Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Psychological effects of nurses and midwives due to COVID-19 outbreak: The case of Turkey

Yasemin Erkal Aksoy,⁎ Vesile Koçak

Department of Midwifery, Health Sciences Faculty of Selçuk University, Konya, Turkey
Department of Obstetrics and Gynecology Nursing, Nursing Faculty of Necmettin Erbakan University, Konya, Turkey

ARTICLE INFO
Keywords:
COVID-19 outbreak
Nurse
Midwife
Psychological Effect

ABSTRACT
Purpose: The study was carried out to determine the psychological impact levels of nurses and midwives due to the COVID-19 outbreak.
Methods: The research is planned in a descriptive type. Nurses and midwives working in any health institution in Turkey constituted the population of the research. The questionnaire form of the study was shared on social media tools between 01 and 14 April 2020 and a total of 758 nurses and midwives were included in the study sample. Personal Information Form, State-Trait Anxiety Inventory and Intolerance of Uncertainty Scale were used as data collection tools.
Results: Participants who attended the study were 56.9% of nurses and 43.1% of midwives. Approximately half of the nurses and midwives (48.8%) participating in our study contacted the patient with suspected COVID-19, and 29.8% provided care to the patient diagnosed with COVID-19. Nurses and midwives were scored 52.75 ± 9.80 for State Anxiety, 44.87 ± 7.92 for Trait Anxiety Inventory and 35.16 ± 9.42 for Intolerance of Uncertainty Scale. It has been determined that 54.5% of nurses and midwives have been making their lives worse since the outbreak started, 62.4% had difficulties in dealing with the uncertain situation in the outbreak, 42.6% wanted psychological support and 11.8% had alienated from their profession. It was determined that there was a difference between scale scores and difficulties in work, family and private life due to COVID-19.
Conclusion: As a result, it is seen that the midwives and nurses in our country have high psychological effects due to the COVID-19 outbreak.

Introduction

COVID-19 is an infectious Corona virus disease caused by a newly discovered virus. COVID-19 was first reported on December 12, 2019 in Wuhan (Wang, Tang, & Wei, 2020; Zhou et al., 2020a). COVID-19 has been shown to be a clone of beta-corona viruses associated with human Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (Wu et al., 2020; Zhu et al., 2020; Zhu et al., 2020). Most people infected with the COVID-19 virus experience mild or moderate respiratory disease and recover without special treatment. The disease is severe in individuals with elderly and chronic diseases (cardiovascular diseases, diabetes, chronic respiratory disease, cancer) (Perlman, 2020; WHO, 2020). Since COVID-19 has fast spreading feature, it causes difficulties in the health systems of societies (NMBA, 2020). More than 150 countries are now infected due to the virus outbreak, and the outbreak of this virus has become a global emergency (Al-Mohaissen, 2017; Jiang et al., 2020). Like SARS and Ebola, COVID-19 has a serious impact on mental health as well as causing physical damage (Lehmann et al., 2015; Lin et al., 2007; Wang et al., 2020; Zhou et al., 2020b). COVID-19 is a worldwide life-threatening concern.

Nurses and midwives who care for individuals in the health system continue to work at the forefront to ensure public safety. Nurses and midwives are in close contact with individuals during the care process (WHO, 2019). Despite the use of protective equipment and precautions, COVID-19 may be contaminated (OSHA, 2020). In our country, the case of COVID-19 first appeared on March 10, 2020 (Republic of Turkey Ministry of Health, 2020). There are a large number of health professionals in the World and Turkey who were infected with the virus and thus, died (Choi, Skrine Jeffers, & Cynthia Logsdon, 2020; Republic of Turkey Ministry of Health, 2020). Healthcare workers may face social isolation and social discrimination. Therefore, healthcare professionals appear as a sensitive group against complex emotional reactions and psychological distress (Kang et al., 2020). In a study conducted by Zhu,
Xu, et al. (2020) and Zhu, Zhang, et al. (2020), women with more than 10 years of work, concomitant chronic illnesses, a history of mental disorders, and family members or relatives who have been confirmed or suspected are susceptible to stress, depression and anxiety during the COVID-19 outbreak (Zhu, Xu, et al., 2020).

Anxiety is defined as a sense of concern that is felt against a non-objective danger (Swift, Cyhlarova, Goldie, & O’Sullivan, 2014). Anxiety is divided into state and trait anxiety. State anxiety is the anxiety that occurs when a dangerous, undesirable situation is encountered. Trait anxiety is the long-term and severe anxiety that exists when there is no objective reason (Alavi & Omrani, 2019). Uncertainty may arise due to a new, complex or contradictory, unsolvable situation (Alavi & Omrani, 2019; Tovilovic, Novovic, Mihic, & Jovanovic, 2009). Uncertainties about the vaccine, treatment and transmission rate of COVID-19 virus can affect the level of anxiety of nurses and midwives (Gecgin & Sahranç, 2017). In addition, it is possible for nurses and midwives working in the epidemic to experience problems in their family and social life due to the fear of infecting. Uncertainty about when the outbreak will end raises negative emotions. An individual's level of intolerance to uncertainty and anxiety and concern levels were found to be related (Anderson et al., 2012; Dugas, Schwartz, & Francis, 2004). It is thought that the increase in the level of anxiety and intolerance of uncertainty during the epidemic may lead to many psychological problems in nurses and midwives. The aim of this study is to determine the psychological impact levels of nurses and midwives due to the COVID-19 outbreak.

Methods

Design

The research is planned in a descriptive type. Research question: What are the psychological effect levels of nurses and midwives due to the COVID-19 outbreak?

Participants

It has created the population of the research who nurses and midwives working in any health care provider in Turkey. The sample calculation was made with known average scores of State and Trait Anxiety Inventory and Intolerance of Uncertainty Scale. After calculations, the known average score of the scale which is calculated the highest number of samples was taken as a reference. The sample size of the study was determined as 726 nurses and midwives with 90% power within one point deviation with the known score (41.9 ± 8.3) using G* Power 3.1.7 program (Yilmaz, Timur, & Ege, 2005). A questionnaire form was shared from social media tools for two weeks to collect data. At the end of two weeks, it is determined that 773 nurses and midwives completed the questionnaire. The data were examined; the faulty and incomplete ones were removed. The study was concluded with a total of 758 nurses and midwives.

Data collection

Questionnaire forms of the data were collected online on the web, using Google Forms (URL: https://forms.gle/jiviv5xie4KSUQo8). Nurses and midwives were included in the study between 01 and 14 April 2020 by using convenience sampling method. Personal Information Form, State and Trait Anxiety Inventory and Intolerance of Uncertainty Scale were used as data collection tools. An online questionnaire link was shared through social media tools (such as Whatsapp, Instagram, Facebook), information was provided about the research, and nurses and midwives were invited to fill in the questionnaire. The questionnaire link was sent to online profession groups to which nurses and midwives are joined. The data of the research were collected based on self-report. While creating the online form, standardizations have been made for the nurses and midwives to respond once; only one response for each participant. Only one response was provided to the surveyed nurses and midwives. The collected questionnaires were checked daily and quality control was made. Social media research can present various challenges or opportunities in terms of research validity and reliability. While social media researches have difficulties for users not to have organic (real) accounts, it is easy to access major data when it is difficult to collect face-to-face data such as COVID-19 outbreak. Social media users do not represent the entire population. However, it can turn into an opportunity when it is made with a special group such as nurses and midwives (Ruths & Pfeffer, 2014; Social Media Research Group, 2016).

Measures

Personal information form

it consists of 22 question statements that question personal such as age, gender, marital status, profession, educational background, etc. of nurses and midwives and COVID-19 related features (Huang & Zhao, 2020; Nemati, Ebrahimi, & Nemati, 2020; Wang et al., 2020; Zhu, Xu, et al., 2020; Zhu, Zhang, et al., 2020).

State-Trait Anxiety Inventory (STAI)

STAI was used to measure the level of anxiety of nurses and midwives. STAI was developed by Spielberger, Gorsuch, and Lushene (1970) and was translated into Turkish by Öner and Le Compte and its validity and reliability was made in different groups (Öner & LeCompte, 1983). The scale contains 40 expressions that individuals can use to express their feelings. Depending on how the person feels and the severity of his feelings, s/he should select one of the options “almost never (1), sometimes (2), often (3), almost always (4)”. The state anxiety scale determines how the individual feels at a certain moment and under certain conditions, and the continuous anxiety scale determines how the individual feels independently of the situation and conditions. The State-Trait Anxiety Scale is consisting of direct and reversed expressions. In this study, the Cronbach coefficient of the state anxiety scale was found to be 0.91 and of the trait anxiety scale was 0.85. Total score of reverse expressions is subtracted from the total score of direct expressions. It is added 50 point to the state anxiety scale and 35 point for the trait anxiety scale on previously determined total score. The most recently obtained value gives the individual anxiety score. Big score indicates high anxiety level, small score indicates low anxiety level (Öner & LeCompte, 1983).

Intolerance of Uncertainty Scale (IUS-12)

It was developed by Carleton, Norton, and Asmundson (2007) and Turkish validity reliability was performed by Sarıçam, Erguvan, Akin, and Akça (2014). Each item was rated on a Likert scale from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). The scale consists of 12 items and two subscales. Rising scores indicate high levels of intolerance of uncertainty. The prospective anxiety subscale of the scale consists of 1–7 items, and inhibitory anxiety subscale consists of 8–12 items. While the minimum score to be obtained from the scale is 12, the maximum score is 60. Scoring of the scale is performed by adding the number values corresponding to the marking made. Cronbach alpha coefficient is found to be 0.88 for the whole scale; 0.84 for prospective anxiety subscale and 0.77 for inhibitory anxiety subscale (Sarıçam et al., 2014). In this study, Cronbach alpha coefficient is determined to be 0.92 for scale whole; 0.86 for prospective anxiety subscale and 0.90 for inhibitory anxiety subscale.

Ethical considerations

Nurses and midwives who voluntarily agreed to participate in the study were accepted. Before starting the questionnaire form, it was made mandatory to read and approve the informed consent form explaining the purpose of the study. The questionnaire does not include
questions containing the contact information or any special information of the participants. Ethical permission was not obtained from any institution because the research was not interventional as the data was collected using social media tools.

Data analysis
Data analysis was carried out using Statistical Package for the Social Science (SPSS) 20.0 package program (SPSS Inc., Chicago, IL, USA). The Kolmogorov Smirnov test was used to determine whether the data were normally distributed. In data analysis, number and percentage mean and standard deviation analysis were used, and t-test, ANOVA analysis was used in independent groups. Statistical significance of the data was evaluated at p < 0.05 level.

Results
Descriptive statistics
Participants who attended the study was 56.9% of nurses and 43.1% of midwives. The average age of the nurses and midwives participating in the study was determined as 30.51 ± 7.24 (Min = 20.00, Max = 56.00) and the year of work in the profession was 8.69 ± 7.82 (Min = 1.00, Max = 35.00). In Turkey there are seven geographic regions. Forty-seven point 2% of the participants in the study live in Central Anatolia, 19.5% in Marmara, 9.9% in Eastern Anatolia, 7.7% in Aegean, 6.2% in Mediterranean, 5.9% in Black Sea and 3.6% in Southeast Anatolia. In our study, it was determined that 92.7% of the nurses and midwives were women, 55.1% were married and 74.1% were of Bachelor's Degree. It was determined that 80.6% of nurses and midwives worked in secondary and tertiary health institutions and were of Bachelor's Degree. It was determined that 80.6% of nurses and midwives participated in our study contacted the patient with suspected COVID-19, and 29.8% provided care to the patient diagnosed with COVID-19.

Effect of COVID-19 outbreak on participants
Approximately half of the nurses and midwives (48.8%) participating in our study contacted the patient with suspected COVID-19, and 29.8% provided care to the patient diagnosed with COVID-19. Participants feel respectively, intense emotions such as anxiety (36.3%), uneasiness (31.3%) and fear (19.4%) due to COVID-19. When the questions containing the contact information or any special information of the participants. Ethical permission was not obtained from any institution because the research was not interventional as the data was collected using social media tools.

Table 1
Descriptive features of nurses and midwives.

| Variables                                | n   | %   |
|-------------------------------------------|-----|-----|
| Gender                                    |     |     |
| Female                                    | 703 | 92.7|
| Male                                      | 55  | 7.3 |
| Marital status                            |     |     |
| Single                                    | 340 | 44.9|
| Married                                   | 418 | 55.1|
| Occupation                                |     |     |
| Midwife                                   | 327 | 43.1|
| Nurse                                     | 431 | 56.9|
| Educational background                    |     |     |
| High school                               | 73  | 9.6 |
| Associate degree                          | 66  | 8.7 |
| Bachelor's degree                         | 562 | 74.1|
| Graduate (master, doctorate)              | 57  | 7.5 |
| Institution where s/he is working         |     |     |
| Primary health care institutions           | 147 | 19.4|
| Secondary and tertiary health institutions | 611 | 80.6|
| Chronic disease status                    |     |     |
| None                                      | 583 | 76.9|
| Existed (thyroid, respiratory diseases, diabetes, etc.) | 175 | 23.1|

Table 2
Nurses and midwives’ qualities related to COVID-19.

| Variables                                                | n   | %   |
|----------------------------------------------------------|-----|-----|
| Contact of a suspected patient with COVID-19             |     |     |
| Yes                                                      | 370 | 48.8|
| No                                                       | 388 | 51.2|
| Care of the patient diagnosed with COVID-19              |     |     |
| Yes                                                      | 226 | 29.8|
| No                                                       | 532 | 70.2|
| The most intense emotion feeling due to COVID-19         |     |     |
| Fear                                                     | 147 | 19.4|
| Anxiety                                                  | 275 | 36.3|
| Uneasiness                                               | 237 | 31.3|
| Other (sadness, astonishment, despair, unhappiness, fatigue etc.) | 99  | 13.1|
| Feeling remorse due to profession                        |     |     |
| Never                                                    | 310 | 40.9|
| Sometimes                                                | 377 | 47.7|
| Very often                                               | 71  | 9.4 |
| Experiencing change in relationship with colleagues      |     |     |
| No change                                                | 309 | 40.8|
| Close and sharing                                        | 302 | 39.8|
| Distant and selfish                                      | 147 | 19.4|
| Experiencing difficulty in family and private life due to COVID-19 |     |     |
| No                                                       | 39  | 5.1 |
| Yes                                                      | 719 | 94.9|
| Difficulties in family and private life due to COVID-19  |     |     |
| (n = 719)                                                |     |     |
| No                                                       | 449 | 59.2|
| Yes                                                      | 309 | 40.8|
| Difficulties in social life due to COVID-19              |     |     |
| No                                                       | 222 | 29.3|
| Yes                                                      | 536 | 70.7|
| Difficulties in business life due to covid-19 (n = 536)  |     |     |
| Decreased work efficiency due to fear of transmission    | 407 | 75.9|
| Reduced care of patients due to fear of transmission     | 49  | 9.1 |
| Tiring and inadequate working with protective equipment   | 27  | 5.0 |
| Other (increased workload, being assigned to different services, decreasing time in patient room, etc.) | 53  | 9.9 |

Depending on the outbreak, 49.7% of nurses and midwives sometimes experienced regret for their profession and 19.4% stated that the relationship with their colleagues was distant and selfish. When the causes of those who have difficulties in family and private life (94.9%) due to COVID-19 are examined, it was determined that 68.2% had a fear of infecting their family and 21% missed their family. When the causes such as not meeting with friends, not going anywhere other than work and home, not shopping, etc.) (Table 2). (n = 309)

When the answers given by the nurses and midwives to some statements made about the COVID-19 outbreak, it has been determined that 54.5% of their lives have become worse since the outbreak started, 62.4% had difficulties in dealing with the uncertain situation in the outbreak, 42.6% wanted psychological support, and 11.8% alienated from their profession. In the epidemic period, 59.4% of nurses and midwives stated that they felt valuable while caring for the patients, realized the purpose of their profession and 76% of them stated that...
they were proud to be health workers (Table 3).

**Participants' scale scores**

Nurses and midwives got 52.75 ± 9.80 (Min = 23, Max = 78) points from State Anxiety and 44.87 ± 7.92 (Min = 25, Max = 76) from the Continuity Anxiety Inventory, and 35.16 ± 9.42 (Min = 12, Max = 60) from the Uncertainty Scale (Fig. 1).

**Comparison of the scale scores of the participants with the variables**

It was determined that there was a statistically significant difference between the State Anxiety Inventory scores of the nurses and midwives participating in our study with the state of chronic disease, the most intense emotion felt due to COVID-19, and experiencing remorse due to their occupation, and difficulties in social, profession, family and private life due to COVID-19. It was determined that there was a statistically significant difference between the Trait Anxiety Inventory scores with the most intense emotion felt due to COVID-19, experiencing remorse due to their profession, and difficulties in profession, family and private life due to COVID-19.

It was found that there was a difference between the total score of the Intolerance of Uncertainty Scale with remorse due to their occupation and difficulties in profession, family and private life due to COVID-19. It was determined that there was a statistically significant difference between prospective anxiety subscale score of Intolerance of the Uncertainty Scale with gender variable and chronic disease status. It was determined that there was a difference between the inhibitory anxiety subscale score of the Intolerance of Uncertainty Scale with having remorse due to their profession and having difficulties in profession, family and private life due to COVID-19 (Table 4).

**Discussion**

COVID-19 pandemic that created a shock effect in the whole world has also affected Turkey in a profound way. While all healthcare workers, nurses and midwives are performing their duties in the best way in our country, they may face some inevitable problems as well. Approximately half of the nurses and midwives participating in our study contacted the patient with suspected COVID-19, and 29.8% provided care to the patient diagnosed with COVID-19. Participants feel intense emotions such as anxiety (36.3%), uneasiness (31.3%) and fear (19.4%), respectively, due to COVID-19. There is a significant difference between the intense feelings felt and state anxiety and trait anxiety. Similarly, in a study conducted during the COVID-19 outbreak in China, Huang and Zhao stated that healthcare professionals are experiencing a high level of anxiety compared to the majority of the population (Huang & Zhao, 2020). In the study of Lai et al., there were symptoms of depression, anxiety, insomnia and distress among doctors and nurses who care for patients with COVID-19 (Lai et al., 2020). Health professionals (including nurses, doctors, and assistant staff) have been found to be highly anxious during previous pandemics. During the SARS outbreak in previous years, psychological health problems have been observed in both healthcare workers and SARS victims (Lu, Shu, Chang, & Lung, 2006; Mak, Chu, Pan, Yiu, & Chan, 2009; McAlonan et al., 2007). Similar results were reported in the MERS case (Lee, Kang, Cho, Kim, & Park, 2018). In addition, post-traumatic stress disorder and depressive disorders have been identified as the most common psychological effects (Mak et al., 2009). Nurses feel a high level of anxiety, sadness, fear and tension (Chia et al., 2004). In addition, increased suspect or diagnosed COVID-19 cases and predictable material deficits, as in the SARS outbreak, may contribute to healthcare workers fears and anxiety (Chia et al., 2004). Stressful work, sleep disorders, inability to be free, heavy responsibility and environmental factors cause physical and psychological problems (Chia, 2004). Health professionals have more concern than the general public about virus transmission during a pandemic (Wu et al., 2009). In healthcare workers who are at risk of being infected with COVID-19 or who are in regular and direct contact with COVID-19 patients are likely to experience understandable anxiety about the virus, the health of their loved ones, and colleagues. In our study, it was determined that the participants had the fear of transmitting the virus to their family...
due to COVID-19 and had trouble and difficulties in isolation-related life. It was determined that there was a statistically significant difference between State, Trait Anxiety and Uncertainty, and difficulties in social, work, family and private life during COVID-19 pandemic. The psychological response of healthcare workers to the epidemic of infectious diseases is complex (Lai et al., 2020). The same situation was observed in the SARS outbreak, and the source of stress in nurses was determined to be the loss of control/vulnerability, fear of self-health, and fear of spreading the virus (Wong et al., 2005). Possible cause of psychological problems may be anxiety about infection and fear of controlling the outbreak (Furer, Walker, Chartier, & Stein, 1997; Huang & Zhao, 2020). In addition, the shortage of medical facilities across the country can be expected to exacerbate the situation.

In our study, it was found out that most of the participants had difficulty in dealing with the uncertainty in the outbreak and that there was a statistically significant difference between intolerance of uncertainty prospective anxiety subscale score and gender and chronic disease status. Similarly, in the study of Huang and Zhao, it is seen that the psychological impact seen in one out of every five participants is caused by the uncertainty in the progress of the epidemic and this situation will cause more psychological impact (Huang & Zhao, 2020). The concept of uncertainty brings with it the concept of concern, anxiety and fear in general (Sari & Dağ, 2009). Individuals who are intolerant of high levels of uncertainty find uncertain and challenging situations in daily life events worrying and challenging and have an intense threat perception and this may be related to depression symptoms (Carleton, 2012). People who are more intolerant of uncertainty may experience a higher adaptation difficulty (Boelen, Reijntjes, & Smid, 2016).

It was determined that there was a statistically significant difference between prospective anxiety subscale score of the Intolerance of Uncertainty Scale and gender variable and chronic disease status in our study. COVID-19's being transmittable from person to person, associated with high morbidity and potentially fatal may intensify personal perception of danger (Li et al., 2020; Rothe et al., 2020; Wang et al., 2020). In a previous study during an acute SARS outbreak, 89% of

| Scales                                      | State anxiety mean ± SD | Trait anxiety mean ± SD | Intolerance of uncertainty mean ± SD | Prospective anxiety mean ± SD | Inhibitory anxiety mean ± SD |
|---------------------------------------------|-------------------------|-------------------------|-------------------------------------|-------------------------------|-------------------------------|
| Gender                                      | Female                  | Male                    |                                     |                               |                               |
|                                             | 52.86 ± 9.85           | 51.38 ± 9.21           | 44.98 ± 8.01                       | 35.32 ± 9.43                  | 21.41 ± 5.47                  | 13.90 ± 4.71                  |
|                                             | p>0.05                  | p>0.05                 |                                     |                               |                               |                               |
| Occupation                                  | Midwife                 | Nurse                  |                                     |                               |                               |
|                                             | 53.23 ± 10.39          | 52.38 ± 9.33           | 45.09 ± 8.15                       | 35.10 ± 9.53                  | 21.40 ± 5.58                  | 13.70 ± 4.68                  |
|                                             | p>0.05                  | p>0.05                 |                                     |                               |                               |                               |
| Chronic disease status                      | None                    | Exists                 |                                     |                               |                               |
|                                             | 52.25 ± 9.92           | 54.40 ± 9.24           | 44.64 ± 7.77                       | 34.84 ± 9.21                  | 21.06 ± 5.35                  | 13.78 ± 4.60                  |
|                                             | p>0.05                  | p>0.05                 |                                     |                               |                               |                               |
| Care of the patient diagnosed with COVID-19| Yes                     | No                     |                                     |                               |                               |
|                                             | 53.31 ± 9.95           | 52.22 ± 9.65           | 44.47 ± 7.80                       | 35.41 ± 9.55                  | 21.50 ± 5.55                  | 13.91 ± 4.77                  |
|                                             | p>0.05                  | p>0.12                 |                                     |                               |                               |                               |
| The most intense emotion feeling due to COVID-19| Fear                    | Concern                | 56.82 ± 9.12                       | 53.13 ± 9.30                  | 47.82 ± 8.49                  | 35.72 ± 9.57                  | 21.29 ± 5.62                  | 14.42 ± 4.51                  |
|                                             | < 0.001                 | < 0.001                |                                     |                               |                               |                               |                               |                               |
|                                             | < 0.001                 | < 0.001                |                                     |                               |                               |                               |                               | 0.195                         |
|                                             | < 0.001                 | < 0.001                |                                     |                               |                               |                               |                               | 0.157                         |
|                                             | < 0.001                 | < 0.001                |                                     |                               |                               |                               |                               | 0.137                         |
| Experiencing remorse due to profession      | Neverx                  | Sometimesb              | 49.22 ± 9.34                       | 54.28 ± 9.20                  | 42.44 ± 7.25                  | 34.07 ± 8.87                  | 20.88 ± 5.17                  | 13.19 ± 4.57                  |
|                                             | < 0.001                 | < 0.001                |                                     |                               |                               |                               |                               |                               |                               |
|                                             | < 0.001                 | < 0.001                |                                     |                               |                               |                               |                               |                               |                               |
|                                             | < 0.001                 | < 0.001                |                                     |                               |                               |                               |                               |                               |                               |
| Experiencing difficulty in family and private life due to COVID-19| No        | Yes                    | 45.38 ± 9.54                       | 53.15 ± 9.67                  | 41.71 ± 8.78                  | 31.56 ± 7.94                  | 19.71 ± 4.87                  | 11.84 ± 3.99                  |
|                                             | p>0.05                  | p<0.001                |                                     |                               |                               |                               |                               |                               |                               | 0.006                         |
| Experiencing difficulty in social life due to COVID-19| No        | Yes                    | 51.22 ± 9.60                       | 54.98 ± 9.68                  | 44.42 ± 7.73                  | 34.89 ± 9.56                  | 21.14 ± 5.56                  | 13.74 ± 4.69                  |
|                                             | p>0.05                  | p<0.001                |                                     |                               |                               |                               |                               |                               |                               | 0.006                         |
| Experiencing difficulty in profession life due to COVID-19| No        | Yes                    | 46.50 ± 8.31                       | 55.33 ± 9.20                  | 42.04 ± 7.05                  | 33.36 ± 9.01                  | 20.75 ± 5.38                  | 12.60 ± 4.46                  |
|                                             | p>0.05                  | p<0.001                |                                     |                               |                               |                               |                               |                               |                               | 0.001                         |

* Independent groups t-test.
** Variance (ANOVA) analysis Post Hoc Tukey Test.
healthcare workers in high-risk situations reported psychological symptoms (Chua et al., 2004). Based on this result, it would be correct to say that this already dangerous pandemic causes more uncertainty and anxiety among high-risk healthcare workers.

Health professionals have close contact with infected patients and have a decisive role in infection control (Kharma, Amer, Tarakji, Aws, & Alalwani, 2015). During this period, nurses and midwives in Turkey fulfilling their roles in the best way feel themselves valued, become more aware of the importance of the profession and are proud to be health care workers while providing healthcare to the patients. However, despite all these results, most of the participants stated that they sometimes feel remorse due to their profession and that the relationship with their colleagues became distant and selfish. S/he even stated that due to the fear of transmission, her/his work efficiency decreased. It was determined that there was a significant difference between the inhibitory anxiety subscale score of the Intolerance of Uncertainty Scale with experiencing remorse due to the profession. Based on the research findings, it can be said that the psychological effects of the nurses and midwives who are in direct contact with the patients during the COVID-19 outbreak are intense and experience professional wear.

Conclusion

According to the results of the study, it can be said that midwives and nurses in our country have intense psychological effects and sometimes have difficulty in coping due to the ambigious COVID-19 pandemic that causes anxiety all over the world. It is necessary to protect health workers, to take infection protection measures against the COVID-19 epidemic, and to implement special interventions immediately, especially for those in the risk group. A secure fast information network, ready and appropriate continuing education, easy access to protective equipment and psychological support can help reduce negative psychological effects on nurses and midwives. In addition to these practical measures, it may be useful to establish an ongoing mental health monitoring program for health professionals.

Limitations

The measurements obtained in the research are limited with the scale tools used and the self-reports of the participants. Nurses and midwives who did not use social media tools could not be reached because the study was conducted on the web.

Acknowledgment

We would like to thank to all the nurses and midwives who participated in the study and fight devotedly against epidemic in Turkey.

Author contributions

YEA and VK designed the study. YEA was analyzed data collection. VK drafted the manuscript. YEA and VK revised the manuscript for intellectual content. All authors read and approved the final version.

Declaration of competing interest

No conflict of interest has been declared by the author(s).

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

Alavi, N., & Omrani, M. (2019). What is depression? What is anxiety? Online cognitive behavioral therapy (pp. 17–31). https://doi.org/10.1007/978-3-319-99515-1_3.

Al-Mohaisen, M. (2017). Awareness among a Saudi Arabian university community of Middle East respiratory syndrome coronavirus following an outbreak. Eastern Mediterranean Health Journal, 23(5), 351–360. https://doi.org/10.26719/2017.23.5.

Anderson, K. G., Dugas, M. J., Koerner, N., Radomskey, A. S., Savard, P., & Turcotte, J. (2012). Interpretive style and intolerance of uncertainty in individuals with anxiety disorders: A focus on generalized anxiety disorder. Journal of Anxiety Disorders, 26(8), 823–832. https://doi.org/10.1016/j.janxdis.2012.08.003.

Boelen, P. A., Reijntjes, A., & Smid, G. E. (2016). Concurrent and prospective associations of intolerance of uncertainty with symptoms of prolonged grief, posttraumatic stress, and depression after bereavement. Journal of Anxiety Disorders, 41, 65–72. https://doi.org/10.1016/j.janxdis.2016.03.004.

Carleton, R. N. (2012). The intolerance of uncertainty construct in the context of anxiety disorders: theoretical and practical perspectives. Expert Review of Neurotherapeutics, 12(9), 937–947. https://doi.org/10.1586/14737175.2012.713272.

Carleton, R. N., Norton, M. A. P. J., & Asmundson, G. J. G. (2007). The intolerance of uncertainty construct in the context of anxiety disorders: A focus on generalized anxiety disorder. Journal of Anxiety Disorders, 21(1), 105–117. https://doi.org/10.1016/j.janxdis.2006.03.014.

Chan-Young, M. (2004). Severe acute respiratory syndrome (SARS) and healthcare workers. International Journal of Occupational and Environmental Health, 10(4), 421–427. https://doi.org/10.11179/ijeo.2004.10.4.421.

Choi, K. R., Shinrne Jefferis, K., & Cynthia Loganon, M. (2020). Nursing and the novel coronavirus: Risks and responsibilities in a global outbreak. Journal of Advanced Nursing. https://doi.org/10.1111/jan.14369.

Chua, S. E., Cheung, V., McAlonan, G. M., Cheung, C., Wong, J. W., Cheung, E. P. T., ... Tsang, K. W. T. (2004). Stress and psychological impact on SARS patients during the outbreak. The Canadian Journal of Psychiatry, 49(6), 385–390. https://doi.org/10.1177/070674370404900607.

Dugas, M. J., Schwartz, A., & Francis, K. (2004). Brief Report: Intolerance of uncertainty, worry, and depression. Cognitive Therapy and Research, 28(6), 835–842. https://doi.org/10.1023/B:COGR.0000010681.08266.69.

Furer, P., Walker, J. R., Chartier, M. J., & Stein, M. B. (1997). Hypochondriacal concerns and somatization in panic disorder. Depression and Anxiety, 6(2), 78–85. https://doi.org/10.1002/(SICI)1520-6399(199702)6:2<78::AID-ADA3.0.CO;2-I.

Geçgin, F. M., & Sahranç, Ü. (2017). The relationships between intolerance of uncertainty and psychological well-being. Sakarya University Journal of Education, 7(4), 739–755.

Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 epidemic in China: A web-based cross-sectional survey. The Lancet, 395(10228), 949. https://doi.org/10.1016/S0140-6736(20)30419-0.

Kang, L., Li, Y., Hu, S., Chen, M., Yang, C., Yang, B. X., ... Liu, Z. (2020). The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. The Lancet Psychiatry, 7(3), Article e14. https://doi.org/10.1016/S2215-0366(20)30047-X.

Kharma, M., Amer, M., Tarakji, B., Aws, G., & Alalwani, M. (2015). Assessment of the awareness level of dental students toward Middle East Respiratory Syndrome-coronavirus. Journal of International Society of Preventive and Community Dentistry, 5(3), Article e4. https://doi.org/10.3106/jispcd.2015.03.04.

Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., ... Hu, S. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Network Open, 3(3), e203976. https://doi.org/10.1001/jamanetworkopen.2020.3976.

Lee, S. M., Kang, W. S., Cho, A.-R., Kim, T., & Park, J. K. (2018). Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. Comprehensive Psychiatry, 87, 123–127. https://doi.org/10.1016/j.comppsych.2018.04.003.

Lehmann, M., Brunenahl, C. A., Löwe, B., Addo, M. M., Schmiedel, S., Lohse, A. W., & Schramm, C. (2015). Ebola and psychological stress of health care professionals. Emerging Infectious Diseases. https://doi.org/10.3202/eid2105.141988.

Lü, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Teng, Y., ... Feng, Z. (2020). Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. New England Journal of Medicine, 382(13), 1199–1207. https://doi.org/10.1056/NEJMo1200316.

Lin, C.-Y., Yang, Y.-C., Wu, Y.-H., Chang, J., Chan, C.-H., & Yang, D. Y. (2007). The psychological effect of severe acute respiratory syndrome on emergency department staff. Emergency Medicine Journal. https://doi.org/10.1136/emj.2006.035089.

Lo, Y.-C., Shu, B.-C., Chang, Y.-Y., & Lung, F.-W. (2006). The mental health of hospital workers dealing with severe acute respiratory syndrome. Psychotherapy and Psychosomatics, 75(6), 370–375. https://doi.org/10.1159/000095443.

Mak, I. H. C., Chu, C. M., Pan, P. C., Yu, M. G. C., & Chan, V. L. (2009). Long-term psychiatric morbidity among SARS survivors. General Hospital Psychiatry. https://doi.org/10.1016/j.genhospsy.2009.03.001.

McAlonan, G. M., Lee, A. M., Cheung, V., Cheung, C., Tsang, K. W. T., Sham, P. C., ... Wong, J. W. (2007). Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. The Canadian Journal of Psychiatry, 52(4), 241–247. https://doi.org/10.1177/070674370705200406.

Nemati, M., Ebrahimi, B., & Nemati, F. (2020). Assessment of Iranian nurses’ knowledge and anxiety toward COVID-19 during the current outbreak in Iran. Archives of Clinical Infectious Diseases. https://doi.org/10.5812/archcid.102848 (In Press In Press).

NMBA (2020). COVID-19 guidance for nurses and midwives (Retrieved April 12, 2020, from Nursing and Midwifery Board of Australia website:) https://www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/COVID19-guidance. aps.
Öner, N., & LeCompte, W. A. (1983). State-trait anxiety inventory handbook. Boğaziçi University Publications.

OSHA (2020). Guidance on preparing workplaces for COVID-19. Retrieved from https://www.osha.gov/Publications/OSHA3998.pdf.

Perlman, S. (2020). Another decade, another coronavirus. New England Journal of Medicine, 382(8), 760–762. https://doi.org/10.1056/NEJMe2001126.

Republic of Turkey Ministry of Health (2020). Current situation in Turkey (Retrieved April 12, 2020, from Republic of Turkey Ministry of Health website) https://covid19.saglik.gov.tr/.

Rothe, C., Schunk, M., Sothmann, P., Bretzel, G., Frosch, G., Wallrauch, C., ... Hoelscher, M. (2020). Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. New England Journal of Medicine, 382(10), 970–971. https://doi.org/10.1056/NEJMoa2001468.

Ruths, D., & Pfeffer, J. (2014). Social media for large studies of behavior. Science, 346(6213), 1063–1064. https://doi.org/10.1126/science.346.6213.1063.

Sari, S., & Dağ, I. (2009). Problem solving style, hopelessness, helplessness and haplessness as the predictors of psychopathology assessed by MMPI-2. Anatolian Journal of Psychiatry, 10, 261–270.

Sariçam, H., Erguvan, F. M., Akin, A., & Akça, M.Ş. (2014). The Turkish short version of the intolerance of uncertainty (IUS-12) scale: The study of validity and reliability. Route Educational and Social Science Journal, 1(3), 148–157.

Social Media Research Group (2016). Using social media for social research: An introduction (Retrieved from) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/524750/GSR_Social_Media_Research_Guidance_Using_social_media_for_social_research.pdf.

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). STAI manual for the state-trait anxiety inventory. (“Self-evaluation questionnaire”). Consulting Psychologists Press. https://doi.org/10.1037/0049-000-000.

Swift, P., Cyhlarova, E., Goldie, I., & O’Sullivan, C. (2014). Living with anxiety: Understanding the role and impact of anxiety in our lives. Mental Health Foundation, Tovilovic, S., Novovic, Z., Milic, L., & Jovanovic, V. (2009). The role of trait anxiety in induction of state anxiety. Psychologie. https://doi.org/10.2298/psi0944911.

Wang, W., Tang, J., & Wei, F. (2020). Updated understanding of the outbreak of 2019 novel coronavirus (2019-nCoV) in Wuhan, China. Journal of Medical Virology, 92(4), 441–447. https://doi.org/10.1002/jmv.25689.

WHO (2019). Coronavirus disease (Covid-19) outbreak: Rights, roles and responsibilities of health workers, including key considerations for occupational safety. World Health Organization (WHO).

WHO (2020). Coronavirus (Retrieved April 12, 2020, from World Health Organization (WHO) website) https://www.who.int/health-topics/coronavirus#tab=tab_1.

Wong, T. W., Yau, J. K. Y., Chan, C. L. W., Kwong, R. S. Y., Ho, S. M. Y., Lau, C. C., ... Lit, C. H. (2005). The psychological impact of severe acute respiratory syndrome outbreak on healthcare workers in emergency departments and how they cope. European Journal of Emergency Medicine, 12(1), 13–18. https://doi.org/10.1097/00036311-200502000-00005.

Wu, F., Zhao, S., Yu, B., Chen, Y.-M., Wang, W., Song, Z.-G., ... Zhang, Y.-Z. (2020). A new coronavirus associated with human respiratory disease in China. Nature, 579(7798), 265–269. https://doi.org/10.1038/s41586-020-2008-3.

Wu, P., Fang, Y., Guan, Z., Fan, B., Kong, J., Yao, Z., ... Hoven, C. W. (2009). The psychological impact of the SARS epidemic on hospital employees in China: Exposure, risk perception, and altruistic acceptance of risk. Canadian Journal of Psychiatry, 54(5), 302–311. https://doi.org/10.1177/070674370905400504.

Yılmaz, U., Timur, S., & Ege, E. (2005). Investigation of worries and state-trait anxiety on children’s care of midwives and nurses working at hospital. Atatürk University Journal of School of Nursing, 8(2), 63–73.

Zhou, P., Yang, X. L., Wang, X. G., Hu, B., Zhang, L., Zhang, W., ... Shi, Z. L. (2020a). A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature. https://doi.org/10.1038/s41586-020-2007-7.

Zhou, P., Yang, X.-L., Wang, X.-G., Hu, B., Zhang, L., Zhang, W., ... Shi, Z.-L. (2020b). A novel coronavirus associated with human respiratory disease in China. New England Journal of Medicine, 382(10), 970–971. https://doi.org/10.1056/NEJMoa2001017.

Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., ... Tan, W. (2020). A novel coronavirus from patients with pneumonia in China, 2019. New England Journal of Medicine, 382(2), 727–733. https://doi.org/10.1056/NEJMoa2001017.

Zhu, Z., Xu, S., Wang, H., Liu, Z., Wu, J., Li, G., ... Wang, W. (2020). COVID-19 in Wuhan: Immediate psychological impact on 5062 health workers (MedRxiv)https://doi.org/10.1101/2020.02.20.20025338.