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Research Paper

The Role of Defensive Mechanisms on Emotional Expressiveness and Symptoms of Social Anxiety Disorder in Spinal Cord-injured Patients

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ABSTRACT

Background and Aim: Defense mechanisms influence emotional expression and symptoms of social anxiety disorder, but this effect is unclear in people with spinal cord injury (SCI). This study investigated the role of coping mechanisms on emotional expressiveness and symptoms of social anxiety disorder in people with SCI.

Methods and Materials/Patients: This study, entitled "Investigating the relationship between defense mechanisms, emotional expressiveness, and social anxiety disorder symptoms in individuals with SCI," began in April 2023 and continued over 1 year. A total of 100 people with SCI were randomly selected from those referred to Tehran Welfare Center, Tehran City, Iran. Social anxiety, emotional expressiveness, and defensive styles questionnaires were used for data collection. The t-test was used for data analysis using SPSS software, version 22.

Results: This study showed a relationship between defense mechanisms and emotional expressiveness in people with SCI ($P<0.05$). However, there is no relationship between defense mechanisms and social anxiety disorder in these people. There is no significant relationship between the demographic characteristics and either social phobia disorder or emotional expressiveness. However, a significant relationship was obtained between mature defense styles and being single ($P<0.05$).

Conclusion: Individuals with SCI may use self-coping mechanisms to express their emotions. In people with SCI, efforts should be made to use appropriate coping mechanisms to express their excitement in proper ways.

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Highlights

- A relationship exists between coping mechanisms and emotional expressiveness in people with SCI.
- Spinal cord-injured individuals may use self-defense mechanisms to express their emotions.
- Preventive measures should be taken to help them adopt mature mechanisms that account for their physical and psychological conditions.
- Assessing psychological defensive mechanisms to design and implement preventive actions for individuals prone to nonadaptive coping behaviors is clinically important.

Plain Language Summary

This study tries to evaluate defensive mechanisms on emotional expressiveness and the symptoms of social phobia in SCI individuals for the first time in Iran. According to our findings, demographic characteristics, including gender, age, education, and SCI level, were not significantly related. Similarly, no significant change was observed between defensive mechanisms and social phobia disorder. On the other hand, a significant relationship was found between mature styles and being single. Likewise, a significant relationship was observed between defensive mechanisms and emotional expressiveness. Social phobia disorder is a constant pattern of social fears. SCI patients probably control their social phobia considering the kind of injury. The results demonstrate that individuals with SCI use defensive mechanisms to express their emotions. As a result, preventive measures should be taken to help patients adopt mature defensive styles regarding their physical and psychological conditions. Accordingly, the damages resulting from negative emotions will be modified, affecting themselves, their families, and society. The training and guidance of the patients significantly influence their condition. Thus, evaluating psychological defensive mechanisms is of great importance in clinical settings to design and implement preventive interventions for individuals prone to maladaptive coping behaviors. It is recommended to compare the variables in the current study between the SCI and normal groups. In addition, therapists are recommended to include the assessment of defensive mechanisms in SCI patients.

1. Introduction

Spinal cord injury (SCI) is defined as any damage to the spinal cord that can result from either trauma or disease. The majority of the spinal injuries result from trauma (90%). The symptoms of spinal injury depend on the severity of the injury and its location. The SCI signs include loss of sensation and control of leg and hand movements. The most severe SCI occurs when the systems regulating the functions of the intestines, the bladder, the respiratory system, the heartbeat, and blood pressure are disturbed. Most spinal cord-injured patients suffer chronic pain [1]. The World Health Organization (WHO) estimates that the global incidence of SCI is 40-80 cases in every million individuals. SCI prevalence in Iran is estimated to be virtually 40-50 cases in every million individuals [2]. Some secondary complications accompany SCI, which can be disabling and even threaten life. Among secondary complications are deep vein thrombosis (DVT), urinary system infections, muscular spasms, osteoporosis, chronic pain, and respiratory consequences [3].

SCI can result in serious hygienic, physical, and social impacts on affected patients, imposing considerable negative effects on their quality of life [4]. Along with physical consequences of SCI, it is estimated that 20-30% of the patients will experience symptoms of depression, which has a negative influence on the function and general health. Besides, SCI leads to mental situations such as anxiety, identity disturbance, and feeling lonely. Moreover, suicide, drug abuse, and separation are more frequent in these patients compared to normal persons [3]. The prevalence of depression and anxiety in SCI patients is reported as 30-40% and 20-25%, respectively [5]. One of the significant negative impacts on SCI patients is changes in life quality and its resulting psychological complications [6]. The stress as a result of SCI disability makes the patients isolated and socially detached. Consequently, the patients get depressed and feel incompetent. Nowadays, emotional health is considered one of the most important pillars of health.

Accordingly, emotional health is stated as emotional perception and the ability to cope with everyday life issues. An emotionally healthy person correctly distinguishes his emotions and expresses them in appropriate situations [7]. Emotional expressiveness is defined as an external display of emotion, regardless of its positive or negative value, whether expressed verbally or physically. People express their emotions differently. Some individuals express their emotions freely without considering the consequences, a trait called emotional expressiveness. Nevertheless, some adopt a conservative approach and do not express their emotions. In some others, inhibition of emotions leads to mental confusion and even physical problems in them, and these people suffer from emotional inhibition [7].

The emotion has 4 functions: organizing excitement, fostering self-understanding, improving coping skills, and strengthening interpersonal relationships [8]. According to King and Emmons, emotional expression does not necessarily indicate health; rather, the person's feelings toward these expressive behaviors indicate the health. To express the emotional role of health, three emotional expression dimensions are considered: negative expression, positive expression, and sincerity expression [9]. Several studies have been conducted in this field and demonstrate a relationship between emotional expressiveness and some physical illnesses like cancer and cardiovascular diseases [7]. A positive relationship between positive emotional expression and psychological well-being was reported by Kennedy-Moore and Watson [8]. Misconception, negative attitude, and physical obstacles lead to a considerable deprivation in spinal cord-injured patients, which does not permit their active participation in society. For instance, children with SCI start school later compared to their peers and even progress more slowly at school. Likewise, people with physical disabilities make fewer social contacts and have a great tendency to loneliness and isolation compared to ordinary persons [10]. Social anxiety disorder or social phobia is a disabling disorder that can influence a considerable portion of society [11]. In fact, social phobia disorder is the most prevalent disorder in childhood and adolescence [3]. According to Rapee, social anxiety disorder includes a wide range of anxiety: No social anxiety, normal level of social anxiety, social anxiety (low level of shame), fears and social avoidances (social anxiety disorder), pervasive level of social anxiety disorder, and avoidant personality disorder [12].

Defense mechanisms are unconscious mental processes that protect against different kinds of anxiety. These mechanisms not only protect individuals against anxiety and warn about possible dangers and internal stressors but also regulate mental experiences related to painful thoughts, feelings, and emotions [13]. According to Vailnat's hierarchical classification, defensive mechanisms are divided into 20 mechanisms in 3 defensive styles: mature defense styles, immature defense styles, and neuroticism. Mature defensive mechanisms are considered adaptive, normal, and efficient coping styles, while immature and neurotic defensive mechanisms are nonadaptive and inefficient coping styles. Notably, people adopt different defensive styles in specific situations [14].

Until now, several studies have been carried out on defensive mechanisms, emotional expression, and social anxiety disorder for different target groups who deal with chronic diseases. Nonetheless, defensive mechanisms in individuals with SCI have not been fully evaluated in Iran. The current study aims to investigate the role of defensive mechanisms on emotional expression and symptoms of social anxiety disorder in SCI patients. Eventually, we hope the findings of this investigation help SCI patients receive the necessary education and therapeutic interventions, such as emotional expression, defensive mechanisms, etc. to prevent social anxiety disorder in them.

2. Methods and Materials/Patients

The study sample

The current study, which began in April 2023 and lasted 1 year, was descriptive, correlational, and survey-based. The study population consisted of SCI patients who were referred to the medical centers of the State Welfare Organization of Tehran Province. Initially, ethical approval was obtained to conduct this study. Then, the patients were invited verbally to participate in our investigation. The sample size was determined using G*Power software, version 3.1 with a type I error (false positive) rate of 5%, a power of 80%, and a medium effect size of 0.6, yielding a sample size of 115. The inclusion criterion was adults with SCI and literacy. The exclusion criteria were failure to meet the inclusion criteria and unwillingness to participate in the study.

The questionnaires were distributed to 115 participants, and at the end, 100 were completed; 15 patients dropped out during the study. Demographic characteristics of the participants were as follows: 31 women and 69 men; 56.7% married and 40.2% single; 6.2% with undergraduate education, 57.7% with diploma education, and 32% with university education. According to the levels of SCI, 44.3% had lumbar, 36.1% cervical, and 17.5% thoracic injuries.

Study questionnaires

To collect the research findings, the defense style questionnaire (DSQ), the emotional expressiveness questionnaire (EEQ), and the social phobia inventory (SPI) were employed. DSQ was prepared by Andrews and colleagues [15]. It is scored on a Likert scale and consists of 40 questions, each assessing 20 defensive mechanisms across 3 levels: Undeveloped, developed, and neuroticism. For each defensive mechanism, the score ranges from 2 to 18. Scores >10 indicate that the person uses this mechanism. In each defensive style, a person's average score indicates the defensive mechanism he uses; the highest score indicates the defensive style he uses. The internal reliability of this instrument has been reported to range from 0.75 to 0.85 across studies, and its factor structure has been confirmed across several versions (including DSQ-40 and DSQ-60). The validity and reliability of DSQ were determined for Iranian samples by Heidari Nasab and colleagues [16]. In the aforementioned study, the questionnaire's reliability was determined using test re-test methods and the Cronbach α. In their results, high Cronbach α and high test re-test correlation showed acceptable reliability in Iranian society.

In addition, to evaluate the study's validity, the experts' opinions on the questionnaire items and the NEO personality inventory (NEO PI-R) were also obtained. Accordingly, due to high agreement among experts on the questionnaire items and an acceptable correlation between the NEO factors and the questionnaire, its validity was confirmed for Iranian samples.

The EEQ (King & Emmons, 1990) was designed for evaluating the role of emotional expressiveness in health [9]. It includes 16 items across 3 subscales: positive emotional expressiveness (7 items), sincerity expressiveness (5 items), and negative emotional expressiveness (4 items). EEG was also scored on a Likert scale, with a completely compatible answer scored 5 and a completely opposing answer scored 1. In this questionnaire, the total score ranges from 16 to 80, and higher scores indicate greater emotional expressiveness. Validity and reliability of the questionnaire were confirmed using the internal consistency (Cronbach α: Total 68%) and re-test methods (total 79%), respectively.

The SPI was another questionnaire that we employed. It was written by Connor and colleagues in 2000 to evaluate social phobia [17]. The questionnaire contains 17 items and 3 subscales: Fear in social situations (6 items), avoiding social situations (7 items), and physiological discomfort in social situations (4 items) in which the patient is asked to scale his/her suffer during the recent week: 0 (never), 1 (low), 2 (somewhat), 3 (much), 4 (too much). The total score ranges from 0 to 68, and the questionnaire has high reliability and validity. Its reliability and internal consistency are reported to be high, 0.78-0.89 and 0.94, using the retest method and Cronbach's α, respectively.

Statistical analyses

SPSS software, version 22 was used to analyze the data. Accordingly, statistical indices of the Mean±SD, and the t-test, were used. The t-tests and correlation coefficient (covariance) were used for calculating the relationship between demographic characteristics and defensive mechanisms or social phobia disorder. Moreover, the Pearson chi-squared test was used to calculate the relationship between demographic characteristics and emotional expressiveness.

3. Results

Descriptive information obtained from the questionnaires is given in Tables 1 and 2. Our findings were reported regarding the relationship between demographic characteristics (sex, age, education, and the injury level) with the study variables (defensive mechanisms, emotional expressiveness, and social phobia disorder). On the whole, there is no significant relationship between the demographic characteristics and either social phobia disorder or emotional expressiveness. However, a significant relationship was observed between mature defense styles and being single ($P<0.05$; Tables 1 and 2).

According to Table 3, there is a significant relationship between defensive mechanisms and emotional expressiveness. However, no significant relationship was observed between defensive mechanisms and social phobia disorder.

Table 1. The relationship between variables of defensive mechanisms, social phobia disorder, and the demographic information of the study participants (statistically significant levels)

Variables	Sex	Age	Education	Marital Status	Injury Level
Mature	0.028	0.799	0.182	0.645	0.550
Immature	0.089	0.089	0.561	0.574	0.302
Neuroticism	0.571	0.571	0.171	0.398	0.842
Fear	0.183	0.248	0.716	0.075	0.165
Avoidance	0.026	0.142	0.27	0.139	0.215
Physiologic discomfort	0.274	0.286	0.692	0.113	0.13

Table 2. The relationship between variables of emotional expressiveness and demographic information of the study participants (statistically significant levels)

Variable	Sex	Age	Education	Marital Status	Injury Level
Emotional expressiveness	0.419	0.538	0.699	0.699	0.471

4. Discussion

The current study evaluated the role of defensive mechanisms on emotional expressiveness and symptoms of social phobia disorder in spinal cord-injured individuals. Our results did not reveal any significant relationship between demographic characteristics and social phobia disorder or emotional expressiveness. On the other hand, between demographic characteristics and defensive mechanisms in single participants with mature styles, a significant relationship was obtained. Notably, defensive mechanisms protect individuals against stress resulting from life's disturbing circumstances. Adopting mature defense styles can lead to better relief, whereas immature styles can cause undesirable social consequences.

Our results demonstrated a significant relationship between defensive mechanisms and emotional expressiveness. These observations are consistent with a study by Zandi et al. [18]. They showed that adaptable and extroverted personality traits can predict the adoption of mature defensive mechanisms; nevertheless, neurotic personality traits predict the adoption of immaturemechanisms [18]. In another study, SCI patients used a sense of humor as their primary defense mechanism and rarely used immature defenses [19]. Notably, immature mechanisms are adopted primarily in the first year after the injury, as they distort reality to protect patients from discomfort. Nonetheless, over time, they adopt more mature mechanisms. Mature mechanisms do not falsify reality; instead, they teach patients how to predict stressful conditions and be better prepared to deal with them. In a cross-sectional study, the prevalence of adjustment disorders was estimated at 28% in SCI individuals, and the pattern of defensive styles was identified [20]. The most common defensive style was reported to be neurotic, and the most dominant defensive mechanism was idealization, in which the person attributes exaggeratedly positive qualities to the self. In addition, the role of demographic variables related to the injury in determining defensive mechanisms was not significant [20].

Two-dimensional structures of adaptability were observed in individuals with SCI. One dimension illustrates adaptive responses relative to nonadaptive ones, and the other demonstrates denial of the disturbances resulting from SCI. Their investigation suggests that adaptability and SCI compatibility are complex processes [21]. Similarly, it has been shown that during the adaptability process, feelings of suppression or denial gradually fade, and finally, psychological acceptance is achieved [22].Moreover, as spinal cord-injured people perceive that external factors are controlling their lives, along with their low self-

Table 3. Correlation between variables of social phobia disorder and subscales of defensive mechanisms

Variables	Correlations	SPI	Fear	Avoidance	Physiological discomfort	EEQ	Mature	Immature	Neuroticism
SPI	The Pearson correlation	1	0.922**	0.959**	0.937**	-0.121	-0.060	0.229	0.210
	Sig. (two-tailed)	-	0.000	0.000	0.000	0.302	0.610	0.79	0.098
	No.	87	87	87	87	75	74	60	63
Fear	Pearson correlation	0.922**	1	0.797**	0.827**	-0.136	-0.012	0.183	0.237
	Sig. (two-tailed)	0.000	-	0.000	0.000	0.232	0.920	0.152	0.053
	No.	87	91	89	88	79	76	63	67
Avoidance	Pearson correlation	0.595**	0.797**	1	0.0821**	-0.080	-0.064	0.244	0.164
	Sig. (two-tailed)	0.000	0.000	-	0.000	0.480	580	0.052	0.192
	No.	87	89	92	90	80	77	64	65
Physiological discomfort	Pearson correlation	0.937**	0.827**	0.831**	1	-0.060	-0.047	0.194	0.297
	Sig. (two-tailed)	0.000	0.000	0.000		0.601	0.689	0.124	0.016
	No.	87	88	90	92	79	76	64	65
EEQ	Pearson correlation	-0.121	-0.136	-00.080	-0.060	1	0.726**	0.655**	0.579**
	Sig. (two-tailed)	0.302	0.232	0.480	0.601	-	0.000	0.000	0.000
	No.	75	79	80	79	82	69	59	60
Mature	Pearson correlation	-0.060	-0.012	-0.064	-0.047	0.746**	1	0.783**	0.759**
	Sig. (two-tailed)	0.610	0.920	0/580	0.689	0.000	-	0.000	0.000
	No.	74	76	77	76	69	80	59	58
Immature	Pearson correlation	0.229	0.183	0.244	0.194	0.655**	0.783**	1	0.748**
	Sig. (two-tailed)	0.079	0.152	0.052	0.124	-	0.000	-	0.000
	No.	60	63	64	64	59	59	67	50
Neuroticism	Pearson correlation	0.210	0.237	0.164	0.297**	0.579**	0.759**	0.748**	1
	Sig. (two-tailed)	0.098	0.053	0.192	0.016	0.000	0.000	0.000	-
	No.	63	67	65	65	60	58	50	70

confidence, feelings of helplessness, and despair, they may adopt distinct defensive styles [23]. Although it has been stated in another study that the majority of SCI patients adopt an adaptive coping style, a considerable number of patients adopt nonadaptive styles [24].

On the other hand, most SCI patients can handle their disability consequences without facing any psychological discomfort. However, the coping strategies that they adopt need to be discussed [25].

Additionally, a comparison has been done regarding the effectiveness of cognitive behavioral therapy (CBT), processing emotion regulation, and a combined intervention on anxiety sensitivity of multiple sclerosis (MS) patients. The result demonstrated the effects of CBT and processing emotion regulation in the reduction of anxiety sensitivity of the patients [26].

Additionally, the role of coping styles and personality traits in eating-disordered behaviors has been shown. The results revealed substantial correlations between eating-disordered behaviors and emotion-oriented coping, task-oriented coping, agreeableness, neuroticism, and conscientiousness personality traits. In fact, individuals develop eating-disordered behaviors as a means of encountering difficulties, resulting in an interaction between coping styles and personality traits [27].

The outcomes of the current study demonstrated no significant relationships between defensive mechanisms and social phobia disorder. Nevertheless, these results are not in line with those of Saghirzadeh et al. who found that increasing adoption of mature defensive tools enhanced self-efficacy among ischemic heart patients [13].

The social disorder can be considered a stable pattern of social phobias. Using defensive mechanisms is a measure of an individual's resilience, helping prevent a loss of self-esteem. A person with SCI, according to the level of injury, may be able to control his/her social phobia. Although social phobia is a comprehensive disorder, it mostly manifests in childhood and adolescence. However, SCI usually occurs at an older age, and in our study, the patients ranged from young to older.

Our results demonstrate that SCI individuals showed their emotions with defensive mechanisms. Accordingly, preventive measures should be taken to help patients adopt suitable defensive mechanisms tailored to each person's physical and mental conditions. Additionally, due to their unusual condition, the patients should be helped to express their negative emotions to minimize harm to themselves, their families, and society. To achieve this, educational workshops on emotional expressiveness and emotional control, as well as on adopting appropriate defensive mechanisms, can be held for patients. Education and guidance for individuals with SCI can significantly impact their health and lifestyle. As a result, evaluating psychological defensive mechanisms in spinal cord-injured persons is of great importance in clinics to prevent measures from being taken in individuals prone to adopting maladaptive coping behaviors.

Among the study's restrictions, limited access to patients and the need to commute to and transport patients should be noted, which led to a lack of referrals or reduced referrals to the health centers. Moreover, this study suggests that, for a comprehensive investigation in the future, healthy individuals should also be included to provide a more accurate comparison between healthy and SCI individuals.

5. Conclusion

There is no significant relationship between defensive mechanisms and social phobia disorder in SCI individuals. However, a significant difference was obtained between defensive mechanisms and emotional expressiveness. Social phobia disorder is a constant pattern of social phobias. SCI patients probably manage their social phobia regarding the injury type and express their emotions with defensive mechanisms. As a result, preventive measures should be taken to help them adopt mature mechanisms that account for their physical and psychological conditions. Therefore, damages resulting from negative emotional expressiveness imposed on themselves, their families, and society will be managed. Appropriate training and guidance for these individuals can improve their situation. Consequently, assessing psychological defensive mechanisms to design and implement preventive actions for individuals prone to nonadaptive coping behaviors is clinically important.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Research Ethics Committees of Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran (Code: IR.TUMS.NI.REC.1402.001).

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Authors' contributions

Conceptualiation and study design: Nila Elmi Manesh and Majid Saffarinia; Data collection, data analysis, interpretation, and writing the original draft: Sima Garshasbi; Review and editing : Nila Elmi Manesh and Sima Garshasbi; Final approval: Seyed Hassan Emami-Razavi and Majid Saffarinia.

Conflict of interest

The authors declared no conflict of interest.

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