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Examination perceived stress in Zahedan medical staff in 2022-23 the relationship between coping styles and cognitive distortions (individual negative beliefs about COVID-19) with

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A B S T R A C T

Introduction: The covid-19 disease spread around the world at the end of 2019, which is still ongoing and has affected many people around the world. It seems that the prevention of this disease and the investigation of factors affecting preventive behaviors regarding this disease is the best way to control the epidemic. The present study was conducted with the aim of investigating the relationship between coping styles and cognitive distortions (negative beliefs about covid-19) with the perceived stress of medical staff in Zahedan.

Methods: In this cross-sectional study, 342 people from the medical staff of Zahedan University of Medical Sciences hospitals were selected and evaluated in 1401-1402 in an easy and accessible way. The tool and method of data collection was a questionnaire. Data were analyzed using independent t-tests, analysis of variance and Pearson's correlation coefficient.

Results: In this study, the average score of perceived stress was 47.3 ± 14.4, the average score of using coping styles was 77.3 ± 23.4 with the range and the average score of cognitive distortions in the treatment group was 67.17 ± 17. reached the correlation coefficient test showed that as the score of cognitive distortions and coping styles increases, the perceived stress score in the treatment team decreases (P<0.05).

Discussion and conclusion: By increasing the use of coping styles in critical cases, as well as the use of cognitive distortions and positive thinking, the perceived stress in the treatment staff is reduced. Therefore, teaching about ways to deal with stress and practicing not using cognitive distortions is effective in reducing stress.

Introduction

Since late 2019, a novel virus belonging to the coronavirus family, known as SARS-CoV-2, has been posing a threat to human societies and even animals. Concerns regarding this family of viruses arise from the fact that, for the third time over the past two decades, these viruses have confronted the world

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with a deadly epidemic (1). Coronavirus disease 2019 (COVID-19) is an infection caused by the coronavirus SARS-CoV-2. This disease was first reported in December 2019 as a coronavirus-associated pneumonia in Wuhan, China. On January 30, 2020, the World Health Organization (WHO) declared the outbreak of severe acute respiratory syndrome coronavirus 2 as a Public Health Emergency of International Concern (2). Since its emergence, this disease has been regarded as a threat to the mental health and lives of millions of people around the world (3). Therefore, under such circumstances, maintaining individuals' mental health is essential, as people in different segments of society may experience various stressors during the spread of COVID-19. Accordingly, in the current high-risk situation, identifying individuals susceptible to psychological disorders (as well as methods of coping with such stressful conditions) at different levels of society—whose mental health may be at risk—is essential so that, through appropriate psychological strategies and techniques, individuals' mental health can be preserved (4). Stress is a response to a perceived threat (real or imagined) to an individual's psychological, physical, emotional, and spiritual well-being, leading to a series of responses and, consequently, physiological adaptations. Occupation is one of the causes of stress in life. In occupations involving greater human interaction, stress levels tend to be higher (5,6). Among various professions, healthcare workers—such as individuals employed in hospitals or healthcare centers who provide medical services—are exposed to greater pressure and a higher risk of psychological harm due to their encounter with numerous stressors (7).

In addition to the routine occupational stress experienced by healthcare personnel, the outbreak of COVID-19 led to an increase in the number of patient visits and hospitalizations of individuals infected with COVID-19 in medical centers, and consequently increased the workload of healthcare staff. Furthermore, during the COVID-19 pandemic, healthcare workers were more exposed to contracting the disease compared to other segments of society. Therefore, all these factors jeopardized mental health and increased stress among the healthcare community (8,9). Assessing the level of stress and the factors influencing it under the current conditions of the COVID-19 pandemic can contribute to the effective management of individuals' mental health (10). One of the potential factors influencing individuals' mental health and stress levels is coping styles (11). Coping styles refer to individuals' continuous efforts to adapt to imbalanced situations. When effective coping styles are employed, emotions are regulated and stress is alleviated (12). Effective problem-solving ability, sufficient experience, availability of an appropriate support system, adequate sleep and personal hygiene, and maintaining a balanced lifestyle are among the factors that facilitate the use of effective coping styles. Individuals who are unable to cope effectively experience higher levels of stress, and the resulting maladjustment leads to psychological disorders and problems. Ineffective coping methods constitute a primary cause of many psychological problems (13). Cognitive distortions are defined as highly exaggerated, rigid, irrational, and absolute beliefs. Whenever individuals think irrationally, they perceive life events differently from how they actually are (14). Cognitive distortion refers to cognitive errors and biases, that is, the manner in which individuals evaluate situations and psychological stressors, as well as their perspectives regarding themselves, the world, and the future, and the beliefs and attitudes that increase their vulnerability to emotional disorders. Accordingly, if cognitive distortions occur repeatedly and persist over time, they lead to psychological distress and disorders in individuals. Cognitive distortions are among the factors associated with many illnesses. Accurate and reality-based cognition is an essential factor in discovering truth and becoming aware of different dimensions of life. Lack of awareness, incorrect awareness, and distorted cognition cause individuals to err in analyzing life events. These errors and deviations affect individuals' adaptation to their surrounding world and, in general, their adjustment to life, thereby influencing their quality of life. Individuals' sense of satisfaction, tranquility, and quality of life are directly related to their thinking processes (15). Behavioral restrictions such as quarantine and loss of contact with family members and friends lead to stress and the emergence of cognitive distortions. In other words, these cognitive distortions alter cognitive domains such as perceived stress, working memory, attention, decision-making, and problem-solving (16). Mental health is one of the principal indicators in evaluating the health of societies and plays a significant role in ensuring the efficiency of any community. The World Health Organization defines health as a state of complete physical, mental, and social well-being, and not merely the absence of disease or disability (16). Given that healthcare personnel were

exposed to stress and anxiety resulting from COVID-19 during the pandemic, examining coping skills in dealing with such conditions is crucial and instrumental in safeguarding the mental health of medical center staff. Although the spread of COVID-19 has currently declined, the experiences gained from this pandemic can serve as guidance for navigating the future and reducing neuropsychiatric complications among healthcare workers. Therefore, considering the absence of the present study, this research was conducted with the aim of determining the relationship between coping styles and cognitive distortions (individuals' negative beliefs regarding COVID-19) and perceived stress among healthcare personnel in the city of Zahedan during 2022–2023.

Method

This study employed a descriptive–analytical cross-sectional design. The study population consisted of healthcare personnel working in hospitals affiliated with Zahedan University of Medical Sciences during the years 2022–2023. Individuals were eligible to participate if they provided informed consent, completed all questionnaire items, and had at least one year of work experience in hospitals located in Zahedan. Exclusion criteria included unwillingness to continue participation, the loss of a first-degree relative during the study period, current use of psychiatric medications, a clinically diagnosed psychiatric disorder confirmed by a specialist, and participation in psychological training programs.

In the present study, several factors were considered potential confounding variables, including the loss of a first-degree relative due to COVID-19, current use of psychiatric medications, and the presence of a clinically diagnosed psychiatric disorder. Because these conditions could influence psychological outcomes and potentially bias the study findings, individuals presenting with these conditions were excluded from participation.

The required sample size was determined based on a previous study (17). Considering a standard deviation of 7.5 for perceived stress scores, a type I error rate of 0.05, and a maximum acceptable difference of 0.8 (d = 0.8), the minimum required sample size was estimated to be 342 participants (18).

Sampling was performed using a quota sampling method based on the distribution of healthcare personnel across hospitals and occupational categories. The strata included Ali-Ibn-Abi-Talib Hospital, Khatam-al-Anbia Hospital, and Bu-Ali Hospital. Occupational strata included physicians, nurses, and other healthcare personnel. Within each stratum, participants were selected through convenience sampling while meeting the inclusion criteria.

Data were collected using a four-part questionnaire. The first section included demographic characteristics such as age, gender, occupational category (physician, nurse, laboratory staff, anesthesia technician, midwife, and others), and educational level.

The second section consisted of the Perceived Stress Scale (PSS) developed by Cohen and colleagues. This questionnaire contains 16 items designed to measure perceived stress during the previous month. It evaluates individuals' perceptions and feelings related to stressful events, perceived control, coping ability, and experienced psychological pressure. Items are rated on a five-point Likert scale ranging from 0 (never) to 4 (very often). Items 4, 5, 6, 7, 9, 10, and 13 are reverse scored prior to calculating the total score. The total score ranges from 0 to 64, with higher scores indicating higher levels of perceived stress during the past month. The validity and reliability of the Persian version of this scale were examined in a study by Behrouzi et al. (2012). Cronbach's alpha coefficient and split-half reliability was reported as 0.73 and 0.74, respectively. Construct validity was assessed through correlation with a researcher-developed criterion question, yielding a coefficient of 0.63 (19,20).

The third section included the Coping Inventory for Stressful Situations – Short Form (CISS-SF) developed by Endler and Parker (1990) and translated into Persian by Akbarzadeh (1997). This instrument consists of 21 items, with seven items assigned to each coping style. Responses are scored on a five-point Likert scale ranging from 1 (never) to 5 (always). The CISS assesses three coping styles: avoidance-oriented coping (items 1, 4, 7, 9, 15, 18, and 21), problem-focused coping (items 2, 6, 8, 11, 13, 16, and 19), and emotion-focused coping (items 3, 5, 10, 12, 14, 17, and 20). Each subscale has a score range from 7 to 35, with higher scores indicating greater use of that coping strategy (21). The reliability of the questionnaire, assessed using Cronbach's alpha, has been reported to be high (0.81), and its validity has been confirmed in studies conducted in Iran. Pearson correlation coefficients for the subscales were

reported as 0.58 for problem-focused coping, 0.55 for emotion-focused coping, and 0.93 for avoidance coping (22).

The fourth section consisted of the Cognitive Distortions Questionnaire, which includes 20 items designed to assess cognitive distortions based on Ellis's theoretical framework. The instrument aims to identify irrational thinking patterns that may contribute to psychological distress and maladaptive emotional responses. Responses are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score ranges from 20 to 100. In this questionnaire, lower scores indicate a greater tendency toward cognitive distortions, whereas higher scores reflect more adaptive cognitive patterns. The reliability of the instrument has been assessed using internal consistency and test–retest reliability over a two-week interval, yielding a coefficient of 0.77 (14).

Data analysis was performed using SPSS software version 26. Prior to inferential analyses, data quality and distribution were evaluated using graphical methods and descriptive statistical indices. Qualitative variables were summarized using frequency distributions and percentages, while quantitative variables were described using means and standard deviations. Pearson correlation coefficients were calculated to examine the relationships between study variables. In addition, multiple linear regression analysis was conducted to evaluate the predictive role of coping styles and cognitive distortions on perceived stress while accounting for demographic variables. The level of statistical significance was set at $p < 0.05$.

Results

A total of 342 healthcare personnel working in Ali Ibn Abi Talib Hospital, Khatam al Anbia Hospital, and Bu Ali Hospital in Zahedan who met the inclusion criteria and consented to participate were enrolled through quota and convenience sampling. Participants were assessed in terms of coping styles, cognitive distortions, and their relationship with perceived stress.

The mean age of the participants was 39.8 ± 9.8 years (range: 21–58 years). Of the participants, 231 (67.5%) were female and 111 (32.5%) were male. Regarding occupational position, 221 participants (64.6%) were nurses, 42 (12.3%) were physicians, and 79 (23.1%) belonged to other professional groups including laboratory sciences, radiology, and anesthesia personnel. In terms of educational level, 51 participants (14.9%) held doctoral degrees, 243 (71.0%) had bachelor's degrees, and 48 (14.1%) had associate degrees.

The total score of the Perceived Stress Scale ranges from 0 to 64, with higher scores indicating higher levels of perceived stress during the previous month. In the present study, the mean perceived stress score among healthcare personnel was 47.3 ± 14.4 (range: 22–59). Based on the predefined classification, perceived stress levels were high in 102 participants (29.8%), moderate in 152 participants (44.5%), and low in 88 participants (25.7%).

Table 1 presents the mean perceived stress scores among healthcare personnel according to gender and job position. The independent t test and analysis of variance showed a statistically significant association between perceived stress and both gender and job position ($P < 0.05$). Female staff and nurses reported higher mean perceived stress scores compared with other groups.

Table – 1: Mean ± SD of perceived stress according to gender and job position.

Independent variables	Category	Mean ± SD	P
Gender	Male	43.3 ± 12.3	0.003
	Female	52.5 ± 13.3	
Job position	Physician	42.5 ± 12.9	0.009
	Nurse	54.3 ± 14.3	
	Other specialists	46.1 ± 11.6	

Coping styles for stressful situations were assessed using the CISS-SF. The total possible score ranges from 21 to 105, with higher scores reflecting greater use of coping strategies. In the present study, the mean coping style score among healthcare personnel was 77.3 ± 23.4 (range: 38–89). Based on the distribution of scores, coping style use was categorized as high in 91 participants (26.6%), moderate in 173 participants (50.6%), and low in 78 participants (22.8%).

Table 2 presents the mean coping style scores according to gender and job position. The independent t-test and analysis of variance indicated that coping style scores were not significantly associated with gender or job position (P > 0.05).

Table – 2: Mean score of coping style use among healthcare staff according to gender and job position.

Independent	variables Group	Mean ± SD	P-value
Gender	Male	77.9 ± 22.3	0.23
	Female	78.5 ± 23.4	
Job position	Physician	79.9 ± 22.9	0.19
	Nurse	77.8 ± 24.7	
	Other experts	76.4 ± 21.1	

Cognitive distortions were measured using the Cognitive Distortions Questionnaire, with scores ranging from 20 to 100. In this instrument, higher scores indicate more adaptive thinking patterns, whereas lower scores indicate a greater tendency toward cognitive distortions. In the present study, the mean cognitive distortion score among healthcare personnel was 67.1 ± 17.7 (range: 37–84). According to the score classification, 71 participants (20.9%) had high scores, 165 (48.2%) had moderate scores, and 106 (30.9%) had low scores on this measure.

Table 3 shows the mean cognitive distortion scores among healthcare personnel according to gender and job position. Independent t-test and analysis of variance demonstrated a statistically significant association between cognitive distortion scores and both gender and job position (P < 0.05), with male staff and physicians reporting higher mean scores.

Table – 3: Mean score of cognitive distortion use among healthcare staff by gender and job position.

Independent	variables Group	Mean ± SD	P-value
Gender	Male	75.1 ± 19.1	0.023
	Female	63.9 ± 17.9	
Job position	Physician	78.2 ± 18.8	0.0019
	Nurse	67.2 ± 17.1	
	Other experts	55.9 ± 19.1	

Table 4 presents the correlation coefficients between perceived stress and the main study variables. Pearson correlation analysis showed that perceived stress was negatively correlated with both coping style scores and cognitive distortion scores among healthcare personnel (Table 4).

Table – 4: Correlation coefficients between perceived stress scores and cognitive distortions as well as coping styles among healthcare staff in Zahedan.

Perceived Stress		**Coping Styles**	**Cognitive Distortions**
	Correlation coefficient	−0.311	−0.329
	Significance level	0.005	0.007
	Sample size	342	342

Given the observed associations between some demographic variables and the main study variables, multiple linear regression analysis was performed to control for potential confounding factors. After adjusting for demographic variables such as gender and job position, coping styles and cognitive distortion scores remained significantly associated with perceived stress among healthcare personnel (Table 5).

Table – 5: Adjusted regression coefficients for the association of perceived stress with coping styles and cognitive distortions among healthcare staff in Zahedan.

Independent variable		**β**	**SE**	**95% CI for β**	**P-value**
Gender	Male	0.24	0.077	0.094-0.397	0.021
	female	1	-	-	

Job position	Nurse	0.187	0.033	0.12-0.25	0.031
	Physician	-0.021	0.13	0.013-0.034	0.089
	Other				
Cognitive distortions	0.196		0.43	0.11-0.28	0.001
Coping styles	0.139		0.042	0.05-0.185	0.001

Discussion

The present study investigated perceived stress among healthcare personnel and examined its relationship with coping styles and cognitive distortions. The findings indicated that the mean perceived stress score among healthcare workers was relatively high. In addition, perceived stress showed a significant association with gender and job position, with female staff and nurses reporting higher levels of perceived stress compared with other occupational groups.

The higher level of perceived stress observed among healthcare workers may be related to the demanding nature of clinical environments, heavy workloads, exposure to critically ill patients, and the psychological pressures associated with healthcare settings. These pressures may be particularly pronounced for nurses, who often have prolonged and direct contact with patients and their families and may therefore experience greater emotional and occupational demands. Gender differences observed in perceived stress may also reflect variations in occupational roles, emotional labor, and social expectations within healthcare environments.

The results also showed that the use of coping styles was not significantly associated with gender or job position. This finding may suggest that coping strategies used by healthcare workers are influenced by factors other than demographic characteristics, such as individual psychological traits, professional experience, or workplace conditions. It is also possible that healthcare professionals across different roles are exposed to similar stressors within hospital settings, which may lead to comparable coping responses.

With regard to cognitive distortions, the findings indicated a significant association with gender and job position. Male staff and physicians obtained higher scores on this measure, which in this instrument reflects more adaptive cognitive patterns and a lower tendency toward cognitive distortions. Differences in cognitive appraisal and decision-making processes across occupational roles may partly explain this finding. Physicians, for example, often receive extensive training in analytical problem solving and clinical decision-making, which may contribute to more structured cognitive processing when facing stressful situations.

Correlation analysis showed that perceived stress was negatively associated with coping styles and cognitive distortion scores. In other words, individuals who reported greater use of coping strategies and more adaptive cognitive patterns tended to report lower levels of perceived stress. This finding is consistent with theoretical models emphasizing the role of cognitive appraisal and coping processes in the experience of stress. According to these models, individuals who are able to employ more effective coping strategies and maintain more adaptive thinking patterns may be better able to manage stressful situations and regulate emotional responses.

To further examine these relationships, multiple linear regression analysis was performed while controlling for demographic variables such as gender and job position. The results indicated that coping styles and cognitive distortions remained significantly associated with perceived stress even after adjusting for these background variables. This finding suggests that cognitive and coping-related factors may play an important role in the experience of stress among healthcare personnel.

The findings of the present study should be interpreted in the broader context of the COVID-19 pandemic. Since the onset of the pandemic, the lifestyle and daily functioning of the general population have been substantially affected. However, healthcare workers, particularly those in frontline positions, have faced additional occupational stressors due to their direct exposure to infected patients and the demands of providing continuous medical care. These circumstances may increase psychological strain

and disrupt personal, family, and occupational functioning more extensively than in other social groups (23).

Previous research has also suggested that individuals experiencing higher levels of stress may have reduced capacity for emotional regulation and self-control. Under such conditions, individuals may experience greater difficulty managing emotional reactions, selecting appropriate behavioral responses, and applying effective coping strategies. Consequently, elevated stress may contribute to increased psychological pressure and maladaptive emotional reactions (24,25).

Overall, the findings highlight the importance of psychological and cognitive factors in the experience of stress among healthcare workers. Understanding how coping strategies and cognitive patterns are related to perceived stress may provide useful insights for developing supportive interventions aimed at promoting psychological well-being among healthcare personnel.

Conclusion

The findings of the present study indicate that greater us of coping strategies and more adaptive cognitive patterns are associated with lower levels of perceived stress among healthcare workers. These results highlight the potential importance of psychological coping processes and cognitive appraisal in the experience of stress in healthcare settings.

Considering the demanding nature of healthcare environments, particularly during large-scale health crises such as the COVID-19 pandemic, attention to psychological resources that may help healthcare personnel manage stress appears essential. Interventions aimed at strengthening coping skills and promoting more adaptive cognitive patterns may therefore be beneficial for supporting the psychological well-being of healthcare workers. However, further longitudinal and interventional studies are needed to clarify the direction and strength of these relationships.

Limitation

One of the practical limitations of this study was difficulty in participant recruitment, particularly because some individuals were unwilling to cooperate with the research process. To overcome this challenge, the objectives of the study and the potential benefits of participation were explained to the relevant departments, which helped encourage cooperation in completing the questionnaires.

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