. In rare cases, infection can occur through faecal contamination. Normally respiratory diseases are not transmitted with food, which in any case must be handled respecting good hygiene practices and avoiding contact between raw and cooked food.

Definition of close contact

Item 3: A person who lives in the same house as a COVID-19 case;

Item 4: A person who has had direct physical contact with a COVID-19 case (eg handshake);

Item 5: A person who has had unprotected direct contact with the secretions of a COVID-19 case (for example, touching used paper tissues with bare hands);

Item 6: A person who has had direct contact (face to face) with a case of COVID-19, at a distance of less than 2 meters and lasting longer than 15 minutes;

Item 7: A person who has been in a closed environment (for example classroom, meeting room, hospital waiting room) with a case of COVID-19 for at least 15 minutes, at a distance of less than 2 meters;

Item 8: A healthcare professional or other person providing direct assistance to a COVID-19 case or laboratory personnel handling samples of a COVID-19 case without using the recommended PPE or using unsuitable PPE;

Item 9: A person who has traveled by plane sitting in the two adjacent seats, in any direction, of a COVID-19 case, travel companions or carers and crew members assigned to the section of the plane where the index case was seated (if the index case has a severe symptomatology or has moved within the plane, causing greater passenger exposure, consider all passengers seated in the same section of the plane or in the whole as close contacts airplane);

Item 10: The epidemiological link may have occurred within a period of 14 days before or after the onset of the disease in the case under consideration.

Prevention: what measures to take

Item 11: Wash your hands often. In all public places (gyms, supermarkets, pharmacies) and other meeting places, the use of hydro-alcoholic solutions for hand washing is recommended;

Item 12: Avoid close contact with people suffering from acute respiratory infections;

Item 13: Avoid hugs and handshakes;

Item 14: Maintain, in social contacts, an interpersonal distance of at least one meter;

Item 15: Practice respiratory hygiene (sneezing and/or coughing in a handkerchief avoiding hand contact with respiratory secretions);

Item 16: Avoid the promiscuous use of bottles and glasses, particularly during sports activities;

Item 17: Do not touch your eyes, nose and mouth with your hands;

Item 18: Cover your mouth and nose if you sneeze or cough;

Item 19: Do not take antiviral drugs and antibiotics, unless they are prescribed by your doctor;

Item 20: Clean the surfaces with chlorine or alcohol based disinfectants;

Item 21: It is strongly recommended in all social contacts to use respiratory protection as an additional measure to other personal hygiene-health protection measures;

Item 22: If you experience a fever, cough or breathing difficulties and you suspect that you have been in close contact with a person with COVID-19 respiratory disease, stay indoors, do not go to the emergency room or doctor's office but call the doctor on the phone. family, pediatrician or medical guard.

Treatment:

Item 23: At present, there is no specific treatment for the disease caused by the new coronavirus;

Item 24: Treatment remains mainly based on a symptomatic approach, providing supportive therapies (eg oxygen therapy, fluid management) to infected people, which can be very effective;

Item 25: Several clinical trials are underway to treat COVID-19 disease. The Italian Medicines Agency (AIFA) provides information on its website about the drugs that are made available to Covid-19 patients.