

Research article

# Role of psychological intervention on the quality of life of the patient with spinal cord injury undergoing Magnetic Resonance Imaging examination

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**Citation:** Tănase I., Stoica S.I., Prada G.I. - Role of psychological intervention on the quality of life of the patient with spinal cord injury undergoing Magnetic Resonance Imaging examination

*Balneo and PRM Research Journal*  
2024, 15(3): 735

Academic Editor(s):  
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Received: 22.08.2024  
Published: 25.09.2024

**Reviewers:**  
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**Abstract:** In the modern world, technological progress has also been accompanied by an increase in traumatic suffering, including those followed by spinal cord injury. The severity of spinal cord injury requires an understanding of the physiological and psychological aspects of patient management. Spinal cord lesions impair physical capabilities and tend to reduce the quality of life, thus creating the need for psychological intervention. In order to do the magnetic resonance imaging (MRI), it has been observed that patients frequently experience distress (1) Background: The research highlights the significant influence that psychological interventions have on improving the quality of life of patients undergoing MRI, who have sustained spinal cord injury; (2) Methods: we studied 78 patients hospitalized in the Neurosurgery Clinic 2 of the "Bagdasar Arseni" Hospital for acute spinal cord injuries, in 2 groups of patients with and without psychotherapy, for which we later applied the quality of life test; (3) Results: We observe how, in 2017, SCI were more frequent in the adult male population and psychotherapeutic treatment was slightly more effective in improving QOL in male patients.; (4) Conclusions: For the 27 patients investigated by MRI and operated for SCI in the Neurosurgery Clinic 2 of the "Bagdasar Arseni" Hospital, the average quality of life was higher after the psychotherapy, both for female patients and for male patients and. The psychotherapeutic response and improved quality of life were higher in male patients.

**Keywords:** psychological intervention, Spinal cord injury, MRI examination, quality of life

## 1. Introduction

In the modern world, technological progress has also been accompanied by an increase in traumatic suffering, including those followed by spinal cord injury. The progress of medical therapies has improved the survival of the victims, and their psychological and emotional research is required to discover the methods of approach and their emotional balancing (1). The severity of spinal cord injury requires an understanding of the physiological and psychological aspects of patient management. Spinal cord lesions impair physical capabilities and tend to reduce the quality of life, thus creating the need for psychological intervention (2) (3) (4). The interactive relationship between pain and anxiety undesirably influences (for the patient and for the medical team) the therapeutic expectation (2). When these two affective-emotional and physical symptoms are consciously combined with the patient's sense of guilt and his vulnerability (resulting from the dependency imposed by the present condition), the patient can't identify his inner reserves to overcome his condition without being helped by a

psychologist (2). The most effective is changing the "here and now" thinking style, teaching the patient to discover new coping mechanisms (5).

We noticed that there was no emphasis on the benefits of psychological counseling for SCI victims who underwent MRI. For magnetic resonance imaging (MRI), it has been observed that patients frequently experience distress due to their medical conditions and uncertainties related to the investigation process. Thus the need for psychological intervention to address emotional and cognitive reactions arises (6) (7). Psychological assistance can play an integral part in alleviating the negative repercussions of anxiety and discomfort that many patients experience in the run-up to and during imaging. Techniques (cognitive-behavioral therapy, mindfulness strategies, stress mitigation methods) may help to build resilience and encourage improved coping skills in patients undergoing these assessments (5). This study seeks to reveal the significant impact that personalized psychological interventions can have on the lived experiences of MRI patients with spinal cord injuries. By emphasizing the importance of an integrated model of care, the results will promote a more comprehensive perspective on patient treatment, ultimately aiming to improve patient outcomes within the health system. The research highlights the significant influence that psychological interventions have on improving the quality of life of patients who have sustained spinal cord injury (8) (9) (10). According to the World Health Organization, quality of life is "people's perception of their position/status in life, in the cultural context and values in which they live and about their own objectives, expectations, standards, concerns." The individual's health influences it, as the condition of independence, psychological level, social relations, beliefs, and relationship with the environment. It is a multidimensional concept that includes different aspects of life (state of health, lifestyle, satisfaction, well-being, emotional health) (11).

## 2. Materials and Methods

With the consent of the Ethics Commission of the "Bagdasar Arseni" Hospital, we studied 78 patients hospitalized in the Neurosurgery Clinic 2 of the "Bagdasar Arseni" Hospital for acute spinal cord injuries in 2 groups of patients with and without psychotherapy for which we later applied quality of life test. We statistically processed the data obtained using the Microsoft Office 2021 package (using descriptive statistics and elementary correlative evaluations). The psychological intervention consisted of the Schultz-directed imaging technique, the objective being the de-tension and relaxation of the patient, then focusing on breathing, specifying to him that he is not breathing correctly. A person's breathing stroke is inspiration 4 seconds, apnoea 3 seconds, expiration 4 seconds, then rep. The cognitive-behavioral psychotherapy of anxiety disorders aims to reduce physiological anxiety, eliminate avoidant behavior, modifier subjective interpretations of inner dialogue, change the interpretation through intrusive, negative scenarios and thoughts, the direct action on the emotional and physiological response to anxiogenic stimuli, desensitization or reconditioning. We also applied techniques from Eriksonian therapy and hypnotic trance through Schultz training for emergency intervention on anxious patients. We also used music therapy (a spectacular intervention) with particularly good results. The anxiety was evaluated using the Romanian version of the Depression Anxiety Stress Scale - 21 (DASS21R) before and after the cognitive-behavioral psychotherapy (12) .

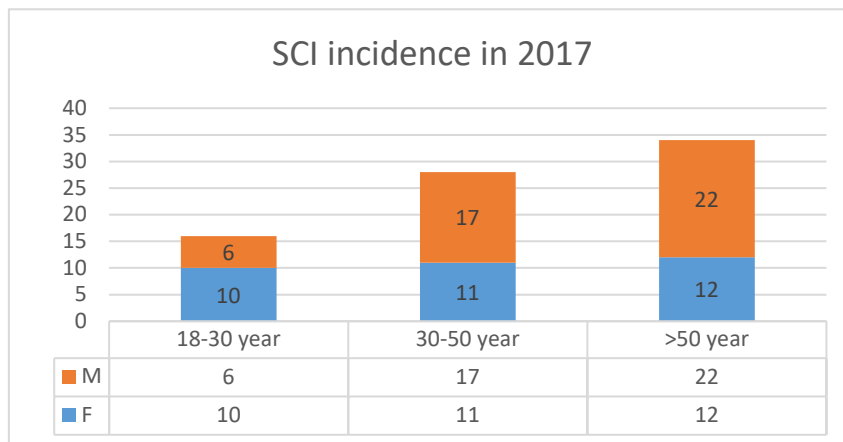
## 3. Results

We obtained the following results:

### 1.1. Demographic data

In 2017, 78 patients with spinal cord injuries were admitted to the Neurosurgery 2 clinic of the Bagdasar Arseni Hospital. Most were male patients (45 men compared

to 33 women). The best-represented age group was over 50 for male and female patients.

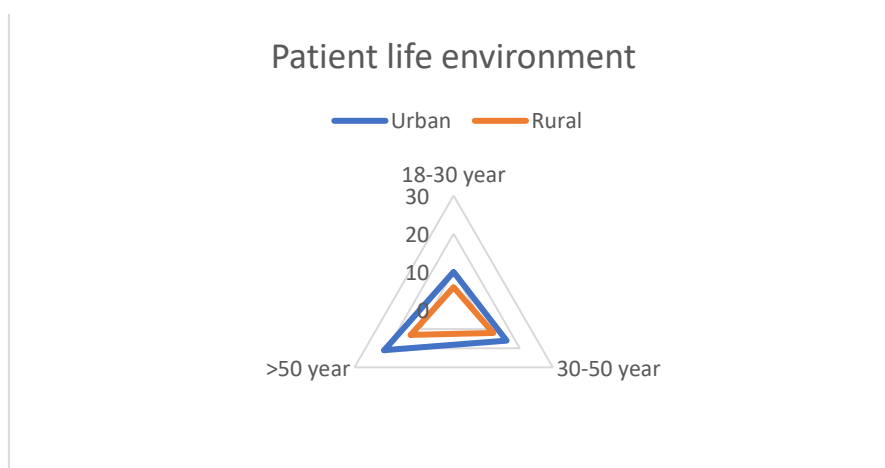


**Figure 1.** SCI incidence in 2017: the best represented age group was over 50 (for female and male)

Regarding the living environment, each age group of patients predominantly lived in the urban environment.

Table 1. Patient life environment

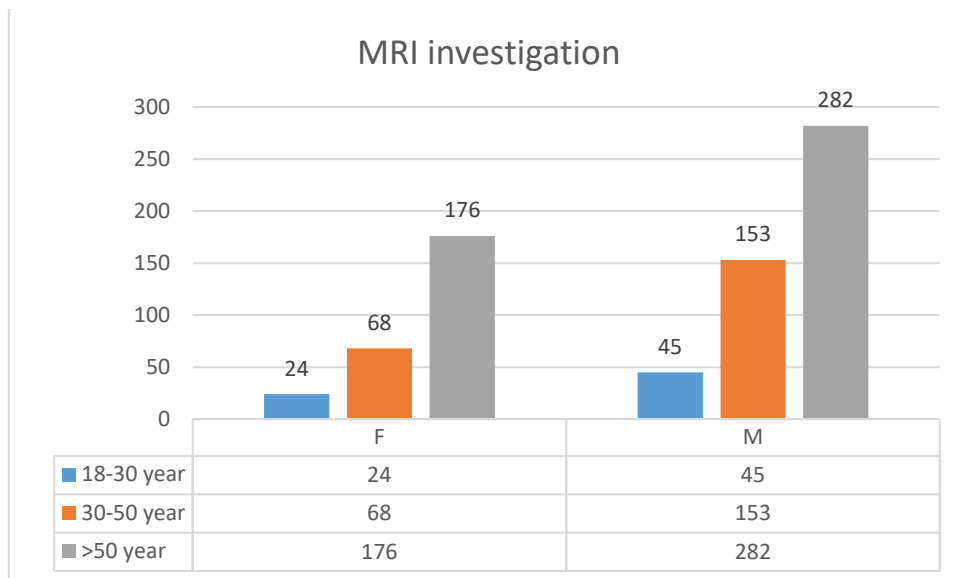
	Urban	Rural
18-30 year	10	6
30-50 year	16	12
>50 year	21	13
Total	47	31



**Figure 2.** Patient life environment: most of the patients lived in the urban environment

### 1.2. Evaluation of patients

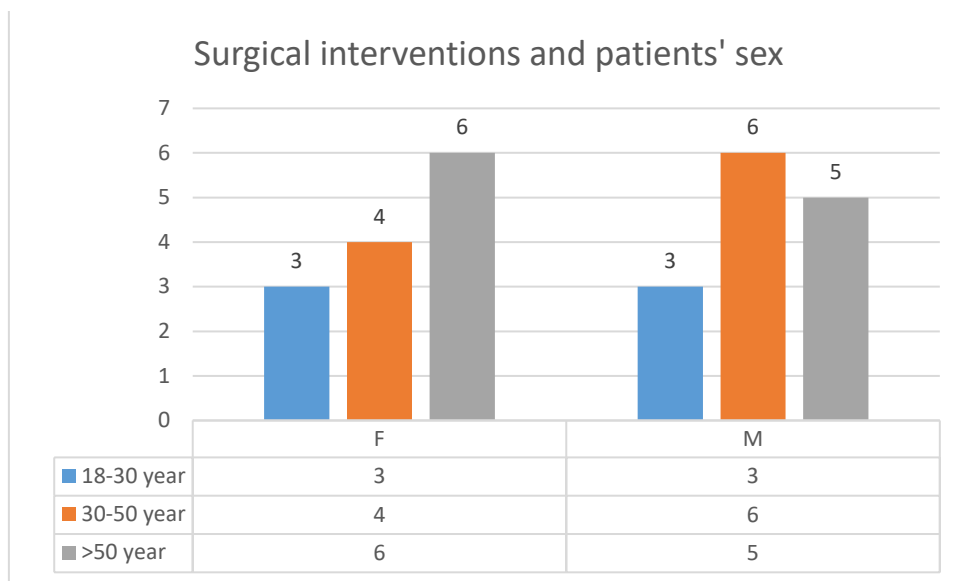
In 2017, 748 patients (268 women and 480 men) underwent MRI investigations in the Neurosurgery Clinic II, including those diagnosed with SCI.



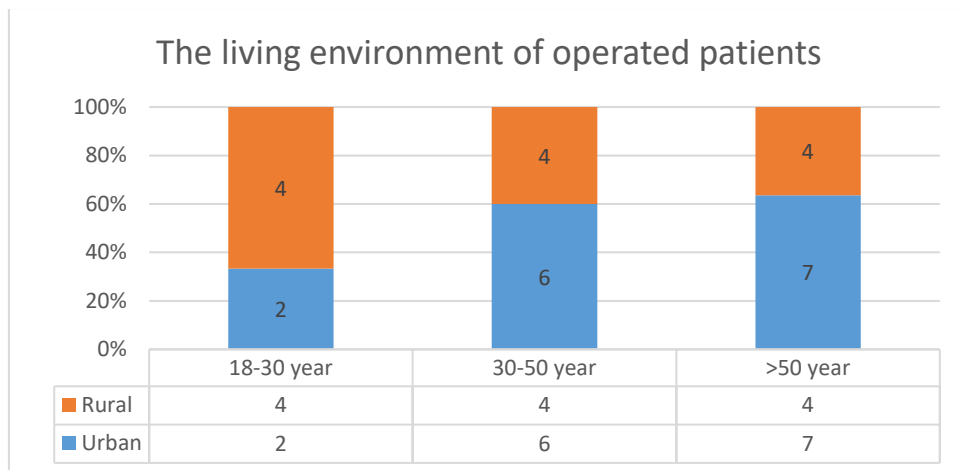
**Figure 3.** MRI investigation were done predominantly in patients older than 50 years

1.3. Treatment of patients with SCI

Among the patients hospitalized with SCI in 2017, 27 were operated (14 women and 13 men). And 15 of the operated patients lived in the urban area, and 12 in the rural area.

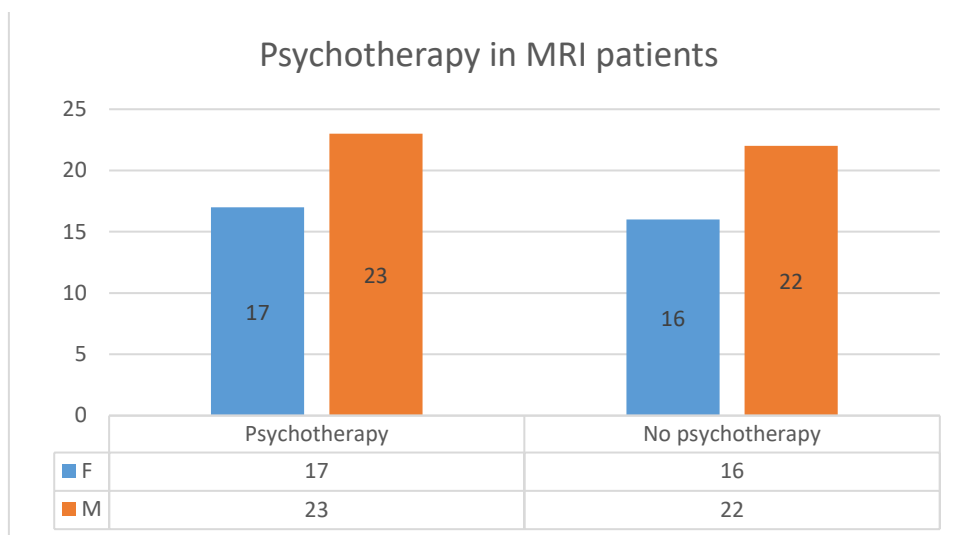


**Figure 4.** Surgical intervention and patient sex neurosurgical interventions were more frequent in patients older than 30 years



**Figure 5.**The living environment of operated patients -neurosurgical interventions were more numerous in all age groups of patients who lived in the urban environment

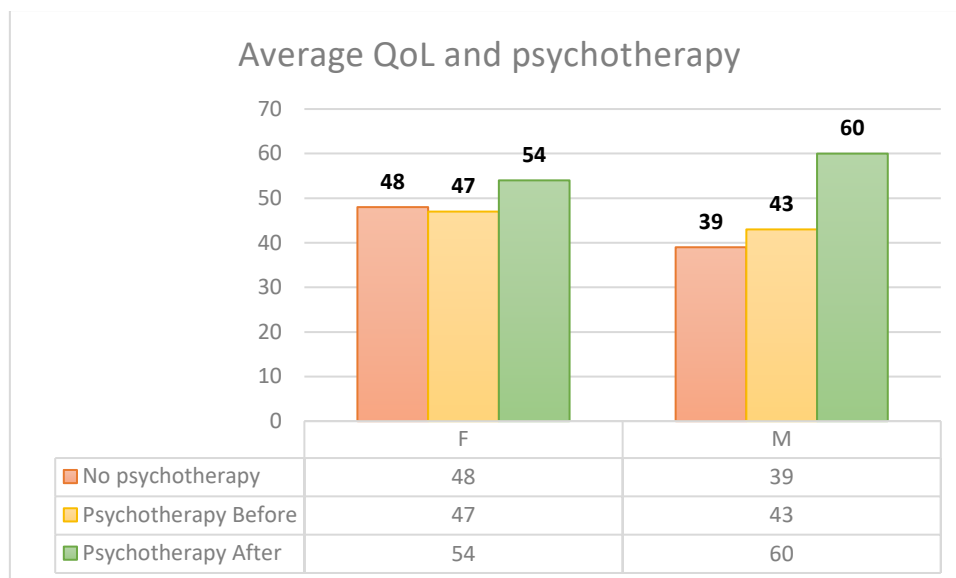
Among the patients who were investigated by MRI and then operated on, 40 underwent psychotherapy (17 women and 23 men), and 38 did not undergo psychotherapy (16 women and 22 men).



**Figure 6.**Psychotherapy in MRI patients: 40 underwent psychotherapy

#### 1.4. Quality of life of patients

Patients treated in the Neurosurgery 2 clinic had a better average QoL if they also performed psychotherapy (54, compared to 48 for female patients and 60, compared to 39 for male patients).At the end of psychotherapy, the treated group showed the best improvement in quality of life (from 47 to 54 for female patients and from 43 to 60 for male patients).



**Figure 7.** Average QoL and psychotherapy- psychotherapy increased the quality of life of the women and men studied (predominantly in male patients)

#### 4. Discussion

We observe how, in 2017, SCI was more frequent in the adult male population and psychotherapeutic treatment was slightly more effective in improving QoL in male patients. In approaching the quality of life hospitalized in the Neurosurgery Clinic 2 for spinal cord injury, we took into account the exhortation of Professor Ioan Bradu Iamandescu, who said that "it is appropriate that doctors, psychologists, sociologists lean more towards an interdisciplinary action since the state of health has as a common feature the substantial participation of the mental state, as well as an increased vulnerability of patients to their action". Considering that patients with SCI have a great vulnerability regarding their physical and psycho-emotional state, I managed to apply DASS 21 with great difficulty (short form of the DASS test) for the evaluation of the anxiogenic factor before the psychological intervention (psychotherapy, supportive counseling, music therapy), following that later we will evaluate the DSS21 with the same difficulty after the psychological intervention, observing the reduction of anxiety.

The MRI procedure involves a degree of anxiety related to the restricted space and procedure duration but also related to results. The degree of structural damage to the spinal cord revealed by the MRI is an important prognostic factor. Therefore, it has an important anxiogenic effect (6).

This study is special because it approaches the reality of psychotherapy with imaging investigations of SCI patients, a perspective rarely found in the scientific literature.

#### 5. Conclusions

For the 27 patients investigated by MRI and operated for SCI in the Neurosurgery Clinic 2 of the "Bagdasar Arseni" Hospital, the average quality of life was higher after the psychotherapy, both for female and male patients.

The psychotherapeutic response and the improvement of the quality of life were higher in male patients

The study aimed to show the importance of psychological intervention, reflected in the physical and mental state of SCI patients admitted to the vertebra-spinal neurosurgery department, and to discover new cognitive mechanisms of adaptation and adaptability in the stage following discharge.

**Ethics.** Our study was carried out with all ethical approvals from the "Bagdasar Arseni" Hospital and with the informed consent of the researched patients.

**Author Contributions:** "Conceptualization, T.I. and P.G.I.; methodology, T.I.; software, S.S.I.; validation, T.I., P.G.I.; formal analysis, T.I.; investigation, T.I.; resources, T.I.; data curation, S.S.I.; writing—original draft preparation, T.I.; writing—review and editing, S.S.I.; visualization, T.I.; supervision, P.G.I.; project administration, T.I. Professor Ioan Bradu Iamandescu initiated this study. Unfortunately, he passed away before the end of this study. Authors have read and agreed to the published version of the manuscript.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

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