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Determination of Self-Critical Rumination levels and work stress levels in intensive care nurses: a descriptive, cross-sectional and relational study

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Abstract
This study aims to determine the levels of self-critical rumination and work stress among intensive care nurses. The research is descriptive and cross-sectional. The sample of the study consists of 131 nurses working in intensive care units. Personal Information Form, Self-Critical Rumination Scale and Work Stress Scale were used to collect the data. Mann Whitney U test and Kruskall Wallis test were used to analyze the data, and the Spearman correlation coefficient was used to examine the relationship between variables. The significance level was taken as $p<0.05$. In the study, it was determined that the mean scores of the Self-Critical Rumination Scale and the Work Stress Scale were moderate. The data revealed a high level of positive correlation between the Self-Critical Rumination Scale and the Work Stress Scale. Therefore, it was concluded that the increase in the stress levels of the nurses can also increase the self-critical rumination process. Although there are studies examining the overall stress experienced by intensive care nurses in the working environment in the nursing literature, studies examining the stress levels in an individual sense have not been carried out. Thus, this study can give an idea about individual stress levels since the self-critical rumination levels and work stress levels of intensive care nurses are examined together. In this context, our study is important because it is field-specific and original, and we believe that it will shed a light for future studies.

Keywords Rumination · Work stress · Intensive care · Nurses

Introduction

Compared to nurses working in other clinical settings in healthcare settings, nurses working in intensive care units are more likely to encounter patients with dynamic and life-threatening medical conditions and high morbidity and mortality rates (Allen et al., 2013; Karanikola et al., 2014). Additionally, working in critical care is physically and intellectually challenging, and it is increasingly necessary for the contemporary critical care nurse to have sufficient technological understanding and competence to manage advanced monitoring and clinical information systems. Furthermore, unequal workload distribution, inadequate staffing, end-of-life care and interprofessional conflicts in intensive care work environments can also contribute to the complexity of nurses' practice environment, complicate the care process and increase stress levels (Chuang et al., 2016; Kaddourah et al., 2018).

Self-critical rumination

In general terms, rumination can be defined as an involuntary, compelling, and repetitive thinking pattern that can be triggered by various emotions, thoughts, and experiences, focused on the past and directed toward oneself. Smart et al. (2016) defined self-critical rumination as a situation in which self-criticism, a form of self-evaluation developed for oneself or devalued by comparing oneself with others, turns

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into a ruminative way of thinking because of not meeting one's high standards. Kolubinski et al. reported that attention is focused on the aspects of embarrassment and general self-worth in self-critical rumination (Kolubinski et al., 2017). They showed that metacognition, awareness of one's thoughts processes and an understanding of the patterns behind them, may have an important role in the emergence and continuation of self-critical rumination.

Work stress

Stress is a condition that shows various physical and mental symptoms, which occurs when the physical and mental limits of the organism are threatened and forced (Andreas & Florian, 2003), while work stress is a situation in which individual characteristics mediate work and organizational demands, constraints, and opportunities. Ross (1997) states that job stress is the "emotional and physiological arousal" experienced by an employee when exposed to a conflict with another employee or a customer or when exposed to a threatening situation, while Leka and his colleagues (2004) state that "job-related stress is the reaction that people may give when faced with job pressures and demands that are incompatible with their knowledge and that challenge their coping skills". The work stress response is an objective individual phenomenon, and the person stress level is affected by the frequency of stressful events in the work environment, work conditions or individual characteristics (Rai & Maheshwari, 2020). It has been reported that nurses' personality traits affect their stress levels, job performance and adaptation (Ganu & Kogutu, 2014; Gözel et al., 2017). In this context, nurses' characteristics and stress levels vary. Various studies have shown that the nursing profession is difficult and stressful, and that stress caused by the workplace is more common among nurses (Badu et al., 2020; Camkerten et al., 2020; Guo et al., 2018). ICN (International Council of Nurses) Occupational Stress and the Threat to Worker Health report in 2020 listed many factors that may cause stress in nurses. ICN has listed the most important sources of stress among nurses in the hospital working environment as care and death of a dying person, conflict with superiors and colleagues including other health care professionals, inadequate preparation to deal with emotional needs of patients and their families, lack of staff support and workload uncertainty about treatment plans (ICN on Occupational Stress and the Threat to Worker Health, Harder et al., 2020). In addition to these items, ambiguity in roles in the workplace, role conflict, management style, responsibility, career barriers, negative physical space, and environmental conditions can also be counted among the sources that cause stress for nurses (Ahmad et al., 2022; Ekawarna et al., 2021; Olaniyan, 2020). One of the most important and frequently encountered factors among work-related stressors is workload (Mo et al., 2020). Working under time pressure to complete more work than necessary in a certain time or overload work than the individual's ability and skill level is also a source of stress for a person (Adebayo et al., 2021; Badu et al., 2020).

Calmes & Roberts reported that both worry, and rumination predicted anxiety prospectively. Based on their findings, they stated that repetitive thinking in the form of both worry and rumination can increase individual anxiety (Calmes & Roberts, 2007). Alloy et al. also defined rumination as a cognitive process that makes people prone to depression and revealed that individuals with increased mental chewing tendencies are more prone to depression (Alloy et al., 2006). Nolen-Hoeksema et al. (1994) revealed the relationship between rumination and depression and stated that it causes an increase in grief symptoms.

It is also claimed that rumination is associated with many conditions such as anxiety disorder (Nolen-Hoeksema, 2000), suicide attempt (Morrison et al., 2008), eating disorder (Lyubomirsky et al., 2015) and substance addiction (Nolen-Hoeksema et al., 2002). Overall, based on these studies it is noted that there is a strong relationship between rumination, stress, and individual characteristics in coping with stress.

Guo et al. (2018) found that Australian nurses experienced more mental fatigue and burnout than Chinese nurses. They also stated that burnout is a stress-related condition accompanied by loss of energy and fatigue (Guo et al., 2018). Interestingly, t was found that Chinese nurses and Australian nurses faced similar stressful situations in the work environment when the reason for the high burnout rate in Australian nurses was investigated in the same study. They found that Chinese nurses had higher levels of education, higher rates of marriage or domestic partnerships, and healthier lifestyles than Australian nurses and midwives. The importance of individual characteristics in coping with stress is emphasized by stating that the education levels are higher in Chinese nurses. the nurses that have more nursing knowledge, receive more family support, and being successful in dealing with problems may have helped alleviate burnout. Baysak et al. (2020) state that rumination can be a decisive marker in the emergence of psychiatric disorders and is also a factor that may affect the clinical course of psychiatric diseases and some physical diseases. And thus, personality characteristics of nurses affect their job performance and adaptation (Ganu & Kogutu, 2014; Gözel et al., 2017). The differences in the stress level that individuals perceive in the face of negative life events and challenging situations are affected by several individual and social variables (Seery & Quinton, 2016; Aksoz Efe, 2018).

Intensive care nurses may always have to be careful and make quick decisions to provide safe care to patients and to intervene in sudden changes in the clinical conditions of patients. (Gok Metin, 2019). It is known that excessive stress is associated with many negative situations such as difficulty in making decisions, weakening of judgment, decrease in self-esteem and productivity, weakness in memory, lack of concentration and increase in errors (Bayram et al., 2024), which may cause problems in ensuring patient safety. The self-critical thinking style is characterized by a persistent and intense form of internal dialogue that expresses hostility and contempt toward oneself when one fails to meet the high standards one has set for oneself. In this context, intensive care nurses may develop emotional distress following direct and indirect exposure to traumatic events. This situation should be measured and its relationship with work stress should be questioned.

It is very important to question whether there is a relationship between self-critical rumination and job stress levels of nurses working in intensive care units, which have many physically and psychologically challenging factors. Although there are many studies examining the stress experienced by intensive care nurses in the work environment in general, there is no study examining the levels of self-critical rumination and job stress together. In this context, this study aims to determine whether there is a relationship between the levels of self-critical rumination and job stress in intensive care nurses.

Hypotheses

H0 = There is no relationship between the self-critical rumination and job stress levels of intensive care nurses.
H1 = There is a relationship between the self-critical rumination and job stress levels of intensive care nurses.

Method

The study was carried out in the intensive care units of Sivas Cumhuriyet University (SCU) Health Services Application and Research Hospital. This hospital is a training hospital affiliated with a university and provides services at the tertiary level. The hospital includes internal and surgical clinics and special units with 55 bed-capacity (Palliative unit, Dialysis unit, Physical therapy and rehabilitation hospital, oncology hospital), and many units providing outpatient treatment and services, and employs 770 nurses. The current research is a descriptive, cross-sectional, and relational study type. The universe of the research consisted of all the nurses working in the pediatric and adult intensive care units in the SCU Health Services Application and Research Hospital. The sample of the study consisted of 131 nurses who agreed to participate in the study without any limitations.

The sample size of the study was determined as at least 130 nurses using the universal sample calculation formula (Kılınç, 2012). The sample was selected by stratified random sampling method.

$$S = \frac{\mathrm{Nt}^2 p.q}{\mathrm{d}^2 (N-1) + t^2 p.q} = 130$$

Intensive care units in the institution where the study was conducted differ in that they have different bed capacities and varying numbers of employees, serving different patient and disease groups. However, all intensive care units are units with the technical equipment and competence to provide care and treatment to tertiary intensive care patients. Nurses working in the intensive care unit work in situations that may cause stress, such as the number of patients, clinical conditions of the patients, etc., which may vary between units. Situations that create stress in nurses stated by ICN in its report (Caring for a dying person and death, conflict with superiors and colleagues, including other health care professionals, inability to cope with the emotional needs of patients and their families, lack of staff support, workload, uncertainty about treatment plans, etc.) All intensive care units were included in the study because they were similar among nursing staff.

In the SCU hospital, a total of 10 different intensive care units from 3 different types of intensive care, including pediatric, newborn and adult (Anesthesia department, Coronary department, Cardiovascular Surgery Department, General Surgery Department, Neurology Department, Neurosurgery department, Thoracic Surgery Department, Diseases Department, Internal Medicine Department, Pediatrics Department, and Neonatal Department). Study data were obtained by filling in the participant information form, the Self-Critical Rumination Scale, and the Work Stress Scale-20 by the nurses working these units.

Research inclusion criteria

Intensive care nurses who could speak and understand Turkish, had a written informed consent form, and had no defined psychological distress participated in the study voluntarily.

Application of data collection tools

After obtaining permission from the institution for the study, the nurses who agreed to participate in the study filled in the participant information form about their sociodemographic characteristics, data were collected. Consent

was obtained from the participants before the study. It was explained to the participants that the not very well-known concept of rumination, which could impair the quality of care of the study, and the results of the study would contribute to increasing the quality of nursing care. The surveys were filled out online by the participants in April, 2023. Before the surveys were directed to the participants, each intensive care nurse in charge was interviewed and the purpose and method of the study were explained. Finally, the participants' consent was obtained and the questionnaires were filled out by the participants.

Personal information form

The nurse's age, gender, marital status, number of children, educational status, years of work, the intensive care unit works, the time works in intensive care unit, working style, weekly working hours, socioeconomic status, choosing the profession willingly, personality structure and level of perception of stress were recorded. The questions and information in the form about the participants were created by the researchers. This form aims to identify situations that may cause individual stress in nurses and to obtain data regarding the coping process.

Self-Critical Rumination Scale

The scale was developed by Smart et al. (2016) to evaluate ruminative processes associated with self-critical thoughts. The Turkish validity and reliability study of the scale was carried out by Erarslan İngeç et al. (2021), and the scale consists of 10 items. It is asked how the statements in the Likert-type 4-point scale describe people (1 =not at all, 2= very little, 3= moderately, 4= very much). The scale consists of a total of 10 questions. The minimum score that can be obtained from the scale is 10, the maximum score is 40. As the scores obtained from the scale increase, the level of self-critical rumination of the individuals also increases. In the original study in which the psychometric properties were examined, the internal consistency coefficient of the scale was determined as 0.92 and it was seen that it had a single-factor structure. In this study, Cronbach's alpha value of the scale was calculated as 0.90. It was also reported that the scale showed a high correlation with structures related to both self-criticism and rumination.

Work Stress Scale-20

The Perceived Stress Scale (PSS) was developed by Cohen et al. (1983). It was later adapted to Turkish culture by Tatar (2020). A Work Stress in the first study, 24 items were selected. In the second study, 20 items were selected and the final version of the scale was named A Work Stress Scale-20. The developed scale is aimed at measuring the stress levels in the hospital. There is no reverse-coded item in the one-dimensional A Work Stress Scale-20. The scale consists of a total of 20 questions. The lowest score that can be obtained from the scale is 20, and the highest score is 100. As the scores obtained from the scale increase, the work stress levels of individuals also increase. The Cronbach's alpha value for the whole scale was found to be 0.91. In this study, the Cronbach's alpha value of the scale was calculated as 0.89. As a Likert-type scale, the scale is evaluated over 5-point options.

Evaluation of data

Data were analyzed with the IBM SPSS V25 program. Frequency and percentage were used in the analysis of sociodemographic data. The skewness and kurtosis values (+ 1, −1) were examined with the Kolmogorov-Smirnov test, and the conformity of the data distribution to the normal distribution was tested. Mann Whitney U test and Kruskall Wallis test were used to compare data that were not normally distributed. Spearman rank correlation coefficient was used to examine the relationship between variables. Since the data were not normally distributed, Spearman Pears correlation coefficient was used to examine the relationship between variables. The significance level was taken as $p < 0.05$.

Findings

The distribution of the participants in the study according to some introductory characteristics is given in Table 1. 69.50% of the participants are women's, 83.96% of the participants are between the ages of 20–35, 71.75% of the participants are Associate/Bachelor's graduates, 55.70% of the participants have no children, 55.72% work in the Anesthesia Intensive Care Unit, 65.60% work weekly basis. It was determined that participants worked 0–40 h per week and 93.10% of them worked as service nurses. It was also found that 66.40% of the participants chose the nursing profession voluntarily, 65.60% had a moderate socio-economic level, 35.18% had a perfectionist personality structure, and 68.70% of the participants sometimes felt stressed.

Table 2 shows the Mean Scores of the Self-Critical Rumination Scale and the Work Stress Scale. The mean score of the participants on the Self-Critical Rumination Scale was determined as 20.97 ±6.92. The Work Stress Scale mean total score was calculated as 58.38 ±8.14.

The Self-Critical Rumination Scale and Work Stress Scale Total Scores According to Some Demographic Characteristics of the Participants are given in Table 3. Accordingly, the

Table 1 Distribution of participants by some introductory characteristics

	n	%
Gender		
Female	91	69.50
Male	40	30.50
20–35	110	83.96
36–50	21	16.04
Educational Status		
Vocational School of Health	25	19.10
Associate Degree/Licence	94	71.75
Graduate	12	9.15
Having a Child		
Yes	58	44.30
No	73	55.70
Department of Study		
Anesthesia intensive care	73	55.72
Neonatal intensive care	10	7.64
CVC intensive care	16	12.21
Surgical Intensive Care	22	16.79
Chest Disease intensive care	10	7.64
Satisfaction with working as a nurse		
Yes	84	64.10
No	47	35.90
Your weekly working hours		
0–40	86	65.60
41–50	45	34.40
Voluntary choice of the nursing profession		
Yes	87	66.40
No	44	33.60
Your current job		
Responsible nurse	9	6.90
Service nurse	122	93.10
Socio-economic level		
Low	45	34.40
Middle	86	65.60
Personality structure		
Shy	37	28.20
Aggressive	46	35.10
Attacker	2	1.52
Perfectionist	46	35.18
Frequency of feeling stressed		
Always	34	26.00
Sometimes	90	68.70
Never	7	5.30

Table 2 Mean scores of the Self-Critical Rumination Scale and the Work Stress Scale

	$\overline{X} \pm SS$	Min.	Max.
Self-Critical Rumination Scale	20.97 ± 6.92	10	40
Work Stress Scale	58.38 ± 8.14	20	98

mean score of the women nurses on the Self-Critical Rumination Scale was calculated as 23.85 ± 7.34 ($p = 0.004$), and the mean total score on the Work Stress Scale was calculated as 59.64 ± 10.16 ($p = 0.005$).

The Self-Critical Rumination Scale and Work Stress Scale Total Scores of the participants with low socio-economic levels were found to be 23.97 ± 7.16 and 59.12 ± 7.64, respectively ($p = 0.005$). The mean score of the nurses working 41–50 h per week on the Self-Critical Rumination Scale was found to be 22.60 ± 7.06 ($p = 0.005$).

The mean scores on the Self-Critical Rumination Scale of nurses working as service nurses were 21.24 ± 6.95 ($p = 0.005$), and the mean scores on the Work Stress Scale were 58.75 ± 6.95 ($p = 0.003$). The Correlation between the Self-Critical Rumination Scale and the Work Stress Scale is presented in Table 4. Abstract A high level of positive correlation was found between the Critical Rumination Scale and the Work Stress Scale ($r = 0.610$, $p = 0.001$).

Discussion

Intensive care nurses are exposed to various stressors at different levels and for different periods in the working environment. In this study, we aimed to determine whether there is a relationship between the self-critical rumination levels and job stress levels of nurses working in intensive care units, which are known to be a stressful working environment. The results showed that there is a highly positive relationship between the Self-Critical Rumination Scale and the Work Stress Scale. When the data obtained according to some descriptive characteristics of the participants in the study were examined, no significant difference was detected in terms of gender, age, education level, intensive care unit where they worked, number of hours of work per week, personality structure, stress situations they described, and the status of having children.

When the data we obtained regarding some of the descriptive characteristics of the participants in the study are examined, it is seen that 69.50% of the participants are women's and they score higher on the Self-Critical Rumination Scale and Work Stress Scale than mans.

Based on this data, it is possible to say that women's experience more intense stress and more repetitive thought processes than men. The difference between the scale scores of women's and mans is also statistically significant. Various studies in the literature obtain results similar to ours, indicating that womens experience more stress than mans (Brougham et al., 2009; Deatherage et al., 2014; Fraizer et al., 2009). These studies explain their results by the fact that women are more vulnerable than mans. Although the results of this study support our study results, it is also possible to find studies in the literature that do not support our results. Guo et al. (2018) in their study investigating burnout among Australian and Chinese nurses, found that participants from both countries experienced moderate levels of burnout (Guo

Table 3 Total mean scores of the Self-Critical Rumination Scale and Work Stress Scale by some demographic characteristics of the participants

	Self-Critical Rumination Scale x̄±s.s	Work Stress Scale x̄±s.s
Gender		
Female	23.85 ± 7.34	59.64 ± 10.16
Male	20.58 ± 6.73	57.83 ± 9.64
Test Statistics	**t = 1.968 *p = 0.004****	**t = 1.663 *p = 0.005***
Age		
20–35	20.83 ± 6.74	57.31 ± 8.12
36–50	21.37 ± 7.51	61.56 ± 7.88
Test Statistics	**t = 0.381 *p = 0.704***	**t = 1.499 *p = 0.801***
Educational Status		
Vocational School of Health	22.93 ± 7.15	59.32 ± 7.55
Associate Degree/Licence	20.80 ± 6.84	59.18 ± 6.88
Graduate	18.16 ± 6.37	50.16 ± 9.92
Test Statistics	**F = 2.046 *p = 0.133***	**F = 2.262 *p = 0.108***
Socio-economic level		
Low	23.97 ± 7.16	59.12 ± 7.64
Middle	20.95 ± 6.50	56.99 ± 6.47
Test Statistics	**t = 1.017 *p = 0.005***	**t = 1.430 *p = 0.005***
Personality structure		
Shy	21,13 ± 5.68	59,64 ± 6.90
Aggressive	20,02 ± 7.09	56,60 ± 6.78
Attacker	21,84 ± 7.70	60,67 ± 7.84
Perfectionist	20,92 ± 7.09	56,90 ± 8.80
Test Statistics	**F = 0.387 *p = 0.763***	**F = 0.66 *p = 0.576***
Having a Child		
Yes	20.17 ± 6.15	57.30 ± 8.40
No	21.60 ± 7.45	59.24 ± 9.44
Test Statistics	**t = 1.174 *p = 0.262***	**t = 0.777 *p = 0.410***
Department of Study		
Anesthesia intensive care	21,20 ± 7.12	56,29 ± 6.90
Neonatal intensive care	19,75 ± 5.22	59,27 ± 6.84
CVC intensive care	20,72 ± 7.88	62,41 ± 7.26
Surgical intensive care	20,47 ± 6.80	58,39 ± 8.65
Chest disease intensive care	22,81 ± 6.64	59,81 ± 8.30
Test Statistics	**F = 0.504 *p = 0.733***	**F = 0.724 *p = 0.577***
Weekly working hours		
0–40	20.64 ± 6.86	59.19 ± 8.02
41–50	22.60 ± 7.06	56.83 ± 7.17
Test Statistics	**t = 1.753 *p = 0.005***	**t = 0.904 *p = 0.272***
Current Position		
Service Nurse	21.24 ± 6.95	*58.75 ± 6.95*
Responsible Nurse	17.22 ± 5.44	*53.33 ± 7.78*
Test Statistics	**t = 2.696 *p = 0.005***	***t = 1.108 p = 0.003*** **
Voluntary choice of the nursing profession		
Yes	21.81 ± 7.09	59.11 ± 0.95
No	19.29 ± 6.32	59.93 ± 0.83
Test Statistics	**t = 1.009 *p = 0.304***	**t = 0.829 *p = 0.543***
Satisfaction with working as a nurse		
Yes	20.70 ± 7.05	58.50 ± 8.70
No	21.45 ± 6.73	58.16 ± 7.82
Test Statistics	**t = 0.591 *p = 0.647***	**t = 0.132 *p = 0.486***
Frequency of feeling stressed		
Always	20.26 ± 5.98	57.60 ± 6.67
Sometimes	21.20 ± 7.24	58.57 ± 6.90
Never	21.42 ± 7.67	59.68 ± 7.14
Test Statistics	**F = 0.240 *p = 0.787***	**F = 0.087 *p = 0.917***

*$p < 0.05$……. Compared to men

**$p < 0.05$…… Compared to service nurse

Table 4 Correlation of Self-Critical Rumination Scale and Work Stress Scale

		Work Stress Scale
Self-Critical Rumination Scale	Correlation Coefficient	0.610
	Sig. (2-tailed)	0.001
	N	131

et al., 2018). When the samples of this and similar studies are examined, it is seen that the majority of the participants are women's, similar to our study (Calmes & Roberts, 2007; Camkerten et al., 2020; Guo et al., 2018; Kolubinski et al., 2017). Calmes & Roberts, in their 2007 study on anxiety and rumination, found that the majority of the participants were women, and their anxiety and rumination levels were high, but they could not detect a statistically significant difference between genders. These studies explain their results by the fact that womens are more vulnerable than mans, and we agree with this interpretation. In addition, although there are social differences, we think that the fact that womens have different responsibilities in their home lives in addition to their responsibilities at work has an impact on the stress levels experienced by women's. As a similar result Camkerten et al. (2020) stated that there was no statistically significant result between genders as a result of their study to investigate whether there was a difference between the general stress levels and work stress levels of healthcare workers (Camkerten et al., 2020). It is thought that the lack of overlap between these results and our study results may be due to institutional and social differences in the countries where the studies were conducted. It is also thought that the difference in sharing the status, values and responsibilities given to women socially will be effective.

When the data obtained from the participants are examined, it is noteworthy that, although not statistically significant, the scale scores of those who stated that they do not have children are higher than the scale scores of participants who have children. Although this situation suggests that the idea of having a child causes anxiety in participants who do not have children, more studies on this issue are needed to reach a clear conclusion. Guo et al. (2018) found that although Australian nurses had more earnings than Chinese nurses, their satisfaction levels were low. They concluded that the fact that Chinese nurses are more committed to their profession and have high levels of satisfaction despite their low salaries may encourage them to cope with clinical difficulties and experience fewer burnout symptoms (Guo et al., 2018). Although our study did not reach a statistically significant result in socio-economic terms, there are studies in the literature that conclude that low-income levels increase the stress levels of employees. The study of Camkerten et al. (2020) is one of them. Camkerten et al. (2020) examined both the general stress levels and job stress levels of healthcare professionals working in a hospital environment in terms of socio-demographic variables and came to a statistically significant conclusion that only low socio-economic levels could be the cause of stress (Camkerten et al., 2020). Although our study result does not support it statistically, it is similar to the study result of Camkerten et al. (2020) when looked at in numerical value.

In our study, it was determined that participants with low socioeconomic status had higher scale scores than others, meaning they had higher stress and rumination levels. This result supports the idea that low-income levels can cause stress. We think that this situation will increase the stress levels of people trying to live with low socio-economic income levels, as their quality of life may be negatively affected. For this reason, we think that detailed results can be obtained by examining the family's total income levels and living standards, rather than the low-income level of individuals alone. In addition, it was determined that the scale scores of those who worked as charge nurses and those who stated that they had an aggressive personality structure were higher than the others. It is thought that these factors may negatively affect the scale scores because they make daily life difficult, create stress, and increase anxiety. When the study data is examined, it is seen that the scale scores increase as the education level of the participants increases. This result is consistent with Guo et al. (2018) and does not coincide with the results obtained. The difference between these two studies is that the working environments are not similar, equipment deficiencies due to institutional financial concerns, scarcity of team members, role confusion, management style, different areas of responsibility, negative physical space and environmental conditions cause stress in nurses may be due to differences between several factors or may be explained by the idea that the nurse's anxiety levels may increase due to their increased awareness of patient safety and/or clinical deficiencies in the working environment because of their education levels (Mo et al., 2020).

Again, when studies on rumination were examined, Roso-Bas et al. (2016) found that Spanish nursing students with high depressive rumination were pessimistic and therefore more likely to drop out of their academic studies. In their study conducted to determine the moderating effect of self-compassion on the relationship between automatic thoughts and repetitive thoughts and burnout among nursing students, Shigematsu et al. (2024) revealed that self-compassion has a moderating effect on the relationship between rumination and burnout. It was also reported that self-compassion has a moderating effect on the relationship between automatic thoughts and burnout. In the studies of Deniz et al. (2017), a moderate negative correlation was found between the meaning of life and rumination levels of

university students with different levels of self-compassion. In the study conducted by Kocalar (2019) to determine the self-critical rumination and perceived stress levels of 317 university students, it was concluded that there was a positive correlation between self-critical rumination and attachment anxiety and perceived stress. In their study conducted to examine the Mediating Role of Rumination and Self-Regulation Between Self-Generated Stress and Psychological Well-Being, Yazıcı-Kabadayı and Öztemel (2024) found that Rumination and Self-Regulation have a partial mediating role on psychological well-being. Again, in the study conducted by İdil Aksöz-Efe (2018) with 311 university students to examine the relationship between negative life events, psychological counseling service, rumination, and stress, it was found that there was a positive and significant relationship between the number of negative events experienced by the students and their rumination reactions and perceived stress level (Aksoz-Efe, 2018).

In general, when all the data obtained from the study are examined, it is noted that as the Self-Critical Rumination Scale scores increase, the scores obtained from the Work Stress Scale also increase. When looking at the correlation level between both scales, it was determined that there was a high level of positive relationship (H_0). From these data, it can be concluded that the stress levels experienced by nurses should be reduced through improvements and arrangements in their working environments. Thus, while the quality-of-care increases and burnout decreases, professional satisfaction and commitment can increase. Guo et al. (2018) supporting this idea in their study, suggesting that the support of colleagues and clinical consultants is not sufficient to cope with negativities in the workplace, that it is necessary to provide institutional leadership, effective mentoring, and reward strategies, and that reward systems for institutional recognition and effort should be developed.

Conclusion

Although there are studies in the nursing literature examining the stress experienced by intensive care nurses in the work environment in general, no studies have been found examining their stress levels individually. This study provides insight into individual stress levels because the self-critical rumination levels and job stress levels of intensive care nurses are examined together. In this context, our study is important and original because it is specific to the field, and it is thought to shed light on future studies.

According to the findings of this study, it was found that the Total Self-Critical Rumination Scale and Job Stress Scale Scores of participants with lower socioeconomic status were higher. It was also found that the Self-Critical Rumination Scale scores of nurses working 41–50 h per week and the Self-Critical Rumination Scale and Job Stress Scale scores of nurses working as ward nurses were higher. It was also determined that the scale scores of those working as responsible nurses and those who stated that they had an aggressive personality structure were higher than the others. From the data we obtained, it was concluded that the increase in nurses' stress levels also increased the self-critical rumination process. Although it is not possible to completely prevent nurses from experiencing stress in their work environment, it is important to decide to reduce it. Since the job to be done is not suitable for the individual's talent and skill level, it can cause stress in the individual, therefore, incorporating methods that will make the person feel good, such as assignments that consider personal characteristics, rewards and recognition, institutional policies can reduce stress and strengthen professional commitment. Thus, the quality of care can increase, burnout can decrease, and professional satisfaction and commitment can increase.

Limitations of the research

There are some limitations of the research. This study was conducted with participants from different intensive care units in a hospital, and the majority of the participants were nurses in a single intensive care unit. Therefore, its generalizability is limited.

Authors' contributions Study conception and design: TK, ZG; Data collection: TK; Data analysis and interpretation: TK, ZG; Drafting of the article: TK, ZG; Critical revision of the article: TK, ZG.

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Data availability The data of this research cannot be shared openly to protect the privacy of research participants.

Declarations

Ethical aspect of research Before starting the study, approval was obtained from the ethics committee of Sivas Cumhuriyet University, Non-Invasive Clinical Studies, dated 22.02.2023, and numbered 2023-02/12. During the study process, the study was carried out by observing the Helsinki Declaration rules. Voluntary consent was obtained from the participants in the study. There is no conflict of interest among the researchers.

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