Female Nurses' Experience of Psychological Changes when Caring COVID-19 Patients in Indonesia: A Qualitative Study

Ira Kusumawaty[1], Suzanna Suzanna[2], Yunike Yunike[1], Marlinda Marlinda[3], Arif Setyo Upoyo[4]*

[1]Department of Nursing, Politeknik Kesehatan Kemenkes Palembang, Palembang, Indonesia; [2]Department of Psychiatric Nursing, IkesT Muhammadiyah Palembang, Palembang, Indonesia; [3]Department of Nursing, Universitas Muhammadiyah Pringsewu, Lampung, Indonesia; [4]Department of Nursing, Faculty of Health Sciences, Universitas Jenderal Soedirman, Purwokerto, Indonesia

Abstract

BACKGROUND: Nurses as health workers at the frontline have major challenges in dealing with COVID-19. The COVID-19 pandemic can cause the risk of psychological changes in nurses in maintaining the quality of public health services.

AIM: This study aims to explore nurses' experiences through their psychological changes when giving treatment to COVID-19 patients.

DESIGN AND METHOD: This qualitative research employed a phenomenological approach. Purposive sampling was applied to determine the participants with criteria of female nurses caring COVID-19 patients and working in hospitals until achieved data saturation. The data were collected by interviewing participants through phone and video calls. In-depth interview recordings were presented in transcriptions, and the contents were analyzed into codes, categories, and themes.

RESULTS: Eight nurses participated in this study. This research resulted three themes: Self-surrender during early nursing care for COVID-19 patients, acceptance of the feelings and achievements as COVID-19 nurses, and self-empowerment supported by the environment.

CONCLUSIONS: The psychological changes during the nursing care start from self-surrender in the early period of COVID-19 patient care, self-acceptance for any feelings and achievements as COVID-19 nurses, to the forms of self-empowerment and environmental support.

Introduction

The COVID-19 virus as the cause of the coronavirus disease that attacks acute respiratory function generally has clinical symptoms, namely, fever, cough, shortness of breath, and loss of sense of smell. However, there are asymptomatic or non-existent illness symptoms on some patients that cause risks of transmission to vulnerable groups [1], [2]. Coronavirus spreads globally and quickly all over the world and became a global pandemic when this research was employed. In April 2020, data showed that there were more than 2 million confirmed cases in the world with more than 160 deaths, and more than 4000 people died in China [3]. COVID-19 development data with confirmed cases in Indonesia have increased considerably, including the death toll [4], [5], [6], [7], [8]. Preventive and curative efforts are made to reduce the number of deaths and diseases caused by COVID-19 virus exposure [9], [10]. Preventive efforts are made by having a healthy and clean lifestyle, minimizing outdoor activities, and wearing masks. Meanwhile, curative efforts are made by health care workers in the form of treatment for COVID-19 patients with poor health conditions [11], [12].

Health care workers, especially nurses, have high infection risks since they are very close to patients when providing nursing care [13], [14]. It is also explained in a previous qualitative study that describes the psychological stress felt by nurses when working in COVID-19 treatment installation, such as professional conflicts, fear, anxiety, stigmatization, discomfort, social isolation, burnout, and work-related stress, finally, it has an impact on the decreasing in the quality of public health services [15], [16], [17], [18] Meanwhile, great attention has been given to nurses and health-care providers aim to improve of the quality of public health services during the COVID-19 pandemic [19].

Another qualitative study showed that health-care providers, especially doctors and nurses, possess higher risks of mental health problems such as insomnia, stress, anxiety, and depression [14], [20], [21]. The fear and anxiety felt by nurses due to the high risks of treating COVID-19 patients become a very interesting case to be identified comprehensively in a qualitative

study, particularly relating to nurses' experiences of various psychological changes when treating COVID-19 patients. This study focuses on the nurses in a number of referral hospitals in South Sumatera and Palembang as a COVID-19 red zone. The study aims to identify the psychological changes of female nurses who work in the COVID-19 ward.

Design and Methods

Materials and methods

The empirical-phenomenological approach employed in this research aimed to obtain a description of the nurses' experiences and their psychological changes when giving treatments to COVID-19 patients in COVID-19 referral hospitals. Researchers also conducted a checklist using Consolidated criteria for Reporting Qualitative research (COREQ) consist of 32 criteria. This guide directs in detail about methods, information analysis, and relatedness of analysis results.

Selection and description of the participants

The data collection in this qualitative study valid information interview by phone, before the interview, and informed consent was conducted face-to-face explaining in detail and offering several interview methods and making an agreement. During the interview process through video call, face and voice recordings were conducted 2–3 times. The participants were recruited through purposive sampling with predetermined inclusion criteria. The inclusion criteria were female nurse and work in the COVID-19 referral hospitals in South Sumatera province. The sampling size was determined by data saturation, the point at which no more new data or themes related to the informant's experiences emerged. The informants' characteristics described some important aspects, such as age, sex, marital status, employment status, duration of work experience, hospitalization rooms, and number of work days.

Data collection

The research team explained and distributed informed consent meet directly with the participants as well as asked for the agreement and contract to conduct interviews. Semi-structured in-depth interviews through phone and video calls were conducted at agreed period from April 15 to 27, 2020. With the permission from all participants, the interviews were recorded in an audio recorder. The

questions consisted of the age, sex, marital status, employment status, duration of work experience, hospitalization rooms, and number of work hours/days from the date they began to work in the COVID-19 installation. Some of the questions given to the nurses were about how they felt when being assigned to COVID-19 installation, their attitudes when performing their job as COVID-19 nurses assigned to COVID-19 installation and other duties, how their family and the hospital supported COVID-19 nurses, and the attitudes of the community toward their profession as COVID-19 nurses. The data collection was done simultaneously with the data analysis. The voice or audio recordings were transcribed word by word in 24 h after the interview, and the interview team also reviewed the accuracy of the recording.

Data analysis

The data analysis was done through Haase's adaptation of Colaizzi's method to analyze transcripts. The analysis started by reading the transcription several times to gain profound understanding of the meanings conveyed. The next steps were identifying important phrases, repeating them in general terms, formulating meanings, and validating meanings through discussion of the research team to achieve consensus. The final steps were identifying and grouping themes into clusters and categories to be completely developed into theme descriptions [22], [23].

This strategy was done to ensure data accuracy and reliability, including credibility and transferability. Credibility was achieved through in-depth interviews followed by peer debriefing. Two authors independently analyzed the transcripts by bracketing the data on a number of previously established ideas and systematically adapting Colaizzi's methods. The bracketing process is carried out, namely, by placing the focus of research into the basket, so as not to be mixed with the personal experience of previous researchers so that it becomes unfocused on the purpose of the research. Husserl proposed a method of "emptying oneself of certain beliefs" or bracketing any information derived from a phenomenon without providing justification for the truth of a decision. Phenomena that appear in consciousness are completely natural without being interfered with by the assumptions of observers.

The findings were then compared and discussed by the team to achieve an agreement on the themes, domains, and codes. Meanwhile, transferability was completed by considering the variety of participants' characteristics and quotes mostly obtained from the in-depth interviews. The data privacy was also guaranteed in the process of data collection by employing numbers, instead of names, with quotation codes (I: Interview, N: Nurse, and L: Line) and erasing the identification information from the transcripts. All of

the audio recordings and transcripts were stored in a password-protected computer. During the study, the team followed the references or standard guidelines for qualitative research report.

Ethics approval

The ethical approval for this research was accepted and processed by the board of ethical review or the ethics committee of Health Polytechnic of Ministry Health Palembang (No: 013 KEP/ADM2/March 30, 2020). To ensure the confidentiality of participants in the study, participants did not write their full names. The information submitted will be stored by the researcher, will not be passed on to others, and will only be used for research purposes.

Results

Participants were eight female nurses who meet the inclusion criteria and have met the consideration of data homogeneity and gender in the scope of emotional problems. All of the participants treated COVID-19 patients with various durations, from different departments, with different starting points in treating the patients, and different work experiences that would be described in the following discussion (Table 1).

Table 1: The characteristics of participants

Nurses number	Age (years)	Marital status	Work experience years	Original department	COVID-19 ward start date	Days worked COVID-19 ward before interview
Nurse 1	35	Married	12	Emergency	April 20	24
Nurse 2	37	Married	15	Emergency	April 25	39
Nurse 3	32	Single	10	Emergency	April 20	18
Nurse 4	33	Married	13	Emergency	May 17	28
Nurse 5	40	Married	19	Emergency	April 18	30
Nurse 6	42	Married	16	Internal	May 20	25
Nurse 7	35	Married	13	Internal	June 17	28
Nurse 8	36	Married	13	Internal	May 18	30

Information from participants had reached data saturation because the information submitted had the same pattern and no different information was found**.** The next step was analysis of the in-depth interview results starting from selecting the quotations combined in quotation groups as the basis for coding to be formulated into categories, domain, and themes. Based on the themes formulated, there was a series of events starting from the early stage when nurses dealt with COVID-19 patients until the self-empowerment efforts made by the nurses to deal with some psychological aspects. Tables 2-4 show the process of theme formulation started by quoting the in-depth interview results of the eight female nurse participants. Three mayor themes were self-surrender during early nursing care for COVID-19 patients, acceptance of the feelings and achievements as

Table 2: Theme identification of nurses' psychological changes

Participants	COVID-19 nurses
Theme 1: Nurses' self-surrender in the early treatment of COVID-19 patients	
Domain	
Nurses' submission through self-surrender	
Category	
Compulsion to perform their duties	
Coding	
*Self-surrender attitude, ignorance, life bait, minimal attention and protection, demand for responsibility and loyalty	
Quotation	*"if I am very anxious and this job becomes burdensome, I submit and surrender everything to Allah SWT in my night prayers" (I2, N2, L25)*
Quotation	*"we all have direct contacts with confirmed patients, we are afraid, while the protection policy is still minimal, we are just ignored" (I2, N16, L18)*
Quotation	*"yes, we do realize that being ready to be a COVID-19 nurse means we must be ready to surrender our lives" (I3, N16, L12)*
Quotation	*"there are only 11 nurses in my room but there is only one set of personal protective equipment, so we have to take turns to wear it, and those who do not get one can wear a raincoat" (I2, N16, L16)*
Quotation	*"I always tell myself that this is my responsibility, I must be able to perform this profession" (I1, N7, L5)*
Quotation	*"whatever the condition we have, this job must be completed well, I should give the best service" (I1, N3, L11)*
Category	
Situational psychological changes	
Coding	
*Despair, low self-esteem, insult, and isolation	
Quotation	*"the isolation stigma is cruel, we take care of them, but they see us cynically" (I1, N8, L10)*
Quotation	*"I don't know, sometimes they seem disgusted with our profession, and it really hurts, we feel tired, desperate with this situation, tired but not physically" (I1, N15, L28)*
Quotation	*"my family will get infected and underestimated by the people because the wife is a nurse, so sad and I really feel guilty"(I1, N7, L3)*
Quotation	*"Not only other people, what really hurts is that my own friends insult me as "virus carrier" and they don't want to make friends with me because of my duty at the COVID-19 installation" (I1, N36, L8)*

COVID-19 nurses, and self-empowerment supported by the environment.

Table 3: Theme identification of nurses' psychological changes

Participants	COVID-19 nurses
Theme 2: Self-acceptance of the feeling and achievement as COVID-19 nurses	
Domain	
Achievement process and feeling in self-acceptance dimension	
Category	
Raging emotional expression	
Subcategory	
Inner self-emotional feeling	
Coding	
*The emerging feelings were emotional instability, helplessness, internal torture, and loneliness	
Quotation	*"all mixed feelings, angry, sad, confused, tough with the condition, we work with danger, but people see us like that. also stressful, worried that my child will get infected"(I1, N3, L5)*
Quotation	*"maybe, if only physically tired, we can still have a rest, but it is our heart and feeling that are sick. tired soul, sleeping is difficult due to helplessness" (I3, N6, L14).*
Quotation	*"this pandemic is like an open heart ache.still have to feel it and strive to get up though although it really hurts, dilemmatic between the duty and family" (I1, N7, L13)*
Quotation	*"loneliness haunts me when I am alone, far from my family and friends, and my spirit decreases, my heart aches"(I1, N4, L5)*
Subcategory	
Externally affected emotional feelings	
Coding	
*The emergence of others' accusation (insults)	
Quotation	*"when I go home from work, the security guard in my real estate told me not to open the car window because I bring the virus"(I2, N2, L11)*
Quotation	*"in the community environment, I was also accused, don't spread the virus from the hospital" (I3, N6, L17)*
Category	
The forms of nurses' self-actualization and professional obligation	
Coding	
*Soul contentment, self-pride, new challenge, and professional obligation	
Quotation	*"well this is the real fight, when sending patients home, I feel very satisfied and happy" (I2, N2, L6)*
Quotation	*"when patient goes home healthily, I feel so proud as a humanity hero, that is pandemic nurse" (I1, N7, L4)*
Quotation	*"so many changes since the COVID-19 happens, behavior changes, we as nurses must be ready with so many changes and challenges" (I2, N1, L2)*
Quotation	*"there must be fear, but no matter what, this is our profession, we have to be ready"(I2, N4, L1)*

Discussion

The investigative study employed a qualitative design with the phenomenological approach. It aimed to explore comprehensively the nurses' psychological changes when performing their duty as COVID-19 nurses in COVID-19 referral hospitals in South Sumatera Province, Indonesia. The results of the investigation showed that there were three major themes felt by the nurses. In the early stage, the nurses felt the negative energy surrounding themselves, and as the process of caring for COVID-19 patients continued, positive energy grew and minimized all the negative energy emerging in the early phase of treatment. The results of several systematic reviews explain the situation when nurses face an emergency of either national or global pandemic that will automatically trigger psychological stress reaction of the nurses due to the potential danger, threat to individuals and the environment, fear, grief and loss, uncertainty, increased deaths, and infectious disease transmission [24], [25]. The emergence of diverse negative emotions will lead to weakness, tense, and vulnerability of the cells, organs, and the systems of the human body, particularly the immune system. This has an impact on nurses' health, performance, burnout, and safety that will affect the quality of nursing care for the patients if not immediately solved [21], [26], [27].

Table 4: Theme identification of nurse's psychological changes

Participants	COVID-19 nurses
Theme 3: Forms of self-empowerment and environmental support	
Domain	
An effort to solve problems through empowerment and support	
Category	
The measure to solve problems	
Coding	
*Deep cry, self-contemplation, the power of prayers, suggestion, positive vibration	
Quotation	*"the way to strengthen myself is by crying alone deeply so that I feel relieved" (I1, N1, L12)*
Quotation	*"there is a way that I do by contemplating alone silently"(I1, N4, L13)*
Quotation	*"by praying, my heart becomes peaceful and I get strength from God"(I1, N5, L15)*
Quotation	*"thinking positively to adapt with the difficult situation becomes the best way"(I3, N7, L16)*
Quotation	*"if there is someone who asks about my condition, it means a lot, because when I am worried, I need someone to support me" (I2, N8, L19)*
Category	
Various environmental supports	
Subcategory	
Forms of family support	
Coding	
*Expressions of love and care from the family	
Quotation	*"I like to smile when there is my family.sending messages or calling then saying I miss you or love you." (I1, N4, L24)*
Quotation	*"my mother always sends me messages to remind me to stay healthy, eat a lot, consume vitamins, and pray" (I2, N5, L29)*
Subcategory	
Forms of support from colleagues and media	
Coding	
*Friends' support, colleagues' empathy, and care of the media	
Quotation	*"if I meet my coworkers, it feels like I have relatives who support each other"(I1, N4, L23)*
Quotation	*"our colleagues from clinics not hospitals support us with equipment and vitamins, they really care about us"(I2, N3, L14)*
Quotation	*"the videos from media about the nurse's struggle really mean a lot and they show that the public respond to our struggle"(I2, N6, L36)*

The age of participants in this study in the middle adult category has more complex emotional development tasks ranging from career paths, family life, and economic needs. Meanwhile, women have higher sensitivity, sensitivity, and emotional reactions compared to men. The investigation results of this research revealed the process of psychological changes of the nurses in their early stage of duty as frontliners with humanity mission. The first theme described self-surrender in the early stage of caring for the patients. Fear, anxiety, and severe stress haunted the nurses' mind when they received the letter of assignment as COVID-19 nurses working in the infection emergency room. Most nurses instantly rejected the assignment by complaining to other nurses, and only a small number of nurses proposed themselves voluntarily to help caring for COVID-19 patients for the sake of humanity. The burden from the external environment and reluctance to work began with some negative energy and feelings in the form of infection threat, death, ignorance, alienation, insults, self-surrender, and adversity. However, the internal conflicts in their mind, feelings, and attitudes encouraged them to change their perceptions that whatever they felt about the duty, it was a form of responsibility, loyalty, commitment, and professional obligation as nurses. Such process of psychological changes is supported by previous research employing phenomenological approach to a group of 23 nurses in the city of Wuhan, China, where the first COVID-19 incident occurred. The results describe the presence of ambivalence pattern or feelings of confusion and emotional exhaustion that emerge in the early and middle stages of performing their duty, fear, restlessness, anxiety, burnout, convulsion, and depression, along with the responsibility and duty to perform their profession as nurses, but the support of the whole team can reduce the negative feelings, thereby encouraging the nurses' mindset to prioritize responsibility [28], [29], [30].

A qualitative study in Henan, China, explains the psychological experiences of 20 COVID-19 nurses collected through face-to-face interviews and phone calls. The established theme is a summary of the emotional changes felt by nurses when caring for patients. In the early stage, nurses experience negative emotions marked by burnout, helplessness, discomfort, extreme anxiety and fear, and extremely high intensity and pressure. During such particular situation, the nurses make some adjustments through good coping mechanisms supported by the team with rational cognition and altruistic action. Self-reflection with full professional responsibility and increased compassion to help human beings grow their spirit although they face a difficult situation. Finally, the last phase of the psychological changes experienced by the nurses shows positive emotional development along with negative emotion through their positive coping mechanisms, cognitive evaluation, and full responsibility to provide the best service as nurses amidst a pandemic [14], [15], [30].

This is in line with previous qualitative research which employed focused group discussion to identify the positive energy when nurses experience retention in working. There are six themes, including professional

responsibility mission, achievement, working spirit, nursing meaning, nurses' personal characteristics, and intrinsic treatment from the nurses through positive thinking; therefore, it is assumed that the existence of positive energy empowered by the nurses as their stable and unchangeable inner power can inspire them amidst various retentive situations [31]. The same concept is explained in the psychological changes of the nurses who served patients with MERS-CoV syndrome in South Korea. There are four themes of changes with interesting conditions experienced by the nurses, including a dangerous situation being accepted as a new challenge with stronger responsibility, strong pressure such as extreme stress, unavoidable fear, and the community's stigma, all of which trigger the nurses to survive with the strong feeling of fraternity combined with the sense of humanity and support from the community, the nurses' enormous altruistic instinct that emerged spontaneously, and the nursing basic concept of being "a light in the darkness" as well as the nursing effort to have built a disaster preparedness system [32].

Self-acceptance for the feelings and achievements as a COVID-19 nurse became the second theme of the investigation results in this research. Self-acceptance is one of the aspects in the concept of psychological well-being. Psychological well-being is described as an individual's psychological condition based on the fulfillment of positive psychological criteria, a full achievement of the individual's psychological potential. Individuals who accept the strengths and weaknesses within themselves can create a positive relationship with others and the environment, make their own independent decisions, become competent, possess life goals, and get through every development stage [33]. Self-acceptance becomes the main part of psychological well-being that is strongly correlated with the individuals' positive perception toward themselves. The foundation of self-acceptance is built with honest self-assessment, in which individuals are aware of their failure and internal constraints to be able to accept and understand themselves [34], [35], [36].

This theme is in line with previous research that analyzes nurses' psychological changes in caring for COVID-19 patients. The results show that the nurses in Henan, China, can manage their self-assessment, deal with themselves including the psychological function, make a decision with the team support, and perform altruistic actions. The above psychological changes are strongly related to self-acceptance in the concept of psychological well-being [14]. The nurses' self-acceptance for the feelings and achievements as COVID-19 nurses as the second theme in this research was observed as they were able to assess themselves when they had a sense of helplessness, inner conflicts, loneliness attack, and emotional instability. Nevertheless, as they performed their duty to treat COVID-19 patients, they felt self-contentment, self-pride, and new challenges as nurses needed in the humanity mission. The nurses' self-acceptance in this research is also supported by previous research on the experiences of the doctors and nurses in China during their mission in the COVID-19 pandemic crisis. There is a positive perception experienced by the team of health care workers after struggling with the negative energy, and there is understanding of the ongoing critical situation that it is "a challenge to accept and handle the COVID-19 patient installation" [1], [15], [21], [28].

The forms of self-empowerment and environmental support became the last theme in the results of this research. The nurse's self-empowerment as a form of attitudes toward problem solving included, among others, deep cry, the power of prayers, positive vibration, breathing relaxation, intentional challenges, and contemplation. Meanwhile, the environment truly supported them in the form of family's attention, caring expression from friends and family, and media's attention.

The abundant social support addressed to the nurses in China during their mission in the COVID-19 pandemic crisis is also described in previous research. The forms of social support are the government's reward, large attention from the family and media, as well as psychological services [20], [21], [37]. Meanwhile, the coping mechanisms performed by the nurses in dealing with the pandemic pressure, according to the previous studies, are breathing exercise, prayers, humors, listening to music, meditation, and self-contemplation. It is proved that all of the coping mechanisms adapted by nurses under a disaster situation can reduce stress and pressure [14], [38]. Social support has a significant role for nurses in coping with a major disaster as it will synergize with their internal power, such as survival adaptation, self-acceptance, and positive response in performing humanity mission [14], [17], [20]. The formation of self-empowerment, including emotional adaptation, gratitude, prayers, attention from colleagues, and great support from the government of Wuhan, China, in dealing with the disaster emergency situation becomes the third stage of the process of psychological changes also experienced by the nurses in this study. It can enhance the value of professionalism and dignity of nurses as the warriors of humanity mission in the city with the first incident of COVID-19 in the world [29].

Limitations of study

The limitations of this study were participants who only came from two departments, namely, emergency department and internal departments at one government hospital. Conditions in both departments are less able to describe the overall condition across the department. The results of this study cannot necessarily be applied to other hospitals even with the same hospital status. The age range of the adjacent nurse cannot be generalized to be applied to all nurses.

Conclusions

The psychological changes during the nursing care for COVID-19 patients start from self-surrender in the early period of COVID-19 patient care, self-acceptance for any feelings and achievements as COVID-19 nurses, to the forms of self-empowerment and environmental support. The psychological changes during the pandemic emergency situation can be anticipated earlier through the nurses' self-awareness of the duties and responsibilities as nurses. Most of all, nurses who have good self-awareness will be able to face all psychological changes in nursing care during a pandemic. Sincerity and pride in the form of caring for patients grow along with their acceptance of the duties as COVID-19 nurses. It is expected that the nursing management division can facilitate counseling for nurses and their families in overcoming the changes and coping with psychological problems felt by the nurses while performing their duties.

Acknowledgments

References

1. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. Lancet. 2020;395(10223):470-3. https://doi.org/10.1016/S0140-6736(20)30185-9
   PMid:31986257

2. World Health Organization. Coronavirus Disease Situation Report. Vol. 19. Geneva: World Health Organization; 2020.

3. Vieira CM, Franco OH, Restrepo CG, Abel T. COVID-19: The forgotten priorities of the pandemic. Maturitas. 2020;136:38-41. https://doi.org/10.1016/j.maturitas.2020.04.004

4. Setiati S, Azwar MK. COVID-19 and Indonesia. No. April. Geneva: World Health Organization; 2020.

5. Djalante R, Lassa J, Setiamarga D, Sudjatma A, Indrawan M, Haryanto B. Progress in Disaster Science Review and Analysis of Current Responses to COVID-19 in Indonesia: Period of January to March 2020. Vol. 6; 2020. https://doi.org/10.1016/j.pdisas.2020.100091

6. Gutenbrunner C. COVID-19 Pandemic in Indonesia: Situation and Challenges of Rehabilitation COVID-19 Pandemic in Indonesia; 2020.

7. Apresian SR. Responding to the COVID-19 Outbreak in Indonesia: Lessons from European Countries and South Korea; 2020.

8. Susanna D. When will the COVID-19 Pandemic in Indonesia End? Vol. 15. 2020. p. 160-2. https://doi.org/10.21109/kesmas.v15i4.4361

9. Gao J, Zheng P, Jia Y, Chen H, Mao Y, Chen S, _et al_. Mental health problems and social media exposure during COVID-19 outbreak. PLoS One. 2020;15(4):1-10. https://doi.org/10.1371/journal.pone.0231924
   PMid:32298385

10. Chang YK, Hung CL, Timme S, Nosrat S, Chu CH. Exercise behavior and mood during the COVID-19 pandemic in Taiwan: Lessons for the future. Int J Environ Res Public Health. 2020;17(19):1-17. https://doi.org/10.3390/ijerph17197092
    PMid:32998207

11. Wu CC, Lin CC, Chang SC, Chou HL. Identifying the positive energy for retention in clinical nurses: A focus group study. J Nurs Manag. 2019;27(6):1200-7. https://doi.org/10.1111/jonm.12792
    PMid:31102544

12. Olson K, Young RA, Schultz IZ. Handbooks in Health, Work, and Disability Handbook of Qualitative Health Research for Evidence-Based Practice. Berlin: Springer; 2016.

13. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. Lancet Psychiatry. 2020;7(4):300-2. https://doi.org/10.1016/S2215-0366(20)30073-0
    PMid:32085840

14. Sun N, Wei L, Shi S, Jiao D, Song R, Ma L, _et al_. A qualitative study on the psychological experience of caregivers of COVID-19 patients. Am J Infect Control. 2020;48(6):592-8. https://doi.org/10.1016/j.ajic.2020.03.018
    PMid:32334904

15. Chong YY, Cheng HY, Chan HY, Chien WT, Wong SY. COVID-19 pandemic, infodemic and the role of eHealth literacy. Int J Nurs Stud. 2020;108:103644. https://doi.org/10.1016/j.ijnurstu.2020.103644
    PMid:32447127

16. Fernandez R, Lord H, Halcomb E, Moxham L, Middleton R, Alananzeh I, _et al_. Implications for COVID-19: A systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. Int J Nurs Stud. 2020;111:103637. https://doi.org/10.1016/j.ijnurstu.2020.103637
    PMid:32919358

17. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, _et al_. Mental health care for medical staff in China during the COVID-19 outbreak. Lancet Psychiatry. 2020;7(4):e15-6. https://doi.org/10.1016/S2215-0366(20)30078-X
    PMid:32085839

18. Otu A, Charles CH, Yaya S. Mental health and psychosocial well-being during the COVID-19 pandemic: The invisible elephant in the room. Int J Ment Health Syst. 2020;14(1):38. https://doi.org/10.1186/s13033-020-00371-w
    PMid:32514302

19. Abdelhadi A. Patients' satisfactions on the waiting period at the emergency units. Comparison study before and during COVID-19 pandemic. J Public Health Res. 2021;10(1):1956. https://doi.org/10.4081/jphr.2021.1956
    PMid:33708749

20. Hacimusalar Y, Kahve AC, Yasar AB, Aydin MS. Anxiety and hopelessness levels in COVID-19 pandemic: A comparative study of healthcare professionals and other community sample in Turkey. J Psychiatr Res. 2020;129:181-8. https://doi.org/10.1016/j.jpsychires.2020.07.024
    PMid:32758711

21. Liu Q, Luo D, Haase JE, Guo Q, Wang XQ, Liu S, _et al_. The experiences of health-care providers during the COVID-19 crisis in China: A qualitative study. Lancet Glob Health. 2020;8(6):e790-8. https://doi.org/10.1016/S2214-109X(20)30204-7

PMid:32573443

22. Patton MQ. Nontraditional Regulations, and Innovations in Darning-Centered, Doctoral Education, Including Faculty Meetings That Are Interesting and Important, an Indication of Knovation of the Highest Order; 2002.

23. Sargeant J. Qualitative research Part II: Participants, analysis, and quality assurance. J Grad Med Educ. 2012;4(1):1-3. https://doi.org/10.4300/jgme-d-11-00307.1
PMid:23451297

24. Foli KJ, Reddick B, Zhang L, Krcelich K. Nurses' psychological trauma: They leave me lying awake at night. Arch Psychiatr Nurs. 2020;34(3):86-95. https://doi.org/10.1016/j.apnu.2020.04.011

25. Singh C, Cross W, Munro I, Jackson D. Occupational stress facing nurse academics a mixed-methods systematic review. J Clin Nurs. 2020;29(5-6):720-35. https://doi.org/10.1111/jocn.15150
PMid:31856356

26. Chen CH, Wang J, Yang CS, Fan JY. Nurse practitioner job content and stress effects on anxiety and depressive symptoms, and self-perceived health status. J Nurs Manag. 2016;24(5):695-704. https://doi.org/10.1111/jonm.12375
PMid:27086775

27. Johnson J, Louch G, Dunning A, Johnson O, Grange A, Reynolds C, *et al.* Burnout mediates the association between depression and patient safety perceptions: A cross-sectional study in hospital nurses. J Adv Nurs. 2017;73(7):1667-80. https://doi.org/10.1111/jan.13251
PMid:28072469

28. Sevillano-Jiménez A, Romero-Saldaña M, Molina-Recio G. Nursing role on rapid recovery programmes fast-track. Enferm Clín (Eng Ed). 2018;28(4):266-73. https://doi.org/10.1016/j.enfcle.2017.04.009

29. Zhang Y, Wei L, Li H, Pan Y, Wang J, Li Q, *et al.* The psychological change process of frontline nurses caring for patients with COVID-19 during its outbreak. Issues Ment Health Nurs. 2020;41(6):525-30. https://doi.org/10.1080/01612840.2020.1752865
PMid:32497451

30. Xie J, Tong Z, Guan X, Du B, Qiu H, Slutsky AS. Critical care crisis and some recommendations during the COVID-19 epidemic in China. Intensive Care Med. 2020;46(5):837-40. https://doi.org/10.1007/s00134-020-05979-7
PMid:32123994

31. Wu CC, Lin CC, Chang SC, Chou HL. Identifying the positive energy for retention in clinical nurses: A focus group study. Journal of nursing management. 2019;27(6):1200–1207. https://doi.org/10.1111/jonm.12792

32. Kim Y. Nurses' experiences of care for patients with Middle East respiratory syndrome-coronavirus in South Korea. Am J Infect Control. 2018;46(7):781-7. https://doi.org/10.1016/j.ajic.2018.01.012
PMid:29502886

33. Ryff CD, Keyes CL. The structure of psychological well-being revisited. J Pers Soc Psychol. 1995;69(4):719-27. https://doi.org/10.1037/0022-3514.69.4.719
PMid:7473027

34. Contel JC. Integrated care and the challenge of chronic illness. Enferm Clín (Engl Ed). 2018;28(1):1-4. https://doi.org/10.1016/j.enfcle.2017.12.001
PMid:29352862

35. Pedrola JL. The management of emotions in clinical practice. An intelligent and healing way to improve the health of people. Enferm Clín (Engl Ed). 2018;28(2):77-80. https://doi.org/10.1016/j.enfcle.2018.02.001

36. Munawar K, Choudhry FR. Exploring stress coping strategies of frontline emergency health workers dealing Covid-19 in Pakistan: A qualitative inquiry. Am J Infect Control. 2021;49(3):286-92. https://doi.org/10.1016/j.ajic.2020.06.214
PMid:32649990

37. Shakil MH, Munim ZH, Tasnia M, Sarowar S. COVID-19 and the environment: A critical review and research agenda. Sci Total Environ. 2020;745:141022. https://doi.org/10.1016/j.scitotenv.2020.141022
PMid:32711074

38. Khalid I, Khalid TJ, Qabajah MR, Barnard AG, Qushmaq IA. Healthcare workers emotions, perceived stressors and coping strategies during a MERS-CoV outbreak. Clin Med Res. 2016;14(1):7-14. https://doi.org/10.3121/cmr.2016.1303
PMid:26847480