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Original scientific paper

The Relationship Between Cognitive Emotion Regulation and Depression, Anxiety, and Stress in Nurses

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Abstract

Introduction. Numerous studies have shown that there is significant relationship between nurses' emotional states and their work performance. This relationship is particularly significant when symptoms of distress (depression, anxiety, and stress) are elevated. Cognitive emotion regulation strategies that support effective responses to environmental challenges are termed adaptive, while those that impede functioning are known as maladaptive.

Aim. To examine mental health of nurses, as measured by depression, anxiety and stress and to investigate the contribution of cognitive emotion regulation strategies to the prediction of depression, anxiety and stress.

Methods. Data were collected in February 2023 at Osijek University Hospital. A total of 82 nurses participated in the study. Data were collected using sociodemographic questions, the Depression, Anxiety, and Stress Scale (Lovibond & Lovibond, 1995), and the Cognitive Emotion Regulation Questionnaire (Garnefski & Kraaij, 2006).

Results. Although most nurses do not experience depression, anxiety, and stress beyond the normal level, there is a non-negligible proportion who exhibit symptoms ranging from mild to extremely severe levels of these negative emotional states.

The largest proportion of severe and extremely severe results, that might be of clinical significance,

was observed for anxiety (18.53%). The maladaptive strategy of blaming others was found to be a significant predictor of depression, anxiety, stress and positive refocusing was significant predictor of stress.

Conclusion. The results suggest that the use of specific cognitive emotion regulation strategies plays an important role in nurses' mental health, measured as rates of depression, anxiety and stress. This underscores the need for and importance of implementing education and training programmes on cognitive emotion regulation strategies in the professional education of nurses.

Introduction

Nurses' professional functioning can be very stressful and emotionally challenging (1-3). Nurses are often expected to balance the challenging demands of patients, families and colleagues, and the healthcare system. While there is an abundance of literature highlighting the emotional challenges of the nursing profession, there is a lack of research that focuses specifically on how nurses manage their emotions. However, research into the concept of emotion regulation in nursing has evolved over the last decade (4).

Emotion regulation is a process by which 'individuals influence what emotions they have, when they have them, and how they experience and express these emotions' (5). It is a broad concept that encompasses self-regulation and regulation by others, as well as the direct management of emotions or the treatment of their underlying causes (6). These processes encompass biological, social, behavioural, and cognitive domains. On a physiological level, emotions are regulated by physical reactions such as increased heart rate or sweating. On a social level, they are controlled by seeking support from others, while on a behavioural level, reactions such as crying or withdrawal can contribute to coping with stress. Cognitive emotion regulation refers to thought strategies and processes that consciously or unconsciously attempt to alter the extent of the individuals' emotional experience and can be adaptive or non-adaptive (7-10). Garnefski et al. (8) identify four maladaptive cognitive strategies – self-blame, rumination, catastrophizing, and blaming others – and five adaptive strategies – acceptance, positive refocusing, planning refocus, positive reappraisal, and putting events into perspective.

Self-blame involves holding yourself accountable for difficult experiences, while rumination causes you to dwell on negative emotions and thoughts related to negative events. Catastrophizing means exaggerating the severity of situations, and blaming others means attributing your problems to external parties. Acceptance is about coming to terms with what has happened, while positive refocusing is about turning your attention to pleasant and uplifting thoughts, rather than the current challenges. Refocusing on planning emphasizes devising actionable steps to tackle negative situations, and positive reappraisal involves interpreting stressful events as opportunities for growth. Putting events in perspective involves minimizing their perceived severity. There is evidence that the habitual use of certain cognitive emotion regulation strategies is related to emotional outcomes (10-11). The comparison between clinical and non-clinical populations has shown that clinical population uses maladaptive strategies to a significantly greater extent, which are associated with a higher frequency of depressive and anxiety symptoms (7, 8, 12).

Accordingly, it is important to investigate the relationship between cognitive emotion regulation strategies and stress, anxiety and depression specifically in the nursing profession. Nurses' emotions can significantly affect their understanding and retention of information, motivation to achieve healthcare goals, accuracy of problem-solving, and the quality of communication and interpersonal relationships in the workplace (12, 13). Emotions can facilitate nurses' functioning, but they can also lead to declined effectiveness, especially when they arise in inappropriate contexts, are overly intense, or persist for too long (14, 15). The ability to regulate emotions has already been shown to influence nurses' professional efficacy, general psychological well-being (16, 17) and communication skills (16).

Wang et al (18) showed that nurses' cognitive emotion regulation strategies were associated with anxiety and depressive symptoms. A positive correlation was also found between emotional regulation strategies and the level of nurses' perceived stress (19-

20). Some research suggests that emotion regulation characteristics also predict all components of burnout: emotional exhaustion, depersonalization and personal accomplishment (21). However, Bamonti (22) reported that rumination and refocus on planning only predicted depersonalization. Moreover, it seems that maladaptive cognitive emotional strategies of nurses, alleviate PTSD symptoms after experiencing a stressful event (20).

These findings suggest that education about emotional regulation and the implementation of emotional regulation training programs may contribute to better emotional and professional functioning of nurses.

Karatzadeh et al (23) previously reported that the six-week emotional regulation training effectively changed symptoms of depression, anxiety and stress, as well as quality of life in intensive and critical care nurses.

As far as we know, the cognitive emotional strategies of nurses in Croatia have not been studied so far, although Filipec et al (24) have studied cognitive emotion regulation of physiotherapy students as far as health care workers are concerned.

Aim

To examine mental health of nurses, as measured by depression, anxiety and stress and to investigate the contribution of cognitive emotion regulation strategies to the prediction of depression, anxiety and stress.

Methods

Participants and procedure

This cross-secitonal study was conducted in February 2023. The convenience sample consisted of 82 nurses from the Departement of Gynaecology and Obstetrics and the Department of Neurology of the Osijek Universtiy Hospital, Osijek, Croatia. They were predominantly female (95.1%), aged between 21 and 65 years (M=44, SD=1.04). The length of service of the participants ranged from 1 to 46 years (M=22.8, SD=12.1). The additional sociodemographic data of the participants are presented in Table 1.

The questionnaire was completed using a paper-and-pencil method. Participation was voluntary and anonymous. The written instructions on the first page of the questionnaire provided details about the subject, purpose and objectives of the study. They also included information about the data usage, the voluntary nature of participation, measures ensuring anonymity and confidentiality, and participants' right to withdraw at any time without providing a reason.

With the consent of the head nurses from the two wards, printed questionnaires were placed in the nursing rooms, where ward nurses were invited to participate. The completed questionnaires were then deposited in a sealed box provided in the nursing room.

Table 1. **Sociodemographic data of pariticipants (N=82)**

		Frequency	%
Marital status	single	5	6.1
	in a relationship	14	17.1
	married	54	65.9
	divorced	6	7.3
	widowed	1	1.2
Education	secondary education	59	72
	post-secondary education	12	14.1
	tertiary education	10	12.2
Income	below average	0	0
	average	68	82.9
	above average	14	17.1

Instruments

Data were collected using previously validated instruments: the Cognitive Emotion Regulation Questionnaire and the Depression, Anxiety, and Stress Scale (DASS-21), and a series of socio-demographic questions.

The Cognitive Emotion Regulation Questionnaire (CERQ) is a self-report instrument designed to assess the cognitive emotion regulation strategies people use to regulate their emotions after negative experiences or situations.

Unlike other coping questionnaires, which often do not distinguish between person's thoughts and their actions, the CERQ focuses exclusively on cognitive processes (9, 26).

The CERQ consists of 36 items divided into 9 conceptually different subscales, with 4 items per subscale. Respondents rate the frequency with which they use each described cognitive strategy on a 5-point scale (1 – 'never,' 2 – 'very rarely,' 3 – 'sometimes,' 4 – 'often,' 5 – 'always').

The score is calculated by adding the relevant points for each cognitive strategy (from 4 to 20), with a high score indicating more frequent use of a particular strategy.

The meanings of the subscales are as follows:

1. **Self-Blame** – Preoccupation with one's own mistakes and the tendency to blame oneself for negative experiences (e.g., 'I feel like I am the one to blame.').
2. **Acceptance** – Thoughts about the impossibility of changing what has happened and acceptance that life goes on (e.g., 'I think I have to learn to live with it.').
3. **Rumination** – Persistent thoughts about the feelings and thoughts associated with the negative event (e.g., 'I am preoccupied with what I think and feel about what happened.').
4. **Positive Refocusing** – Thinking about other, more pleasant things instead of the actual event (e.g., 'I think about something nice instead of what happened.').
5. **Planning Refocus** – Thinking about the steps needed to deal with the event (e.g., 'I plan what would be the best to do.').
6. **Positive Reappraisal** – Thinking about how you can attribute positive meaning to the event in terms of personal growth (e.g., 'I believe I can become a stronger person after what happened.').
7. **Putting into Perspective** – Downplaying the severity of the situation by comparing it to other events and experiences (e.g., 'I tell myself that there are worse things in life.').

8. **Catastrophizing** – Explicitly emphasising and exaggerating the catastrophic nature of the situation (e.g., 'I often think that this is the worst thing that can happen to a person.').
9. **Blaming Others** – Thoughts of blaming others for what the individual has experienced (e.g., 'I feel that others are to blame for what happened.').

The CERQ can be used to measure cognitive strategies that represent an individual's response to stressful situations, as well as to measure cognitive strategies used in coping with specific stressful events or situations, depending on the nature of the research problems. In this study, we examined the general style of cognitive coping.

The CERQ has satisfactory psychometric properties, both in the original English version and in many adaptations in other countries. The Cronbach alpha values of the nine scales in the English version were between 0.75 and 0.86 (8). Similarly, the reliability in the sample used for the Croatian translation and validation of the questionnaire was satisfactory, as it ranged between 0.73 and 0.89 (25). In our sample, the α- values ranged from 0.63 to 0.87.

The Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) (26) is a self-report instrument designed to examine the frequency and presence of emotional states such as depression, anxiety, and stress. It consists of 21 items, and participants must rate the presence of symptoms in the past week on a 4-point scale (0 – almost never, 1 – sometimes, 2 – often, 3 – almost always). All items are negative, so a higher total score indicates greater psychological difficulties and more symptoms of depression, anxiety, and/or stress.

To make the results comparable with the norms of the longer version of the DASS scale, which consists of 42 items, the total score for each subscale of the DASS-21 is multiplied by 2. Each subscale has a maximum score of 42, with categories ranging from normal to extremely severe. The subscales are categorised into the following levels: normal, mild, moderate, severe, and extremely severe. There are certain critical values for each subscale: a value of more than 9 for depression, 7 for anxiety, and 14 for stress is considered critical.

The satisfactory psychometric properties of the Croatian version have already been reported (26). In our study, the Cronbach's alpha was 0.90 for depression, and 0.92 for both anxiety and stress.

Ethics

This study was approved by the Ethics Committee of the Osijek University Hospital (Reg. No. r:16643-2/2022.) and all participants gave their informed consent in person before participating in the study.

Statistics

The normality of the distribution for all variables was tested using the Kolmogorov-Smirnov test and the results showed statistically significant differences from the normal distribution. However, additional analyses of skewness and kurtosis showed that all variables in this study had a skewness within a value range of ±3, and kurtosis within a value range of ±10. The highest value of skewness was 1.40, and the highest kurtosis value was -1.11. This means that the criteria for conducting parametric analyses were met (27).

Results

Descriptive statistical methods were used to process the variables under investigation. The mean values are presented as the arithmetic mean, together with minimum and maximum values and the standard deviation.

The most frequently used cognitive emotional strategies are positive reappraisal, planning, and putting into perspective, all of which are adaptive strategies. In contrast, the least frequently used cognitive emotional strategies are self-blame and blaming others, which are maladaptive strategies.

The arithmetic values for depression and anxiety are higher than their critical values.

To examine the percentage of participants scoring high on the DASS subscales, Table 2 shows the distribution across categories from normal to extremely severe scores.

More than half of the participants fall into the 'normal' category, meaning they do not exhibit significant symptoms of depression, anxiety, or stress. A total of 4.25% of participants show some level of

Table 2. **Descriptive statistics for DASS-21 and CERQ questionnaires**

Variables	N	M	SD	TR
DASS-21:				
Depression	80	9.40	9.464	0-42
Stress	78	11.72	9.641	
Anxiety	81	8.07	9.703	
CER strategies:				
Self-blame	80	10.74	3.055	4-20
Blaming others	80	9.05	2.959	
Rumination	80	12.85	2.761	
Catastrophizing	79	10.67	3.331	
Putting into perspective	78	14.58	2.694	
Positive refocusing	77	13.29	3.663	
Positive reappraisal	80	15.06	2.739	
Acceptance	80	13.12	2.308	
Planning refocus	81	14.88	2.803	

Note: N- number of participants; TR- theoretical range; M- Mean; SD- Standard deviation

Table 3. **Distribution of participants according to the categories' of the DASS-21**

Categories	Depression		Anxiety		Stress	
	SR	N (%)	SR	N (%)	SR	N (%)
Normal	0-9	47 (58.75)	0-7	48 (59.26)	0-14	52 (66.67)
Mild	10-13	6 (7.5)	8-9	4 (4.94)	15-18	7 (8.97)
Moderate	14-20	19 (23.75)	10-14	14 (17.28)	19-25	12 (15.38)
Severe	21-27	3 (3.75)	15- 19	2 (2.47)	26-33	3 (3.85)
Extremely severe	28+	5 (6.25)	20+	13 (16.05)	34+	4 (5.13)
Total		80 (100)		81 (100)		78 (100)

Note: SR – range for severity ratings (cut offs); n-number of participants

depression, the same applies to 40.74% of participants in terms of anxiety, and 33% in terms of stress. We can assume that the participants' mental health is at risk in the 'severe' and 'extremely severe' category. That applies to 10% of the participants regarding depression, 18.52% participants regarding anxiety and 8.98% regarding stress. Anxiety is the most prevalent negative emotional state in the extremely severe category (16.05% of participants report symptoms of severe anxiety).

The results show that depression has a weak positive correlation with self-blame (r=0.388, $p<0.001$) and rumination (r=0.291, $p<0.01$) and a moderate positive correlation with blaming others (r=0.503, $p<0.01$) and catastrophizing (r=0.419, $p<0.01$). In addition, stress has a weak positive correlation with rumination (r=0.371, $p<0.01$), a moderate positive correlation with blaming others (r=0.448, $p<0.01$), catastrophizing (r=0.436, $p<0.01$) and self-blame (r=0.456, $p<0.001$) and a weak negative correlation with positive refocusing (r=- 0.249, $p<0.05$). Finally, there is a weak positive correlation between anxiety and self-blame (r=0.234, $p<0.05$) and rumination (r=0.342, $p<0.01$) and a moderate positive correlation with blaming others (r=0.516, $p<0.01$), catastrophizing (r=0.478, $p<0.01$).

Table 4. **Correlation between depression, stress and anxiety and cognitive emotional strategies**

Variables/ r	D	S	A	1	2	3	4	5	6	7	8
Stress	**.860 ****										
Anxiety	**.805 ****	**.850 ****									
Self-blame	**.388 ****	**.456 ****	**.234 ***								
Blaming others	**.503 ****	**.448 ****	**.516 ****	**.373 ****							
Rumination	**.291 ****	**.371 ****	**.342 ****	**.592 ****	**.403 ****						
Catastro-phizing	**.419 ****	**.436 ****	**.478 ****	**.564 ***	**.582 ****	**.610 ****					
Perspective	.003	.005	.088	**.282 ***	.194	**.481 ****	.188				
Positive refocus.	-.182	**-.249 ***	-.071	-.086	.126	.147	-.049	**.482 ****			
Positive reappr.	-.211	-.189	-.124	-.013	.004	.198	-.092	**.649 ****	**.659 ****		
Acceptance	.111	.055	.056	**.380***	.156	.407	**.297 ****	**.533 ****	.141	**.320 ****	
Planning refocus	-.110	-.148	-.107	.089	.062	.319	.001	**.536 ****	**.611 ****	**.772 ****	**.264 ***

Note: D – depression, S – stress, A – anxiety; 1-8 – CER startegies; *p<0.05, **p<0.01

A linear regression analysis was conducted to identify the cognitive emotion regulation strategies that predict the mental health variables. Prior validity assessments were conducted to ensure the appropriateness of the regression analyses. All tolerance values were above 2, variance inflation factors remained below 5 and Durbin-Watson values were in the range of 1.5 to 2.5 indicating that the conditions for conducting the regression analysis were met.

The variables included in the regression significantly explained 27% of the variance in depression (adjusted R^2=0.266; p<0.01). Blaming others proved to be significant positive predictor (p<0.01) of depression. The more participants tend to blame others, the higher their score on the depression scale is.

Table 5. **Results of regression analysis with depression as criterion (dependent variable)**

Predictors (independent variables)	β	t	p
(Constant)		-1.969	.053
Self-blame	.206	1.598	.114
Blaming others	.392	3.228	.002**
Rumination	-.072	-.529	.598
Catastrophizing	.118	.814	.418
Model Summary	Adjusted R^2 =.266		

Note: p-statistical significance significance (**p<0.01); β-regression coefficient; Adjusted R^2 - adjusted coefficient of determination

The variables included in the regression significantly explain 29% of the variance of anxiety (adjusted R^2=0.289; p<0.01). Blaming others proved to be a significant positive predictor of anxiety (p<0.01). A higher score on the blaming others corresponds to higher anxiety.

Table 6. **Results of regression analysis with anxiety as criterion (dependent variable)**

Predictors (independent variables)	β	t	*p*
(Constant)		-2.493	.015
Self-blame	-.128	-1.024	.309
Blaming others	.364	3.065	.003**
Rumination	.102	.783	.436
Catastrophizing	.276	1.941	.056
Model Summary	Adjusted R^2 =.289		

Note: *p*-statistical significance (**p<0.01); β-regression coefficient; Adjusted R^2 - adjusted coefficient of determination

Table 7. **Results of the regression analysis with stress as criterion (dependent variable)**

Predictors (independent variables)	β	t	*p*
(Constant)		-.238	.813
Self-blame	.208	1.539	.128
Blaming others	.322	2.644	.010*
Rumination	.122	.858	.394
Catastrophizing	.032	.222	.825
Positive refocusing	-.291	-2.845	.006**
Model Summary	Adjusted R^2 =.319		

Note: *p*-statistical significance (*p<0.05, **p<0.01); β-regression coefficient; Adjusted R^2 Adjusted coefficient of determination

The variables included in the regression significantly explain 32% of the variance of stress (adjusted R^2=0.319; p<0.01). More frequent blaming of others is associated with greater stress intensity, while positive refocusing is linked to lower stress levels.

Discussion

The aim of this study was to explore the mental health of nurses, as measured by depression, anxiety and stress levels, and to investigate the relationship between these unpleasant emotional states and nurses' cognitive emotion regulation strategies.

Table 2 shows the average stress, anxiety, and depression scores in our sample. The DASS-21 is primarily a screening instrument and not a clinical instrument. It cannot diagnose depression, anxiety or stress but it can indicate whether these problems are significantly affecting a person's life. People in the 'normal' category are likely to be coping well, while those in the 'mild' and 'moderate' categories may benefit from interventions such as stress management techniques. Participants in the 'severe' and 'extremely severe' categories may need professional support. The majority of participants fall into the category with nopronounced symptoms of stress, anxiety, and depression. For a non clinical population positive asymmetry in DASS-21 scores is common. Looking at the possible range of values from 0 to 42, the average values for stress, anxiety, and depression may appear relatively low at first glance. However, the mean values for anxiety and depression are actually above the critical cut-off value.

Among the nurses in our sample exhibiting extremely severe symptoms of negative emotional states, anxiety was the most prevalent (16,05%). We consider this to be the most concerning finding, highlighting the need to provide support to nurses experiencing such high levels of anxiety. This can be done through organized psychoeducation and providing professional support from mental health services. Research shows that additional training for team leaders in management techniques can also be helpful. Team leaders should be able to respond with empathy, understand the causes of nurses' anxiety and take tangible compassionate organizational acrions to support their well-being and clinical practice (28-29).

When comparing the results of our study with other studies that have used the DASS-21 in nurses, it is important to consider the timing of the research, as most recent studies report levels of anxiety, stress, and depression during the COVID-19 pandemic. For this reason, we will compare our results with a study in which the DASS-21 was administred to hospital nurses in Iran shortly before and than after the outbreak of COVID-19 (29). Before the outbreak of COVID-19, the mean scores for anxiety, stress and depression were 8.74 ± 7.77, 13.71 ± 8.89 and 9.90 ± 8.41. These are mean scores that are very similar to each other, i.e., they correspond closely. In the aforementioned study, anxiety, stress, and depression scores increased significantly during the first wave of the COVID-19 pandemic compared to pre-pandemic levels. In contrast, the study by Pačić-Turk et al. (30), which administred the DASS-21 to

135 healthcare workers in Croatia (including both doctors and nurses) during the COVID-19 pandemic, showed slightly lower average scores on the anxiety and depression subscales, while stress was similar to that in our study. This is particularly interesting, as this study involved healthcare workers from the departments most affected by COVID-19, where one might expect more pronounced negative emotional states compared to our study, which was conducted four years after the outbreak of the pandemic.

In terms of cognitive regulation strategies, our results show that nurses most frequently used positive reappraisal, planning, and putting into perspective, all of which are considered adaptive strategies.

The higher prevalence of adaptive strategies is consistent with previous research on cognitive emotional strategies of nurses in general hospital (17). Bamonti et al. (22) also found that planning, positive reappraisal, and acceptance were the most commonly used techniques among geriatric nurses. Similarly, Kharatzadeh et al (23) found that planning, positive reppraisal and putting into persprecitve are the most common among intensive and critical care nurses. To the best of our knowledge, the cognitive emotional regulation strategies of healthcare workers' in Croatia have not yet been studied. However, Filipec et al (24) examined cognitive emotional regulation in physiotherapy students and found that the most frequently used emotional regulation strategies were adapative ones, such as acceptance and positive reppraisal. They also found that female students used less effective cognitive emotion regulation strategies than male students.

Blaming others, as one of the maladaptive cognitve emotion regulation strategies, was found to to be siginificant predictor of all unpleasant emotional states (depression, anxiety, stress). Domardzaka and Fajkowska (31) found that blaming others for what happened was particularly strognly associated with reactive valence depression, composed of negative affect and attentional avoidance. In addition, Wang et al (18) found that all maladaptive strategies, including blaming others, were used much more frequently by nurses with depressive symptoms than those without depressive symptoms. In the same study, all maladaptive strategies, including blaming others, were used significantly more frequently by nurses with anxiety symptoms than those without anxiety symptoms.

Our results suggest that among the different CER strategies, blaming others was the only significant predictor of all three psychological distress outcomes. This suggests that externalizing blame may play a critical role in nurses' emotional well-being.

Previous research demonstrates that externalizing blame is associated with lower resilience and higher vulnerability to emotional exhaustion (32-33), which may explain why this strategy almost exclusively predicts anxiety, depression and stress in nurses. Although other maladaptive strategies (e.g., self-blame, catastrophizing, rumination) are known to correlate with stress, these are internal attributions that may promote some degree of emotional processing. Blaming others, on the other hand, inhibits emotional processing by focusing on external factors rather than adopting oneself. Another explanation can be that adaptive CER strategies buffer the negative effects of internal attributions such as self-blame, but this buffering effect does not apply to external attributions such as blaming others. Thus, this finding might encourage research to investigate the interplay between concepts from attribution theories and emotion regulation theories in future research.

Apart from the fact that blaming others is a maladaptive strategy, positive refocusing was found to be a significant predictor of stress, suggesting that nurses using this strategy have lower stress levels. This finding is consistent with previous research, that has consistently shown that the use of adaptive cognitive-emotional regulation strategies can help prevent the onset and persistence of mental illness and is often associated with better mental health outcomes (18, 23, 34).

It is interesting to note that, although the nurses in this study used more adaptive than maladaptive strategies, among the adaptive strategies, only positive refocusing was found to be significant predictor, and only for stress.

In a recent comprehensive review, positive refocusing was identified as a key component of most stress reduction programs (35). Bono et al. (36) demonstrated that the introduction of regular daily positive refocusing intervention in clinical settings significantly reduced stress levels in healthcare staff involved in direct patient care. Its effectiveness has also been demonstrated in nurses, particularly in coping with ethical dilemmas related to moral stress in the workplace (35) and in coping with workplace bullying (37).

Study limitations

We were not able to measure gender differences. The sample might be biased as it includes only those who responded, and these might have particular characteristics (e.g., motivation, more free time, interest in the topic), so the generalizability of the results might be limited.

Study strengths

Strategies of cognitive emotion regulation have not been studied in Croatia before. The detailed analysis of individual cognitive emotional strategies conducted in this study can serve as a practical guide for planning interventions to miaintain nurses' mental health.

Conclusion

Anxiety is the most pronounced negative emotional state among nurses. Although the majority of nurses do not exhibit pronounced symptoms of the negative emotional states studied, a smaller proportion of nurses with severe or extremely severe symptoms of anxiety, depression and stress should not be overlooked, as these categories indicate a high level of distress that may require professional intervention.

Of all the cognitive emotion regulation strategies studied, the maladaptive strategy of blaming others was found to be the most detrimental to nurses' mental health, as it was a significant predictor of more anxiety, depression, and stress. Among the adaptive strategies, positive refocusing was a predictor of lower stress.

Author contributions

Conceptualization (ZP, LG); Data Curation (ZP, LG); Formal Analysis (ZP, LP, LG); Investigation (LG); Methodology (ZP, LP, LG); Project Administration (ZP); Resources (ZP); Supervision (ZP); Validation (ZP, LP); Visualization (ZP, LP); Writing – Original Draft (ZP, LP, LG); Writing – Review & Editing (ZP, LP).

Conflict of interest

The authors declare no conflicts of interest.

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Declaration of Generative AI in Writing

During preparation, the author(s) used ChatGpt Open AI for language enhancement.

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