


Perceived stress, optimism-pessimism, psychological adjustment, and death distress of nurses during the COVID-19 pandemic

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Highlights: (1) High levels of perceived stress increased higher score of psychological adjustment. (2) Pessimism mediates the association of stress with adjustment and death distress. (3) Optimism only mediates the effect of stress on psychological adjustment among nurses.



Objective: the aim of this study is to investigate the relationship between death distress, psychological adjustment, optimism, pessimism and perceived stress among nurses working during the COVID-19 pandemic. **Method:** this study was designed as cross-sectional/cohort. The population of the study involved 408 nurses from Northern Cyprus, which are registered as full members of the Nurse Council. The sample comprised 214 nurses, who volunteered to participate in the study. The study data was collected using a web-based online survey (Demographic form, the Coronavirus Stress Measure, The Optimism and Pessimism Questionnaire, The Brief Adjustment Scale-6, The Death Distress Scale). **Results:** the results indicated that perceived stress significantly and negatively predicted optimism ($\beta = -0.21, p < 0.001$) and pessimism ($\beta = 0.38, p < 0.001$). Perceived stress had significant and positive predictive effects on psychological adjustment ($\beta = 0.31, p < 0.001$) and death distress ($\beta = 0.17, p < 0.01$). Further analysis results revealed that pessimism mediates the association of stress with psychological adjustment and death distress; however, optimism only mediates the effect of stress on psychological adjustment among nurses. **Conclusion:** a low level of pessimism is effective in strengthening nurses' psychological adjustment skills against perceived stress and death distress. Nurses should consider behavioral strategies to help reduce the level of pessimism during periods such as pandemics.

Descriptors: Coronavirus; Death; Emotional Adjustment; Nurses; Optimism; Pessimism.

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Introduction

The World Health Organization reported that there have been 762,791,152 confirmed COVID-19 cases and 6,027,059 deaths worldwide⁽¹⁾. After the first COVID-19 case in Northern Cyprus (NC), the pandemic has continued there as well⁽²⁾.

The pandemic has affected mostly healthcare professionals, who are regarded at high risk in terms of COVID-19 infection⁽³⁻⁴⁾, and especially nurses⁽⁵⁾. The COVID-19 pandemic has imposed major physical, mental, and social impacts on healthcare professionals⁽⁶⁻⁷⁾. Previous studies have reported that healthcare professionals presented high levels of stress, fear, anxiety and suffer from depression and burnout, besides many mental disorders such as post-traumatic stress disorder during the pandemic⁽⁵⁻⁹⁾. Previous studies investigating the effects of the COVID-19 pandemic have focused mainly on its impacts on effects health of healthcare professionals^(6,8,10-11).

Perceived stress is the result of a person's appraisal of a stressor as threatening or non-threatening, and one's own coping abilities⁽¹²⁾. Emergency situations such as the COVID-19 pandemic might be considered as a severe and significant stressor⁽¹²⁻¹³⁾. Previous studies have reported that perceived stress is associated with optimism⁽¹⁴⁻¹⁵⁾, coping strategies⁽¹⁶⁾, emotional distress⁽¹⁷⁾, life satisfaction⁽¹⁰⁾, neuroticism⁽¹²⁾, and psychological adjustment⁽¹⁸⁾ during the COVID-19 pandemic.

Optimism and pessimism, which are defined as one's expectations in positive or negative life events, respectively, constitute cognitive constructs of personality traits in association with various physical and mental health outcomes⁽¹⁹⁾. Optimistic people may experience positive effects on their lives and mental health^(14-15,20). Being a response to stress, psychological adjustment refers to one's psychological adjustment skills to challenging living conditions. If psychological adjustment is noted as the individual ability to cope with daily life difficulties and to control stressors, it can be asserted that traumatic and challenging living conditions can have an impact which compels the psychological adjustment skills of the individual⁽¹⁸⁾.

Another concept that may be associated with stress is death distress. Death distress embodies negative attitudes toward death and involves death anxiety, death depression, and death obsession⁽²¹⁾. High levels of death distress can cause more mental disorders or psychopathology such as depression, anxiety, distress and stress which may increase risk of death and suicidal behaviours⁽²¹⁾.

Determining the psychosocial effects of COVID-19 on nurses and evaluating the relationships between

the psychosocial effects experienced are regarded important in term of referring nurses working in NC to the psychosocial support services to protect their own and their families' health. The aim of this study was to investigate the relationship between death distress, psychological adjustment, optimism, pessimism and perceived stress among nurses who worked during the COVID-19 pandemic in NC. To this end, we established the following hypotheses:

H1: Optimism levels of nurses would negatively affect their levels of perceived stress during the COVID-19 pandemic.

H2: Pessimism levels of nurses would positively affect their levels of perceived stress during the COVID-19 pandemic.

H3: Death distress levels of nurses would positively affect their levels of perceived stress during the COVID-19 pandemic.

H4: Psychological adjustment levels of nurses would positively affect their levels of perceived stress during the COVID-19 pandemic.

H5: Optimism, pessimism, psychological adjustment and death distress are related with perceived stress during the COVID-19 pandemic.

Method

Design of the study

The study was designed to be cross-sectional and descriptive.

Population and place

Northern Cyprus is a state that comprises the northeastern portion of the island of Cyprus. The population of Northern Cyprus is estimated to be 313,720 people (2023) and mostly Turkish Cypriots and Turks live in the country. One thousand and six nurses were working in Northern Cyprus and they were member of Nurses Council. The population of the study involved 408 nurses, who were Northern Cyprus nationals and registered as full members of the Council. All nurses registered to the Council are Turkish Cypriot citizens.

Selection-exclusion criteria and sample definition

The selection criteria of the study were not being an academic nurse and having a full-time work among the nurses who are the main members of the Council. The sample of this study consisted of 214 working nurses who volunteered to participate in the study between

December 28, 2020 and May 28, 2021. It was aimed to reach the entire research population and no sampling technique was used. The sample group represents the 52.4% of the population. Nurses who did not have a phone, email address or social media address in the records were excluded from the scope of the research.

Data collection process

The study data was collected using a web-based online survey. Permission was obtained from the Council to access the contact numbers and e-mails of working nurses. A list of the members' personal and contact information (e-mail and phone number) was then received. In order to collect the data, the online survey link was sent by e-mail to all the working nurses who were members of the Council.

The survey link was shared through e-mails, social media (e.g., Facebook) and smartphone applications (e.g., WhatsApp). Nurses who did not have or do not use e-mail and social media could not be reached for data collection.

Tools used to collect information

The Coronavirus Stress Measure (CSM) is a five-item self-report rating measure (e.g., "How often have you been upset because of the COVID-19 pandemic?") used to assess perceived stress during the pandemic⁽²⁰⁾. The scale items are rated on a five-point Likert type scale (never = 0 and very often = 4). Research reported that the scale had strong internal reliability estimate with the Turkish sample⁽²⁰⁾.

The Optimism and Pessimism Questionnaire (OPQ-6) is a six-item self-report rating scale (e.g., "I hope many things will be better in the future") used to assess the optimism and pessimism of Turkish people⁽¹⁴⁾. All items are rated based on a five-point rating scale (strongly disagree = 1 to strongly agree = 5). Previous study showed that the OPQ-6 had strong internal reliability estimates⁽¹⁴⁾.

The Brief Adjustment Scale-6 is a six-item self-report scale used to measure psychological adjustment problems of people. All items are rated based on a seven-point scale (not at all = 1 to extremely = 7). Higher scores represent as a greater level of psychological maladjustment problems⁽²¹⁾. Research reported that scale had strong internal reliability estimates with Turkish people⁽²²⁾.

The Death Distress Scale is a nine-item self-report rating scale used to assess thoughts and feelings related to death and the process of dying. The scale items are scored using a five-point Likert type scale (never = 1, always = 5)⁽²³⁾. Previous study stated that

this scale had strong internal reliability estimate with the Turkish sample⁽²⁴⁾.

Data analysis

All study analyses were performed utilizing AMOS version 24 and SPSS software version 25. We first examined descriptive statistics, the assumptions of analyses, and correlations for the study measures. Normality assumption was checked utilizing skewness and kurtosis values with their decision rules⁽²⁵⁻²⁶⁾. Pearson correlation was then performed to investigate the relationships between the stress, optimism, psychological adjustment, and death distress. Then, a structural equation modeling was carried out to determine the role of optimism and pessimism in the association between perceived stress and psychological adjustment and death distress. Results from the mediation model were interpreted using data-model fit statistics with their decision points: comparative fit index (CFI) and Tucker-Lewis index (TLI) values ≥ 0.95 showed a good data-model fit; the root mean square error of approximation (RMSEA; with 90% CI) and the standardized root mean square residual (SRMR) scores ≤ 0.08 indicated a good data-model fit, while values ≤ 0.05 indicated a close data-model fit⁽²⁷⁻²⁸⁾. The bootstrap (with 95% CI) method was also used to evaluate the significance of indirect effects with 5,000 resamples to estimate⁽²⁹⁾.

Ethical aspects

The study was approved by the ethics committee of the Near East University on December 24, 2020 (IRB No.2020/86/1223). The researchers obtained permission from the authors of the tools to use them. It is explained in the Google Form that the nurses' answers would be kept confidential.

Results

The sample comprised of 91.6% female and 8.4% male, aged between 22 to 65 years (Mean and Standard deviation, 32.89 ± 6.45 years). The demographic characteristics of the participants are shown in Table 1.

Descriptive Statistics and Correlation Analyses: Descriptive statistics of this study indicated that skewness scores were between -0.52 and 1.17, and kurtosis values ranged from -0.97 to 1.27 suggesting that the variables of the study were relatively normally distributed. The scales had also adequate to strong internal reliability estimates with the sample of this study, as shown in Table 2.

Subsequent analyses revealed that perceived stress had significant and negative correlations with optimism, yet positive associations with psychological adjustment, death distress, and pessimism. Pessimism was also

significantly and positively correlated with psychological adjustment and death distress, and optimism was negatively associated with psychological adjustment and death distress, as shown in Table 2.

Table 1 - Demographic characteristics of participants (n = 214). Northern Cyprus, Cyprus, 2021

Demographic variable	Percentage (%)
Gender	
Female	91.6
Male	8.4
Health status	
Not infected with COVID-19	96.3
Infected with COVID-19	3.7
Working with COVID-19 patients	
Yes	15
No	85
Job experience (years)	
< 5	21.5
5-10	42.5
11-15	16.8
16-20	12.1
≥ 21	7

Table 2 - Observed scale characteristics and correlation results. Northern Cyprus, Cyprus, 2021

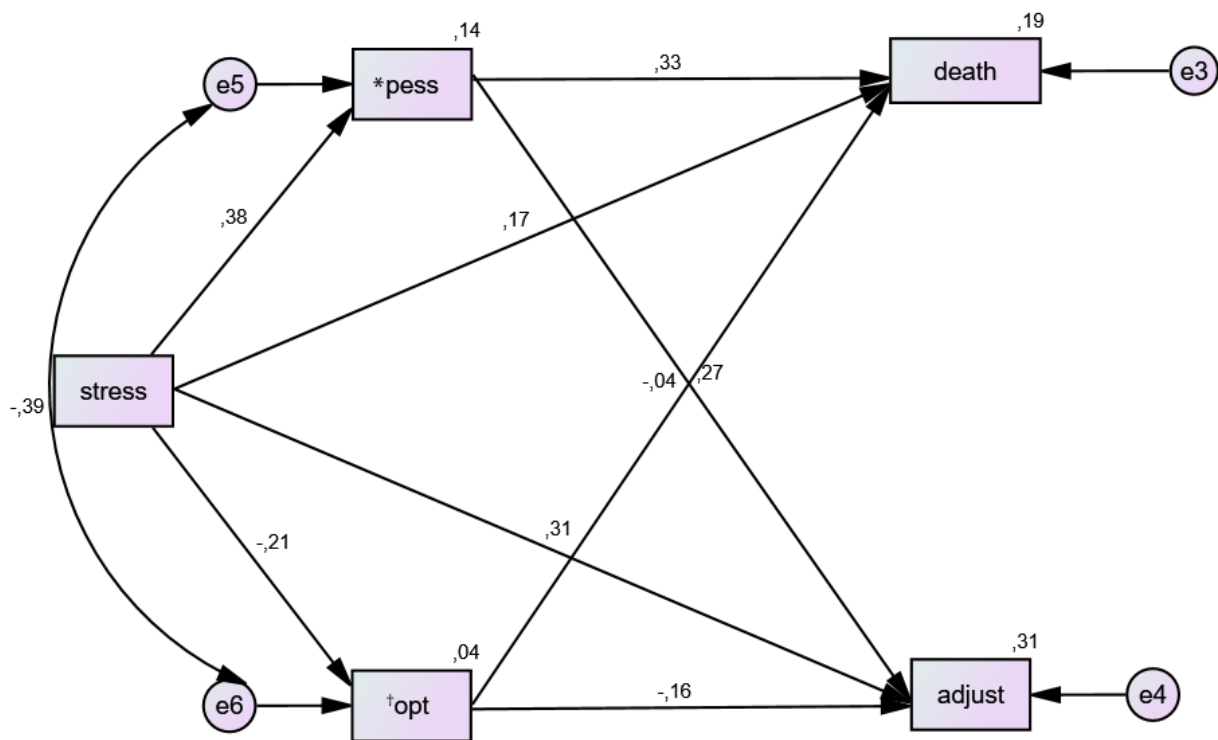
Scales	Descriptive statistics					Correlation coefficients (r)				
	α^*	M [†]	SD [‡]	g ₁ [§]	g ₂	1.	2.	3.	4.	
1. Perceived stress	0.89	13.12	4.26	-0.45	-0.23	—	0.38 [¶]	-0.21 [¶]	0.44 [¶]	0.30 [¶]
2. Pessimism	0.75	6.68	2.62	0.51	-0.21	—	-0.43 [¶]	0.45 [¶]	0.41 [¶]	
3. Optimism	0.78	11.46	2.60	-0.45	0.51		—	-0.34 [¶]	-0.21 [¶]	
4. Psychological adjustment	0.91	24.90	8.73	0.06	-0.71			—	0.35 [¶]	
5. Death distress	0.65	24.12	5.63	0.41	0.70				—	

* α = Cronbach's Alpha value; [†]M = Mean; [‡]SD = Standard Deviation; [§]g₁ = Skewness; ^{||}g₂ = Kurtosis; [¶]Correlation is significant at the 0.001 level (2-tailed)

Mediation analyses: Findings from the structural model (as seen in Figure 1) showed poor-to-acceptable data-model fit statistics ($\chi^2 = 5.01$, $df = 1$, $p = 0.025$, RMSEA = 0.137 [90% CI for RMSEA: 0.039–0.266], CFI = 98, and TLI = 0.80). After excluding the non-significant paths (from optimism to death distress), the model provided better data-model fit statistics ($\chi^2 = 5.31$, $df = 2$, $p = 0.070$, RMSEA = 0.088 [90% CI for RMSEA: 0.00–0.18], CFI = 98, and TLI = 0.92).

Further results indicated that perceived stress significantly and negatively predicted optimism ($\beta = -0.21$, $p < 0.001$) and pessimism ($\beta = 0.38$, $p < 0.001$), accounting for 4% and 14% of the variance. Perceived stress also had significant and positive predictive effects on psychological

adjustment ($\beta = 0.031$, $p < 0.001$) and death distress ($\beta = 0.17$, $p < 0.01$). Mediation results revealed that pessimism significantly predicted both psychological adjustment ($\beta = 0.27$, $p < 0.001$) and death distress ($\beta = 0.33$, $p < 0.001$). Optimism significantly and negatively predicted psychological adjustment ($\beta = -0.16$, $p < 0.01$), yet the predictive effect of optimism on death distress was non-significant ($\beta = -0.04$, $p = 0.585$). Perceived stress, optimism, and pessimism explained 31% of the variance in psychological adjustment and 19% of the variance in death distress. These results suggest that pessimism mediates the association of stress with adjustment and death distress; however, optimism only mediates the effect of stress on psychological adjustment among nurses.



*pess = Pessimism; †opt = Optimism

Figure 1 - Mediation effect of mediators in the association of perceived stress with adjustment and death distress. Northern Cyprus, Cyprus, 2021

Discussion

COVID-19 pandemic may have triggered various healthcare professionals' psycho-social problems in psychological adjustment skills. Therefore, nurses needed to cope with ongoing stressors and conduct to minimize psychological distress⁽³⁰⁾. If psychological condition of nurses has been strengthened, especially their death-related thoughts can be reduced⁽³¹⁾.

Nurses' perceived stress had negative significant correlations with optimism but had positive significant

correlations with pessimism. Based on these findings, this study confirmed the hypothesis "Optimism levels of nurses would negatively affect their levels of perceived stress during the COVID-19 pandemic" (H₁) and "Pessimism levels of nurses would positively affect their levels of perceived stress during the COVID-19 pandemic" (H₂). A limited number of studies support results of the present study. The approaches of optimists to have good hopes for the future have positive effects on their life and psychological health during COVID-19^(15,20). Thus, optimistic people may have a lower

perception of stress⁽¹⁵⁾. On the other hand, optimists are able to adjust their coping strategies to COVID-19 stress compared to pessimistic counterparts⁽²⁰⁾. Low levels of pessimism may aid nurses to cope with COVID-19 stress and lower it⁽²⁰⁾.

Mortality rate increased among healthcare professionals during the COVID-19 pandemic⁽³²⁾. This may have led them to suffer from an increasing level of death distress⁽³³⁻³⁴⁾, even though there were no healthcare professionals who have died due to COVID-19 in Northern Cyprus.

In this study, it was determined that perceived stress also had significant and positive predictive effects on death distress and pessimism mediates the correlation of stress with death distress (Table 2 and Figure 1). These findings confirmed the hypothesis "Death distress levels of nurses would positively affect their levels of perceived stress during the COVID-19 pandemic" (H₃). In a study conducted with 795 nurses in Israel, it was found that higher levels of death anxiety were related with higher levels of psychological distress⁽³³⁾.

The results of this study indicated that high levels of perceived stress increased higher score of psychological adjustment. These findings confirmed the hypothesis "Psychological adjustment levels of nurses would positively affect their levels of perceived stress during the COVID-19 pandemic" (H₄). High levels of psychological adjustment represent as a greater level of psychological maladjustment problems⁽²¹⁾. Likewise, in a study conducted with 627 healthcare professionals, it was shown that healthcare professionals infected by COVID-19 exhibited worse psychological adjustment related to perceived stress compared to non-infected ones⁽³⁵⁾. In a study conducted in Turkey, it was found that the fear of COVID-19 had a negative impact on psychological adjustment in healthcare professionals; however, psychological resilience had preventive function⁽²⁰⁾.

Personal characteristics, sociocultural response, and quality support of the nurses may affect their psychological adjustment during COVID-19 pandemic^(10,36). Optimism and pessimism constitute cognitive constructs of personality traits⁽¹⁸⁾. In this study, it was found that pessimism and optimism mediated the effect of stress on psychological adjustment among nurses. High levels of optimism and low levels of pessimism may improve individuals to cope with stress during the pandemic. In the present study, the fact that the majority of nurses were female may have affected this result. Stress levels of women are highly affected by their increased workload with family and child care as well as the stress at work

during the COVID-19 pandemic⁽³⁷⁾. This may lead them to be more pessimistic and make it more difficult to psychological adjustment in case of stress.

Pessimistic nurses were shown to experience more distress during stressful events, which provides them to have a negative thinking on health. This may also increase their death distress. The level of pessimism may have been influenced by the fact that most of the nurses in this study did not work with COVID-19 patients and were not infected with COVID-19 (Table 1). It has been shown that it is important for nurses to develop optimistic perspectives in the event of new global health crises. Nurses are always on the front line and are mentally at risk. In the future, there is a need for conducting research that examines the relationships between the factors that affect this aspect, as well as determining the levels of mental state in such global health crises. In addition, studies on nurses' resilience and resilient mindset are also important⁽³⁸⁾.

The most important limitation of this study is the small size of the samples. Council members who do not have an e-mail address (only mobile phone), could not access the link to the survey via Google Form. There may be nurses who are not willing to participate in the study because they are retired or not working any longer. The results of this study should be interpreted within the context of research limitations. Online data collection is also a limitation. Another limitation of this study is which data were collected using self-reported measures. The data relied completely on self-reported measures which may prone to bias despite high reliability and validity of the selected measures. For example, participants could have given responses which included a tendency to either underreport or overreport socially desirable attitudes.

Conclusion

These findings highlight that a low level of pessimism is effective in strengthening nurses' psychological adjustment skills against perceived stress and death distress. Nurses should consider behavioral strategies to help reduce the level of pessimism during periods such as pandemics. Prevention efforts such as scanning for mental health problems, psychoeducation, and psychosocial support should focus on nurses at risk for preserving psychosocial outcomes.

Studies can be conducted in the future using large samples to investigate the relationships reported in this study after the COVID-19 pandemic and in new global crises.

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Authors' contribution

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