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Case study

Investigating Corona Disease Anxiety in Nurses and Its Relationship with Cognitive Flexibility: A Case Study

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ABSTRACT

Background: The spread of coronavirus (Covid-19) had many psychological consequences. Nurses experience anxiety due to their professional duties. Considering the importance of mental health and caring behaviors in nurses, the present study was conducted to investigate Covid-19 anxiety in nurses and its relationship with cognitive flexibility. **Method**: The present study was conducted on 100 nurses of a selected hospital in 2021. Data collection tools included demographic questionnaire, Corona Disease Anxiety Scale (CDAS) and Cognitive Flexibility Inventory (CFI). Data analysis was performed through version 22 of SPSS software using Mann-Whitney, Kruskal–Wallis, independent sample t-test, one-way ANOVA and correlation tests. **Results**: The mean of cognitive flexibility was 96.68 (13.72). The median of Covid-19 disease anxiety was equal to 8 (9). Accordingly, the results of data analysis showed that there was no significant relationship between demographic variables and covid-19 anxiety (P>0.05). Furthermore, no significant relationship was found between cognitive flexibility and covid-19 anxiety (P>0.05). **Conclusion**: In this study, cognitive flexibility had no significant effect on Coronavirus disease anxiety. Considering the presentation of contradictory results in this field, authors suggest that a similar study be conducted with a larger sample size and different variables be taken into account.

Keywords: Cognitive Flexibility; Anxiety; Covid-19; Nurses

Introduction

People encounter many events during their lifetime. Some of these events bring with them concerns that can be the source of undesirable psychological consequences. One of these events that have recently changed their lives is the outbreak of Covid-19 disease. In a short time, the disease spread throughout the world and created a new wave of panic.[1] Coronavirus is a large group of viruses that pose challenges to mental resilience, and is known as a public health crisis[2]. Respiratory diseases such as Covid-19 disease can always reduce the quality of life due to painful physical symptoms.[3]

This disease has caused some mental disorders in the community. One of the most important psychological consequences of the disease, is the development of social anxiety around the world.[4] Anxiety is a vague and unpleasant emotion with physiological arousal.[5] Lack of definitive treatment,

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obscurity and forced quarantine are some of the reasons for anxiety in communities.[6] Recent studies demonstrated that psychological problems such as anxiety and depression have increased during the Covid-19 epidemic.[7]

The results of studies showed that the emergency situation of Covid-19 outbreak is considered a stressor. This is because a new and unexpected situation involves social constraints.[8] The first line of action against Coronavirus disease is hospital health personnel. Nurses are the main element of care in the treatment team. They are the first group on the front line of Covid-19 disease. As one of the most important human resources in hospitals, nurses have to spend long hours on the front lines of health services, communicate with other hospital staff and patients and provide services to patients in long work shifts. Such job characteristics increase job stress for nurses.[9, 10] Fear of getting sick, fear of transmitting the infection to family members and using heavy personal protective equipment during work shifts and the nature of work can lead to psychological problems in nurses.[11] One-third of corona death cases in China were nurses.[12] Recent and extensive studies on people exposed to coronavirus (such as nurses) have reported 73.4% of traumatic stress, 50.7% of depression, 44.7% of general anxiety, and 36.1% of insomnia.[13] Also, in a study aimed at determining stress, in a hospital in Torbat-e Heydarieh, anxiety and depression of nurses working in wards related to the hospitalization of Covid-19 patients, and depression, anxiety and stress of regular nurses were reported.[14] The results of studies conducted in pre-corona epidemics indicated that nurses experienced a high level of symptoms of dysfunction such as stress.[15] In a study by Koh et al. , conducted during the SARS epidemic in Singapore, more than half of nurses reported 56% of stress.[16] Stress and anxiety can reduce a person's performance in various jobs. It also affect family and social relationships by disturbing a person's psycho-physical balance.[17] Another consequence of stress and anxiety in the workplace is physical and and emotional burnout.[18]

The results of various studies showed that cognitive traits can affect anxiety.[19, 20] Cognitive flexibility means coping with stressful situations that make sense emotionally and behaviorally. On the other hand, cognitive flexibility is defined as a person's assessment of the controllability of a condition, and the ability to adapt to changing stimuli.[21] Studies revealed that cognitive flexibility is included in resilience and despair.[22] The results of Lee et al.'s study showed that cognitive flexibility affects a person's anxiety.[23]

The presence of high stress and anxiety among nurses, in addition to the occurrence of psychological disorders, can also affect their caring behaviors and raise concerns about the capacity of nurses regarding caring behaviors. Existence of stress and anxiety along with work difficulties can increase medical errors and accidents.[24] Given the threat to mental health of nurses in Covid-19 atmosphere and their occupational importance in the Covid-19 pandemic, it is necessary for us to know the underlying factors as much as possible. Therefore, the present study was conducted to evaluate the Covid-19 disease anxiety in nurses and its relationship with cognitive flexibility.

Method

This cross-sectional study was conducted in 2021. All 100 nurses of a hospital participated in the study. Nurses were from all sections of the hospital included the emergency department, Covid-19 and etc. Inclusion criteria were the age range under 50 (due to the removal of age-related confounders), having nursing expertise or master's, having at least 6 months of work experience and willingness to participate in the research. Exclusion criteria were taking psychedelic pills and having family problems. After explaining the details of the study orally and in writing and completing and confirming the

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informed consent form by each individual, the authors provided questionnaires to them. Individuals were also assured that their information and details would remain confidential.

In this study, percentage frequency, mean and standard deviation were used to describe the information. Mann-Whitney, Kruskal–Wallis, independent sample t-test, one-way ANOVA and correlation test were also used for statistical analysis. The Kolmogorov-Smirnov test was also used to check the normality of data. In the case of non-normal data, median and interquartile range indices were used to express centrality and dispersion. Data analysis was performed in version 22 of SPSS software.

The demographic information questionnaire was designed to obtain personal information such as age, gender, marital status, educational level, satisfaction with personal protective equipment (PPE) and infection of Coronavirus disease.

The Cognitive Flexibility Questionnaire (CFI) was developed by Dennis and Vander Wal (2010). This questionnaire is used to assess the individual's progress in clinical and non-clinical work. It is also used to assess the individual's progress in creating flexible thinking in the cognitive-behavioral therapy of depression and other mental illnesses. This questionnaire consists of 20 questions. It has 7-point Likert scale. It ranges from "totally disagree", 1 point, to "totally agree", 7 points. The sum of the scores of all the questions shows the total score of cognitive flexibility. The highest score is 140 and the lowest score is 20. A higher score indicates greater cognitive flexibility. This questionnaire measures three dimensions of cognitive flexibility. These three dimensions are tendency to perceive difficult situations as controllable situations (perception of controllability), ability to understand several alternative justifications for life events (perception of behavior justification), and ability to create multiple alternative solutions for difficult situations (perception of different options). The validity and reliability of this questionnaire has been confirmed by Dennis and Vander Wal. They reported Cronbach's alpha coefficient of 0.91 for the whole questionnaire.[25] In the study by Lakani et al., Cronbach's alpha coefficient was 0.90 for the whole questionnaire, and respectively 0.87, 0.89 and 0.75 for the perception of controllability, perception of different options and perception of behavior justification.[26]

The Coronavirus Disease Anxiety Scale (CDAS) was developed by Alipour et al (2020) to measure Covid-19 anxiety in Iran. It was an 18-item, two-component self-report tool (psychological and physical factor). This questionnaire was scored based on a 4-point Likert scale (0 = never, 3 = always).The lowest score was zero and the highest score was 54. High scores in this questionnaire indicated a higher level of anxiety in individuals. The reliability of this tool was obtained using Cronbach's alpha. It was 0.87 for the first factor, 0.86 for the second factor and 0.91 for the whole questionnaire.[27]

Result

The results of demographic variables showed that 42.9% of the nurses were male and 57.1% of them were female. 57.1% of nurses were married, and 87.6% of them had a bachelor's degree. In addition, most nurses (84.7%) showed moderate satisfaction with PPE. 48% of nurses was infected with Covid-19 virus. In this study, the mean age was 33.45 (6.42). In the same way, the mean of work experience was equal to 9.18 (6.50). No significant relationship was found between age and work experience, and Covid-19 anxiety (P>0.05). The mean of cognitive flexibility was 96.68 (13.72).

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Table 1. Investigating the Relationship between Coronavirus Disease Anxiety and Cognitive Flexibility of Nurses, and Demographic Variables

Demographic variables		Coronavirus Disease Anxiety			Cognitive Flexibility		
		Median	Interquartile range	P-value	Mean	Standard deviation	P-value
Gender	Male	6	9	0.16	95.39	16.96	0.49
	Female	9	10		97.76	11.36	
Marital status	Married	8	9	0.45	95.84	13.49	0.21
	Single	7.5	13		100.39	14.32	
Satisfaction with PPE	Low	7	7	0.35	108.00	10.79	0.08
	Moderate	8	9		95.52	13.45	
	High	9	6		98.75	15.45	
Education status	Bachelor's	8	9	0.15	95.96	13.51	0.19
	Master's Degree	12	13		102.00	15.02	

Table 2. Results of Investigating Coronavirus Disease Anxiety in Nurses

Variables	Median	Interquartile Range	Minimum	Maximum
Psychological factor	6	5	0	20
Physical factor	1	5	0	18
Corona disease anxiety (total)	8	9	0	38

Table 3. The Relationship between Cognitive Flexibility and Its Subscales, and Coronavirus Disease Anxiety

Cognitive Flexibility Components	Corona Disease Anxiety Correlation coefficient	P-value
Perception of controllability	- 0.17	0.09
Perception of behavior justification	- 0.08	0.43
Perception of different options	- 0.09	0.36
Cognitive flexibility (total)	- 0.13	0.24

The median of Covid-19 disease anxiety was equal to 8 (9). The results of investigating the relationship between Covid-19 disease anxiety and cognitive flexibility, and demographic variables are presented in Table 1. As shown in Table 1, the authors found no significant relationship between demographic variables and cognitive flexibility (P>0.05). The results of data analysis showed that there was no significant relationship between demographic variables and Coronavirus disease anxiety (P>0.05). Table 2 presents the results of the study of Covid-19 disease anxiety in nurses.

The results of data analysis suggested that there was no significant relationship between cognitive flexibility and its subscales, and Corona disease anxiety (P>0.05) (Table 3).

Discussion

Today, the physical and psychological effects of the coronavirus outbreak are not hidden from anyone. Hence, researchers' attention has been drawn to this issue. Therefore, the present study was conducted to investigate Covid-19 disease anxiety in nurses and its relationship with cognitive flexibility. In this study, the median of anxiety in nurses was 8 (9). In the study by Aziziaram et al., the mean anxiety of Covid-19 nurses was equal to 28.98 (13.84), which is much higher than the present study.[28] In another study, the mean anxiety of Covid-19 nurses was equal to 21.39 (9.8), which is much higher than this research.[29] This difference seems to be due to differences in the time of two studies. The authors concluded that the passage of time and vaccination has been able to reduce anxiety of nurses. In this study, authors found no significant relationship between Covid-19 disease anxiety and demographic variables. Contradictory results in different studies can be due to differences in the type of population studied, the number of participants and the method of work.

Cognitive flexibility is one of the factors affecting health. People with high cognitive flexibility will have better mental health.[30] In this study, no significant relationship was found between cognitive flexibility and Covid-19 disease anxiety. The results of Sepahvand study showed that cognitive flexibility components predicted about 18% of the variance of generalized anxiety, which is not consistent with the

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results of the present study. The findings of this study also indicated that perception of different options do not have a significant effect on anxiety, which is consistent with the results of the present study.[31] The results of Yongjuan et al.'s study suggested that cognitive flexibility can affect anxiety of students.[32] In the study by Moghaddam Poor et al, cognitive flexibility of mother had no significant effect on the prediction of child's anxiety.[33] In the study by Korhan et al., authors found a significant relationship between cognitive flexibility and test anxiety in students, which is not consistent with the results of the present study.[34] The study by Rahimzadegan et al. was conducted to investigate the effect of cognitive flexibility on Covid-19 disease anxiety in obsessive-compulsive disorder patients. The results of this study showed that cognitive flexibility negatively predicted Covid-19 disease anxiety, which is not consistent with the results of the present study.[35] The results of Mohammadpour et al.'s study demonstrated that there was a significant relationship between Covid-19 disease anxiety and cognitive flexibility in Kermanshah citizens.[36] The results of Afshari et al.'s study showed that Covid-19 anxiety significantly affects cognitive flexibility of dentists, , which is not consistent with the results of the present study.[37] It seems that the type of population studied and the time of study are the causes of this difference. Covid-19 disease is also an emerging phenomenon, and people may react differently to it. The passage of time and vaccination (the type of vaccine used) may also change people's behavior against this pandemic. The different nature of Covid-19 disease anxiety may be the cause of differences, compared with the results of other studies.

Identifying the psychological factors affecting anxiety and planning to improve them can be effective in improving mental health. Therefore, authors suggest that researchers consider other psychological variables in future studies. The present study also had some limitations, which can affect the results. This study was performed on nurses in a hospital in Yazd, and the results cannot be generalized to other nurses. In addition, there is a possibility of bias in self-report scale. Due to the Covid-19 disease conditions in the hospital, it was not possible to fully monitor them.

Conclusion

Considering the importance of disease anxiety in nurses, the role of cognitive flexibility in anxiety and presenting contradictory results, the authors suggest that a similar study be performed on different populations and the results be compared with the present study. Doing similar studies at regular intervals can identify changes regarding disease anxiety in nurses. The researchers also suggest that a similar study be conducted by taking into account the variables such as personality type, work environment and social status.

Conflict of interest

The authors declared that no conflict of interest.

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Authors' contribution

All authors contributed equally to the study.

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