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Original Article

Relationship of Early Maladaptive Schemas and Emotional Cognitive Regulation with the Mental Health of Operating Room Technologists

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Abstract

Background: The mental health of individuals is an effective factor in having harmonious communication with others and changing and improving personal and social environments. This study aimed to investigate the relationship between primary incompatible patterns, cognitive-emotional regulation, and the mental health of operating room technologists in educational therapeutic centers in West Azerbaijan province, Iran.

Methods: This cross-sectional descriptive-analytical study consisted of all operating room technologists working in educational centers in West Azerbaijan province. The inclusion criteria were technologists who had no history of mental illness diagnosed by a psychiatrist. The sample consisted of 123 people who were selected by simple random sampling. The data were collected using several demographic data forms, including the Early Maladaptive Schema Questionnaire, the Cognitive-Emotional Regulation Questionnaire (CERQ), and the Mental Health Questionnaire. The obtained data were analyzed by descriptive and inferential statistical tests, including the Kolmogorov-Smirnov test and Spearman correlation in SPSS 20 software.

Results: The results showed a direct relationship between early maladaptive schemas and mental health ($r=0.37$, $P<0.05$), as well as between emotional cognitive regulation and mental health ($r=0.30$, $P<0.05$). A significant difference was found between emotional cognitive adjustment with age ($r=0.12$, $P<0.05$) and work experience ($r=0.14$, $P<0.05$), as well as between mental health and employment status ($r=0.07$, $P<0.05$). There was a direct and significant relationship.

Conclusion: Based on the results, a direct and significant relationship was observed between early maladaptive schemas, emotional cognitive regulation, and the mental health of operating room technologists.

Keywords: Early maladaptive schema, Cognitive emotion regulation, Mental health, Operating room technologist

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Introduction

Mental well-being is an influential factor in harmonious and coordinated interpersonal relationships, as well as in the modification and improvement of social environments (1). Occupational environments such as operating rooms, burn units, psychiatric departments, and emergency settings have significant effects on the mental health status of employees (2). Mental health, as one of the dimensions of public health, plays a significant role in individuals' lives (3). In 1948, the World Health Organization introduced the tripartite dimensions of health, namely, physical, mental, and social health, all of which are necessary and interrelated. The issue of mental health has gained attention as an important dimension of overall health. Even in recent studies, it has been shown that mental illnesses have the highest prevalence

and incidence (4,5). Factors such as being constantly exposed to patients, being responsible for patient health, performing clinical procedures, having no sufficient resources or equipment, dealing with emergencies and unpredictable situations, and experiencing excessive noise in the workplace have been identified as occupational stressors for hospital staff (6). Unfavorable environmental factors such as noise, light, radiation, heat, high humidity, understaffing, and heavy workload contribute to stress, especially in the operating room environment, which is considered a stressful condition and influences the mental health of nurses (7). Psychologists and health researchers have focused on identifying psychological variables, especially personality variables, related to health and illness (4,8). Maladaptive patterns are initial cognitive beliefs about themselves, others, and the environment, typically stemming from unmet basic and emotional needs in childhood. These patterns persist and remain stable throughout life, helping them organize and process received information (9). According to the five developmental needs of children, the patterns are divided into five domains, including interference and neglect, autonomy and impaired functioning, impaired constraints, other-orientation, and excessive vigilance and inhibition (10). Cognitive emotion regulation is one of these skills that enhances adaptive functioning and effective behaviors (11). Emotion regulation is the cognitive process of managing emotions, impacting attention, decision-making, memory, physiological responses, and social interactions (12,13). It plays a crucial role in experiencing psychological well-being, forming a cohesive identity, and understanding the connection between attachment and negative events (14). Adaptive emotion regulation strategies improve psychological health, while maladaptive strategies contribute to psychological distress. Negative strategies are positively correlated with depression and stress, while positive strategies are negatively associated with psychological well-being (15). In conclusion, psychological well-being is influenced by the use of specific cognitive emotion regulation strategies and an accurate evaluation of stressful situations. Individuals use different emotion regulation strategies to modify or adjust their emotional experiences when faced with stressful events (16,17). Cognitive emotion regulation is one of the most common strategies. Cognition or cognitive processes help individuals regulate and not be overwhelmed by their emotions and feelings (18). Cognitive emotion regulation refers to the cognitive management and manipulation of emotional stimuli (19). Emotion regulation involves using behavioral and cognitive strategies to change the duration or intensity of an emotional experience (20,21). Cognitive emotion regulation enables us to respond to diverse environmental events with greater flexibility (22). Aldao et al found that adaptive emotion regulation strategies reduce mental disorders, while maladaptive strategies increase them (17).

Research shows that negative strategies, including self-blame, rumination, and catastrophic thinking, are linked to negative emotions such as depression, anxiety, stress, and anger (23). Operating room technologists experience high job stress due to technical complexities, unforeseen complications, and time constraints. Emotional intelligence can mitigate stress and enhance surgical team performance by improving decision-making and problem-solving skills (24). Primary incompatible patterns can increase cognitive-emotional regulation, leading to negative emotions and altering mental health (25,26). This study aimed to investigate the relationship between primary incompatible patterns, cognitive-emotional regulation, and the mental health of operating room technologists in educational therapeutic centers in West Azerbaijan province, Iran.

Materials and Methods

This descriptive-analytic study was conducted between September and December 2018. The target population consisted of all operating room technologists working in educational therapeutic centers in West Azerbaijan province who were employed during the study period and held an associate's or bachelor's degree in operating room technology. After obtaining ethical approval, a total of 123 operating room technologists were selected using stratified random sampling. The inclusion criteria were having at least one year of work experience, not using medications affecting mental health, and not having a history of psychiatric disorders. Consequently, technologists with less than one year of experience, those under psychiatric care, or those using psychiatric medications were excluded from the study. The data were collected by distributing questionnaires to all operating room technologist personnel in the hospital. They were asked to complete the questionnaires. Then, the information was collected as a whole. The questionnaire was used as the data collection tool in this study. The different sections of the questionnaire consisted of two sections. The first section measured demographic characteristics, including gender, work experience, marital status, educational level, and employment type. The second section of the questionnaire consisted of the Future Schematic-Q-sort (FS-QS), Cognitive-Emotional Regulation Questionnaire (CERQ), and General Health Questionnaire (GHQ). The FS-QS questionnaire, developed by Young in 1998, is a 75-item questionnaire designed to assess 15 primary incompatible schemas (27). The Early Maladaptive Schema Questionnaire has a Cronbach's alpha coefficient of 0.94 (28). The CERQ was developed by Garnefski et al. This multidimensional questionnaire measures different coping strategies used to deal with experiencing and handling negative situations (29). Unlike other self-report questionnaires that assess coping styles globally and abstractly, CERQ specifically focuses on cognitive processes and how they contribute to maladaptive emotion regulation. CERQ consists of 36 items and is self-administered (30). The coefficients of Cronbach's alpha

for the subscales ranged from 67% to 89%, indicating satisfactory internal consistency and reliability (31,32). The GHQ is a psychological health questionnaire developed by Goldberg in 1972. It is a self-report questionnaire that is used in clinical settings to screen individuals with mental disorders. The questionnaire focuses on two main categories of phenomena, including the individual's inability to exhibit healthy behavior and the emergence of new phenomena with a disabling nature. Therefore, the main objective of this questionnaire is to create a distinction between mental illness and health rather than providing a specific diagnosis within the hierarchy of mental illnesses. The original version of the GHQ consists of 60 questions. The 28-item form of the GHQ has the advantage of being designed for the entire population (33). Noorbala et al conducted a validity study on this questionnaire in 2001, which involved 90 participants. One week after the initial visit, they retested and evaluated the participants. The intra-class correlation coefficient between the test-retest scores was 0.85 (34). Furthermore, the questionnaire demonstrated good reliability, with a Cronbach's alpha coefficient of 0.90 (35).

Results

Overall, 123 operating room technologists participated in this study, including 58 (47.2%) women and 65 (52.8%) men. The component of reliance or incompetence received the lowest score (mean = 67.7), while rigorous criteria received the highest score (mean = 54.14). The component of blaming others received the lowest score (mean = 46.6), while the component of positive refocusing received the highest score (mean = 29.12). Operating room technicians had an average degree of cognitive-emotional control (mean = 67.77). The study found that operating room technicians had moderate mental health, with the lowest and highest scores being associated with depression and social insufficiency, respectively. The Kolmogorov-Smirnov test was used to assess data normality in inferential statistics, followed by the non-parametric Spearman correlation test for rank-ordered data, estimating significant levels. The data is non-normal, rejecting the hypothesis of variable data normality and necessitating non-parametric tests such as the non-parametric Spearman correlation test for inferential analysis. The study demonstrated a significant positive correlation between early maladaptive schemas and cognitive-emotional regulation among operating room technicians. An increase in initial maladjustment led to a weaker increase (0.24) in cognitive-emotional regulation (0.24). Additionally, an increase in initial maladjustment moderated the level of mental health (0.37) among technicians (Table 1).

Emotional deprivation is significantly correlated with physical symptoms such as anxiety, sleeplessness, and depression among operating room technicians, with increased levels of these symptoms leading to higher levels of depression. The study findings represented a significant positive correlation between abandonment or instability, physical symptoms, and depression ($P < 0.05$). The mistrust/misbehavior variable and depression had a positive and significant connection ($P < 0.05$). In other words, as mistrust and misbehavior increased, so did the incidence of sadness among operating room technologists (0.21). There was a statistically significant positive relationship between social isolation/alienation, physical symptoms, and depression ($P < 0.05$). More precisely, as social isolation and alienation grew, so did the degree of physical symptoms and depression among operating room technologists (0.32, 0.37), respectively. A significant positive association was found between social isolation or alienation, anxiety, insomnia, flaws or shame, somatic symptoms, and sadness among operating room technologists, with increased anxiety, sleeplessness, and sadness. The flaw/shame measure showed a significant positive correlation with somatic symptoms and sadness ($P < 0.05$). There was a statistically significant relationship between the failure variable, physical symptoms, and depression ($P < 0.05$). In addition, a significant and positive association was observed between failure, physical symptoms, depression, anxiety, and sleeplessness ($P < 0.05$). Moreover, there was a significant positive relationship between dependence/incompetence and depression among operating room technologists (0.30). Additionally, the results revealed a negative link between dependency/incompetence and a lack of social activity (0.43) and a significant negative link between dependence/incompetence and inadequate social interaction (0.43) (Table 2).

There was no significant correlation ($P < 0.05$) between the variable of initial maladaptive schemas and the demographic characteristics of operating room technicians, including age, gender, education, work experience, marital status, and employment status. However, a significant positive correlation ($P < 0.05$) was found between the variable of cognitive-emotional regulation and the demographic characteristics of operating room technicians, specifically age ($P = 0.12$) and work experience ($P = 0.14$). Additionally, there was a significant positive correlation ($P < 0.05$) between the variable of mental health and the demographic characteristics of employment status ($P = 0.07$) and work experience ($P < 0.05$) (Table 3).

Table 1. Correlation Results of Initial Maladjustment, Cognitive-emotional Regulation, and Mental Health

Variable		Mental Health	Cognitive-Emotional Regulation	Early Maladaptive Schemas
Early maladaptive schemas	Coefficient	0.37	0.24	-
	P value	0.001	0.006	-
Cognitive-emotional regulation	Coefficient	0.30	-	0.24
	P value	0.001	-	0.006
Mental health	Coefficient	-	0.30	0.37
	P value	-	0.001	0.001

Table 2. Correlation Test Results Between the Components of Early Maladaptive Schema Designs and the Components of Mental Health

Variable		Somatic Symptoms	Anxiety/Insomnia	Social Dysfunction	Depression
Emotional deprivation	Coefficient	0.25	0.20	0.08	0.23
	P value	0.005	0.025	0.354	0.008
Abandonment/instability	Coefficient	0.27	0.11	- 0.19	0.26
	P value	0.002	0.203	0.030	0.003
Distrust/misconduct	Coefficient	0.09	- 0.06	0.14	0.21
	P value	0.274	0.511	0.114	0.020
Social isolation/alienation deficiency	Coefficient	0.32	0.28	- 0.14	0.37
	P value	0.000	0.002	0.104	0.000
Shame	Coefficient	0.25	0.13	- 0.27	0.28
	P value	0.005	0.153	0.002	0.002
Failure	Coefficient	0.34	0.20	- 0.26	0.41
	P value	0.000	0.026	0.003	0.000
Dependency/inadequacy	Coefficient	0.17	0.13	- 0.43	0.30
	P value	0.057	0.139	0.000	0.001
Vulnerability to harm and illness	Coefficient	0.31	0.14	0.09	0.41
	P value	0.000	0.120	0.280	0.000
Stuck/unfulfilled self-transformation	Coefficient	0.16	0.07	- 0.20	0.27
	P value	0.073	0.432	0.022	0.002
Obedience	Coefficient	0.19	0.12	- 0.28	0.27
	P value	0.027	0.161	0.001	0.002
Self-sacrifice	Coefficient	0.02	0.20	0.14	0.002
	P value	0.784	0.025	0.101	0.984
Emotional inhibition	Coefficient	0.24	0.27	- 0.36	0.52
	P value	0.006	0.002	0.000	0.000
Rigid standards	Coefficient	0.13	0.04	0.37	0.10
	P value	0.147	0.604	0.000	0.261
Deserving/magnanimity	Coefficient	0.22	0.08	0.37	0.18
	P value	0.011	0.348	0.002	0.046
Self-possession/inadequate self-discipline	Coefficient	0.11	0.20	0.03	0.31
	P value	0.197	0.020	0.715	0.000

Discussion

The results of the study demonstrated a direct and meaningful correlation between initial maladaptive schemas, emotional cognitive regulation, and the mental health of operating room technicians. The study suggests that examining maladaptive schemas and cognitive-emotional regulation can provide a deeper understanding of the mental health of operating room technicians. Initial maladaptive schemas have led to moderate emotional regulation and acceptable mental health in operating room personnel, resulting in improved overall well-being. Data analysis indicated that there was a substantial association between early maladaptive schemas, cognitive-emotional control, and the mental health of operating room staff. In general, the findings of this study indicated a positive correlation between initial maladaptive schemas, cognitive-emotional regulation, and the mental health of operating room technicians. Emotional regulation acts as a mediator in the relationship between initial maladaptive schemas and mental health. In other words, each of the domains of abandonment/instability, self-surrender/inhibition, impaired autonomy/performance, impaired limits, over-vigilance/inhibition, and over-control has a positive and meaningful role in indicators of mental health through emotional regulation. These findings are directly and indirectly consistent with the hypothesis (36,37).

Individuals who suffer from emotion dysregulation avoid interpersonal disputes and conceal unpleasant feelings (e.g., grief, rage, and hostility) without attempting to express them (38). They are less adaptable to different environmental situations and fail to modulate their arousal levels, resulting in high levels of unpleasant emotions. As a result, people have poor physical and mental health (39). There was a significant positive correlation between cognitive-emotional regulation and mental health. Emotional integration leads to the stabilization of an individual's state with the environment by harmonizing cognitive, physiological, and motivational processes. It eventually contributes to individuals' physical and social well-being by providing them with appropriate and

Table 3. Results of the Correlation Test Between Cognitive-emotional Regulation Components and Mental Health Components

Variable		Depression	Social Dysfunction	Anxiety/Insomnia	Somatic Symptoms
Blame yourself	Coefficient	0.10	-0.26	0.05	0.22
	P value	0.255	0.003	0.579	0.011
Acceptance of conditions	Coefficient	0.16	-0.05	0.14	0.15
	P value	0.071	0.532	0.103	0.079
Rumination	Coefficient	0.06	-0.02	0.20	0.008
	P value	0.469	0.755	0.027	0.929
Positive refocusing	Coefficient	0.18	0.21	-0.02	0.24
	P value	0.046	0.016	0.765	0.006
Refocus on planning	Coefficient	0.22	-0.03	0.10	0.35
	P value	0.011	0.708	0.254	0.000
Positive reassessment	Coefficient	0.12	0.35	0.02	0.22
	P value	0.171	0.000	0.766	0.011
Perspective-taking (perspective development)	Coefficient	-0.28	0.04	-0.19	-0.09
	P value	0.001	0.652	0.027	0.279
Disastrous perception	Coefficient	-0.07	0.26	0.22	0.17
	P value	0.392	0.003	0.013	0.047
Blame others	Coefficient	0.09	-0.34	0.35	0.07
	P value	0.306	0.000	0.000	0.416

effective specialized answers to situations (40). As a result, cognitive-emotional control skills are regarded as the most important individual components of mental health (41).

It has been proven that there is a significant relationship between early maladaptive schemas and mental health among operating room technicians. It is feasible to identify a specific pattern of maladaptive schemas related to diseases (42). In addition, when an individual's degree of early maladaptive schemas increases, there is a greater decline in job performance and less progress in their career (42,43). The findings revealed a significant negative correlation between abandonment/instability and social responsiveness in operating room technicians, indicating that increased instability significantly reduces their social interaction performance and quality (44). In general, these schemas often lead to insufficient thinking and ineffective behaviors, contributing to various illnesses and issues in professional life. The information processing model, which proposes that threat-based stimuli trigger the arousal system, has a substantial influence on the operating room profession, which is sensitive to environmental signals (45). Based on the results, a positive correlation was observed between cognitive-emotional regulation and mental health among operating room technicians, suggesting that increased regulation leads to better mental health. Emotional creativity, positive refocusing, and deficit-based planning are linked to lower social dysfunction, depression, and mental health, while maladaptive cognitive emotion management techniques and self-blame contribute to poor mental health (45,46). The findings revealed a correlation between early maladaptive schemas and cognitive-emotional control, supporting the results of previous research by Seyedasiaban et al (47), Gilbert and Leahy (48), and Riso et al (49). Based on the results, most operating room technicians had average emotional intelligence and used problem-focused coping strategies, with a significant correlation between emotional deprivation and positive refocusing, communication, and meaning. In other words, positive reappraisal shows that an operating room technician attempts to find suitable and different solutions to the issue when they face problems such as stress (7). In the current study, they picked several solutions to solve the dilemma while taking into account the social background of operating room professionals in West Azerbaijan. The research hypothesis claiming a substantial association between early maladaptive schemas, cognitive-emotional control, mental health, and the demographic features of operating room personnel has not been validated. The results of this study are consistent with those of the research conducted by Aghajani and Nazari (50), demonstrating a significant positive relationship between emotional regulation and job satisfaction. Furthermore, the findings of the current study on employees in industrial professions confirmed that mental health is closely tied to their social performance. In other words, poor mental health leads to poor social performance among workers. There was a substantial relationship between mental health and job experience (51). In contrast to the current study, Tehranian et al found no significant link between work and mental health (52).

Conclusion

The study findings suggest that understanding early maladaptive schemas and emotional control can enhance our understanding of surgical technicians' mental health,

potentially altering their emotional regulation and acceptable mental health. A positive attitude can lead to happiness and enhance an individual's capacity to manage psychological stress. However, it is crucial to consider other aspects of emotional control and mental wellness. Surgical technologists' physical and mental health are crucial in healthcare, as any harm can lead to decreased performance, increased medical errors, and potential patient safety risks. It is recommended that mental health professionals and therapists include the examination and identification of initial maladaptive schemas and positive and negative emotion strategies in their treatment programs, as well as a focus on correcting and modifying maladaptive schemas and teaching more constructive cognitive emotion regulation skills (positive reappraisal, positive refocusing, and a focus on planning).

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Authors' Contribution

Conceptualization: Sedigheh Hanani, Abbas Khalilpour.
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Competing Interests

The author(s) declared no potential conflict of interests with respect to the research, authorship, and/or publication of this article.

Ethical Approval

The present study was approved by the Iran University of Medical Sciences (IR.IUMS.REC.1397.1049). Written informed consent was obtained from the participants prior to their participation in the study. Anonymity, confidentiality of information, and the right to withdraw during the study were taken into consideration. The time and place of the interviews were arranged according to the will of the participants.

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