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*Contributions in the psycho-diagnostic and psychotherapeutic approach  
to patients with vertebro-medullary disorders*

**PHD THESIS ABSTRACT**

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## **HOMAGE**

**Thanks with deep respect and profound gratitude, I bow with piety in the memory of the wonderful professors who were my doctoral supervisors: Mr. Professor Ioan Bratu Iamandescu and Mr. Professor Aurel Romilă.  
Acknowledgment**

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## Introduction

In every person's life there are events, turning points, personal dramas or (why not) remarkable achievements or turning points that can be remarkable and motivating for action, more than volunteering thousands of hours at the bedside.

Starting from the premise that life is about functioning, we are forced to accept that the variety of life means precisely the variety of characteristics: biological, physical, clinical.

Studying the patient cannot be done passively, but by offering help.

The vast experience of working with patients with spinal cord trauma in the Neurosurgery Clinic 2 of the "Bagdasar Arseni" Emergency Hospital in Bucharest made us notice differences in the outlook of life and quality of life of patients who received or not psychotherapeutic support during hospitalization. The interest and the challenge were given by the approach from the point of view of psychological assessment (through clinical interview, anamnesis, dialogue with the patient in the most particular and personalized ways, because of the traumatic clinical situation), but also by the surprise experienced with maximum intensity at the diagnosis (at the potential total functional change: from independence to total dependence).

For the sake of scientific substantiation of our observations, we conducted a 2-year retrospective study on the quality of life of patients treated for acute DVT. We then pursued a broader prospective approach on the influence of patients' quality of life by the emotional instability produced by depression, anxiety and stress found in different proportions in victims of DVT.

With the help of psychological tests, with a lot of empathy and consideration adapted to each patient, individualized psychological assessments and counseling (using Isishatic, cognitive-behavioral, guided imagery, Schultz training, Jacobson program), non-directive interviewing, were carried out.

The essential aim of this research was to decrease therapeutic resources of any kind and to increase the therapeutic compliance of patients with DVT in the perioperative period, in order to achieve a change in the inpatient's perspective, self-understanding of medical and psychological problems. So that the way of perception of events and adaptation to the new way of life represent a process of growth including quality of life.

The study in this research approach is designed to be simple, clear, concise because even a small contribution made by psychotherapy can improve the medical act for the benefit of the suffering person.

Therefore, we have formulated and tested (with psychoassessment and psychotherapy tools) the following working hypotheses.

*Hypothesis 1:* There were clear differences in the perceived level of stress according to the age, gender, and background of the patients studied.

*Hypothesis 2:* There is a strong association between quality of life and perceived health.

*Hypothesis 3:* There are differences obtained in this research between female and male patients.

*Hypothesis 4:* There is a clear difference between patients who were counseled and those who did not receive psychological support.

*Hypothesis 5:* The quality of life of the patients counseled in the Neurosurgery Ward 2 of the "Bagdasar Arseni" Emergency Clinical Hospital is improved from the psycho-emotional point of view, the benefit

being taken over and acting positively and optimizing in the postoperative and recovery phase.

This doctoral study was conducted (retrospective and prospective) on 533 patients with vertebro-medullary trauma treated in the Neurosurgery Clinic 2 of the Bagdasar- Arseni Emergency Hospital Bucharest between 2017-2024.

We retrospectively evaluated 151 patients hospitalized in the Neurosurgery 2 clinic of "Bagdasar Arseni" Emergency Clinical Hospital in 2016-2017 for the treatment of acute DVT.

The study population was predominantly male (52 women and 99 men).

Patients were mainly from urban areas.

About one third of the patients (55) needed neurosurgical intervention (mostly performed on urban patients).

Of the total number of patients, 76 received psychotherapy, compared to 75 who did not.

Both female and male patients showed increased quality of life following psychotherapy.

In 2016 and 2017, we also studied the impact of psychotherapy on quality of life in spinal cord injured patients undergoing MRI. Also in this case we observed the improvement of quality of life in both sexes, predominantly among male patients; but with better therapeutic compliance of the studied women.

Of the 382 prospectively studied DVT patients, males were the majority in all age groups. And the age group above 50 years comprised most female and male patients.

The distribution of patients was homogeneous in the years studied, with peak incidence in 2023 (when 76 patients were treated in the clinic).

The patients' background was approximately homogeneously distributed, with a slight predominance of city-dwellers (203 patients with a predominant distribution in patients older than 30 years); while 179 patients were from rural areas (being the majority for the 18-30 age group).

The groups of patients who underwent psychotherapy were relatively evenly distributed across the age groups of the patients. The situation was similar for patients without psychotherapy.

On a population of 382 hospitalized during 2018-2023 with acute DVT we observed improvement in depression, anxiety and stress in male and female patients studied.

The effectiveness of psychotherapy in relieving depression was 35% for female patients and 42.11% for male patients.

The effectiveness of anxiety relief was 38.89% for female patients and 47.37% for male patients.

The efficiency of stress relief was 32.26% for female patients and 39.39% for male patients.

We observe how the quality of life of patients hospitalized with acute DVT who underwent psychotherapy increased, both in the group of female and male patients.

The effectiveness of psychotherapy in improving the quality of life was higher in male patients (44.83%) than in female patients (4.48%).

(Apparently) small interventions such as psychotherapeutic interventions can represent a fundamental element in redefining the relationship with the surrounding world (including in the case of disability faced by a patient with spinal cord injury).

All research hypotheses have been confirmed.

## **Part general**

### **1. Vertebro- spinal cord trauma**

The spinal column is the central axis of the body (made up of 33-35 vertebrae and 23 intervertebral discs, with physiological curvatures that increase its strength 10 times that of a straight rod), with several functions.

Thus, the functions of the spinal column are: static (supporting), dynamic (ensuring mobility), and protective of the elements contained in the spinal canal [1]. The paradox between the static and dynamic functions is a "real conflict" because increased resistance to loading is achieved at the expense of mobility (and vice versa). It is the anatomical elements that provide both functions, and their weighting makes the difference between resistance and mobility. Topographically, the vertebral column is formed by the multiple disc-ligamentous superposition that makes up the spine: cervical, thoracic, lumbar, sacrum and coccyx [2].

The spinal column with normal stability can withstand high physiologic loads, while maintaining normal mobility (without producing neurologic deficits, major deformities or disabling pain). It can be considered that instability is a concept resulting from the loss of spinal functional reserves and the onset of characteristic symptoms [3] [1].

Spinal cord injuries (SCI) are spinal injuries that can affect the spinal cord [4].

Spinal trauma is a difficult traumatic situation that is often treated without consequences for the patient [4].

Vertebro-medullar trauma is a particularly serious medical condition due to: life-threatening, frequent and highly disabling neurological sequelae, personal, family and social impairment, major psychological impact on the patient and his or her entourage. Spinal cord injury occurs as a consequence of spinal cord injury and can result in impaired motor, somatic sensory and vegetative functions[4].

### **2. Quality of life**

Starting from the premise that life is about functioning, we are forced to accept that the variety of life means precisely the variety of characteristics: biological, physical, clinical.

The word quality represents "the totality of the essential features and characteristics by virtue of which a thing is what it is as distinguished from other things" [13] . And the word "life" is defined as "the synthesis of biological, physical, chemical, mechanical processes that characterize organisms" [14].

The Frisch quality of life (QoL) questionnaire involves a score that indicates how satisfied a person is with life, i.e. whether and how well a person's needs and desires are being met. Using the QoL, the specialist chooses an appropriate therapy for each patient[15].

The American psychologist Abraham Maslow believes that there are 5 fundamental human needs, which he systematized in a pyramid, with increasing importance from the bottom to the top. Maslow believes that needs are interconnected, with the need of a lower rung needing to be satisfied in order to move to the next level. Maslow's pyramid is made up of the following needs from bottom to top: physiological, safety, love and belonging, self-respect, self-actualization[16].

Life is about functioning and ranges from physical and mental health, to self-respect, self-esteem, dignity, state of mind or social life activity.

Quality of life is the sum of physical, mental and social well-being. Satisfaction with these factors is defined as a cognitive judgment process that depends on comparing a person's circumstances with an appropriate standard. To achieve the highest possible level of quality of life, the gap between aspirations and achievements should be as small as possible.

The feelings associated with well-being are: satisfaction, contentment, happiness, excitement, pleasure, security, security, peace of mind, hope, optimism, pride, love.

Negative emotions come from a perspective of stagnation or regression with the achievement of needs, goals or desires becoming more difficult.

Assessment of quality of life from a medical point of view (according to the classification of Professor I.B.Iamandescu) is based on indicators: *personal or population-based* (regarding addressability), *specific or generic* (according to the scope), *objective or subjective* (related to the level of perception). Subjective indicators can: record symptoms of the disease, assess personal behavioral manifestations related to the condition or can record feelings about the general physical and mental state[15]

## **Part special**

### **3. Assumption of working**

Our extensive experience of working with patients with spinal cord trauma in the Neurosurgery Clinic 2 of the Bagdasar Arseni Emergency Hospital in Bucharest made us notice differences in the outlook and quality of life of patients who received or not psychotherapeutic support during hospitalization.

In order to scientifically substantiate our observations, we conducted a retrospective study on a 2-year period on the quality of life of patients treated for acute DVT. We then continued a broader prospective approach on the influence of patients' quality of life by the emotional instability produced by depression, anxiety and stress found in different proportions in victims of DVT.

The particularities and importance of the chosen topic are given by the psycho-diagnostic part, together with the diversity and different approach of the clinical interview with the patient with DVT during hospitalization.

Therefore, we have formulated and tested (with psychoassessment and psychotherapy tools) the following working hypotheses.

*Hypothesis 1:* There were clear differences in the perceived level of stress according to the age, gender, and background of the patients studied.

*Hypothesis 2:* There is a strong association between quality of life and perceived health.

*Hypothesis 3:* There are differences obtained in this research between female and male patients.

*Hypothesis 4:* There is a clear difference between patients who were counseled and those who did not receive psychological support.

*Hypothesis 5:* The quality of life of the patients counseled in the Neurosurgery Ward 2 of the "Bagdasar Arseni" Emergency Clinical Hospital is improved from the psycho-emotional point of view, the benefit being taken up and acting positively and optimizing in the postoperative period and in the recovery phase.

#### **4. General research methodology**

We studied two groups of patients (women and men) hospitalized in the Neurosurgery Clinic 2 of the "Bagdasar Arseni" Emergency Hospital in Bucharest, diagnosed with vertebromedullary trauma (VMT) following road traffic accidents: patients who underwent psychotherapy during hospitalization and those who did not undergo psychotherapy.

The working hypothesis was substantiated by a retrospective look at the patients with the stated pathology in the period 2016, 2017.

The paper also contains a prospective outlook on acute inpatients with acute DVT from 2018-2023.

Patients were assessed dynamically using the quality of life (QoL) scales and the short form of the Depression, Anxiety and Stress Rating Scale using 21 questions (DASS-21).

The information obtained was statistically processed using Windows Office 2021.

The psychological interaction with each patient was realized through the clinical interview, an important tool in gathering information about the patient's problems/difficulties, medical and family history. The way the interview is carried out can be influenced by the age and personality of the patient, the applicant (the patient), the timing of the interview (as soon as the patient's condition allows it), the conditions (hospital). If a non-directive attitude is adopted (Rogersian concept), the patient will not be given direction.

The patient-psychologist relationship is personified as a necessity to which the patient has the right to freely express his states, feelings, emotions.

The clinical psychologist needs to pay attention to the patient's relationship to the problem and to identify the meanings attributed by the patient.

The personal involvement of the psychologist ensures authenticity, empathy, superior objectivity, self-control, permanent independence.

The clinical psychologist must be neutral, not to make value judgments, critical, disapproving of the patient; to show goodwill, confidence in the ability to express freely.

The patient benefits from self-determination in that he/she makes decisions for him/herself, is encouraged to develop the capacity for self-regulation, is guided in the use of personal resources, with increased use of personal resources, and increases his/her self-confidence.

##### **4.1. DASS test- 21**



The DASS-21 test is an abbreviated form of the DASS test that measures depression, anxiety and stress in patients through 21 items, for the quantitative assessment of symptom severity in dynamics (before and after psychotherapeutic intervention)[20].

I chose to use this psychological tool because my focus as a clinical psychologist was on the patient. The relevance of this questionnaire is given by the wealth of information about the patient that is obtained in a very short time, so that we can quickly intervene to improve the psycho-emotional state of the patient (stress, anxiety and depression). It is important to relate to the physical and psychological state of the patient with TVM, understanding how the patient is not in the best mood for relating, having an altered ability to concentrate, with preoccupations focused on automatic thoughts "that do not give him peace". The DASS-21 questionnaire provides a quantitative assessment of the baseline severity of symptoms of depression, anxiety and stress; retesting can be done quickly after the clinical psychologist's intervention with counseling and psychotherapy techniques to monitor symptoms [20].

## **4.2. Quality testing life**

From a psychological point of view, quality of life is indicated by physical, psychological, social, behavioral, freedom and individual independence factors.

From a medical point of view, the quality of life test informs about the effects of the disease and treatment on the physical, psychological and social level.

This tool is a short but quite relevant method to measure the concept of life satisfaction by testing 16 areas according to the quality of life theory.

The Quality of Life (QoL) assessment test is accredited by the Romanian College of Psychologists. Focusing on the patient's quality of life ensures symptom reduction and personal life improvement. The questionnaire consists of 32 items and takes about 5 minutes to complete, demonstrating the interest in putting into practice the theory of patient QoL in clinical psychology and medicine.

The QoL theory is appreciated in QoL by: the way QoL is defined, the correlation between global satisfaction and satisfaction in personal life (assessed by its 16 defining areas)[20].

## **4.3. Psychotherapeutic methods used in research**

A clinical psychologist is a person who is super-specialized in assessing a patient's normal or disturbed behavior (cognitive or emotional). The clinical psychologist uses different treatment methods specific to each patient's needs.

The vertebro-medullar trauma patient undergoes a process of behavioral and emotional regression, along with high expectations about the therapeutic surgical procedure. The main fears of the patient are related to death, suffering, bodily change, disability. included under the term of fundamental fears that predispose to a preoperative catastrophic thinking from a psychological point of view. Preoperative anxiety is justifiably present in any rational individual. There may also be an attitude of indifference (bravado), personal over-appreciation and denial of reality (produced by a denial of reality mechanism) that risks the development of postoperative psychological unpleasantness. The patient's behavior and manifestations do not depend on the "biological terrain" or the type of operation, but are related to the patient's personality.

The attitude of the spinal cord injured patient before surgery is hesitant, with a difficult degree of acceptance, the need for reassurance being taken to extremes. The hospital environment (and its specific conditions), the time pressure, the lack of privacy, the medical condition of the patient require that the psychological intervention is carried out at the bedside, with difficulties in applying a certain type of psychotherapy, the psychotherapeutic intervention needing to be tailored to each case. It should be noted that preoperative psychotherapeutic intervention provides postoperative benefits with a decrease in the duration of hospitalization, improvement of emotional state, reduction of postoperative medical complications, shortening of physical and emotional recovery periods.

*Supportive therapy* requires a lot of empathy on the part of the psychologist and is carried out to make the patient feel accepted and encouraged, with the aim of diminishing feelings of loneliness. Listening is the most important part of supportive therapy. The patient is encouraged to talk and to externalize his or her thoughts in order to overcome the emotional block and regain self-control. The aims of supportive therapy are: regaining social skills (easier interpersonal relations), understanding the situation (and identifying with the psychologist the adaptive forces appropriate to the situation), educating and encouraging the patient to unburden his or her emotions in order to reduce anxiety. The means of supportive therapy are: guidance, persuasion, encouragement, catharsis, desensitization.

*Brief psychotherapies* developed out of psychoanalysis, with the goal of solving the patient's problem, focusing on directive instructions. The therapeutic relationship starts from the psychologist's empathy, is collaborative with the patient and is the very important, sometimes sufficient, step towards alleviating the problem by uncovering optimistic thoughts that improve the patient's condition.

*Cognitive-behavioral therapy* has as its main objective the processing of information (cognitive) in order to obtain affective-emotional, cognitive and behavioral responses that can be replaced. The cognitive-behavioral therapeutic relationship is based on empathy, patient acceptance, congruence and collaboration. This psychotherapy aims to identify automatic thoughts and negative thought patterns and improve them through reattribution strategies (based on cognitive restructuring techniques) of verbal type using the Socratic dialogue method, after defining and conceptualizing the terms. The questions are adapted to the patient's level of understanding, adjusting the provocative nature of automatic, automatic thinking. This therapy is a very solid practical and theoretical basis in the treatment of patients with DVT, presenting the following advantages: organized fundamental structuring, limited duration of application, lower cost, long-lasting benefits obtained (and low relapse rate).

*The cognitive ABC model* (Ellis 1962, Beck 1976) is based on the evaluation of A (activating events) the activating event, B (belief) the personal cognitions resistant between A and C, C (consequences) the emotional and behavioral consequences, D (disputing) the restructuring of thinking, E (effective) the assimilation of effective thinking.

*Goal and solution-focused therapy* works with affirmatively formulated goals.

*Spiritual therapies* aim to define the spirit. Spirit can be viewed from the perspective of knowledge or metaphysics. The psychologist's faith is situated outside religions, in a form of energy, and individual psychology promotes inter-human solidarity. A higher rung is religious psychotherapy, which is difficult to objectify because the spiritual force cannot be quantified by the usual scientific methods.

*Orthodox psychotherapy* uses prayer as a therapeutic method in that the patient seeks to gain knowledge through connection with the divine, the Orthodox way of healing. When stress becomes a permanent part of life, the human being is forced to accept that there is something wrong with him, an unknown of his own soul. The environment modifies the uniqueness of the soul, not determines it. And the soul's task is to realize a weaving between the outer and inner world of each individual. Education in the past discouraged the expression of feelings and experiences, which could lead to depersonalization. The task of the psychologist is to support creativity so that healing becomes a continuous process of personal rediscovery. Healing begins when the patient understands that he or she is accepted, understood and contained by the psychologist, through the therapeutic alliance. It is considered impossible to give spiritual life to a person with multiple emotional problems.

*Schultz autogenic training* involves the use of relaxation techniques inspired by medical hypnosis in Germany in the 1930s. Accompanied by guided imagery, this method can cognitively relax the patient and reinforce certain desirable ways of thinking.

*Simple supportive psychotherapy* is the most commonly used in patients with TVM, focusing on anxiety therapy

*The use of music therapy* during psycho-emotional training by the psychologist induces a state of relaxation, eliminating stress and anxiety by activating the right cerebral hemisphere (involved in emotional control).

If we want to explain the expressiveness of music, we can say with all our heart that music expresses everything that words cannot.

Music provokes feelings, resembling an ideal being, the "morgana girl", being a pattern of resistance and escalation of a difficult existential situation

Starting from the concept of the complexity of music and the fact that music is an accumulation of melodies, with psychological implications through rhythm, harmony. To summarize psychologically, a melody listened to by several people can be perceived and experienced in different ways by each individual through their feelings about the melody, unrelated to affect, producing a direct impact on the listener. Thus, the impact of the melody on the patient is very great, with no cognitive implications, but of an emotional nature. The melody with its rhythm has a remarkable impact because it stimulates the sensitivity or identifies and holds it, developing it as a result of the repetition of the listening exercise. A melody can remain in the affective memory, evoking a period in an individual's past.

The psychological effects generated by music are: cathartic (releasing emotions accumulated throughout life after traumatic events), psychological ventilation (possible in the presence of a variable affective resonance), suggestibility (highlighting certain abstract situations experienced emotionally and transferred to the affective-emotional level), interpersonal communication (achieved by listening to a song by a group of patients with the same condition).

Patients with MVT who are to undergo neurosurgical intervention can benefit from massage therapy at all stages of hospitalization for analgesic, relaxing, soothing, calming, optimizing benefits.

The effect is recognized in the literature. And postoperatively, music therapy decreases sympathetic tonus, causing myorelaxation and pain relief, reducing anxiety and depression, and improving patient recovery.

Music therapy is a form of psycho-emotional, short-term cognitive-behavioral (solution-focused) supportive psychotherapy that works through music, with the presence of the clinical psychologist.

Music therapy stimulates the will, initiative, creativity, perseverance and guidance of the patient, through psychological assistance for the discovery of unknown psychological resources, with the change of the limiting psychic model for a free thinking, cognitively undistorted.

The indications of music therapy: acute or chronic pain, elimination of fatigue, insomnia, anxiety, phobias, depression, physical disability, psychomotor inhibition.

## 5. Study 1: Retrospective study of quality of life in 151 patients

### 5.1. Introduction (working hypothesis and specific objectives)

Our clinical experience with spinal cord traumatized patients led us to discover differences in quality of life following acute phase psychotherapy and we wanted to seek scientific objectification of our findings.

Thus, we performed a retrospective analysis of patients with acute DVT in the period 2016-2027.

### 5.2. Patients and methods

We retrospectively studied 151 patients hospitalized (in the period 2016-2017) with acute vertebro-medullary trauma in the Neurosurgery Clinic 2: 52 women and about double the number of men.

(99) men.

We gave them dynamic quality of life tests to observe the effects of psychotherapy.

The results were statistically processed using the Excel program from the Office Windows 2021 package.

### 5.3. Results

Figure 5.1 shows that the majority age group is 30-50 years for women and over 50 years for men.

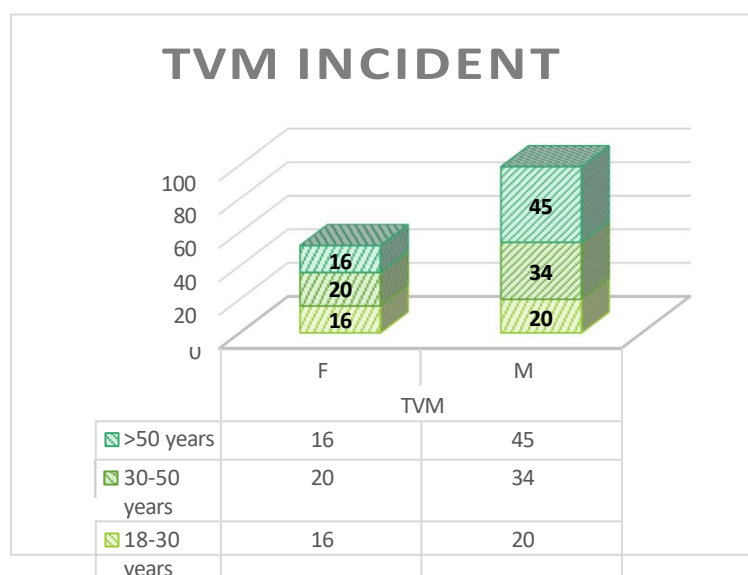


Fig 5.1. Incidence of MDV in 2016 and 2017

In Figure 5.2 we observe how the patients' living environment is predominantly urban for all age groups of patients.

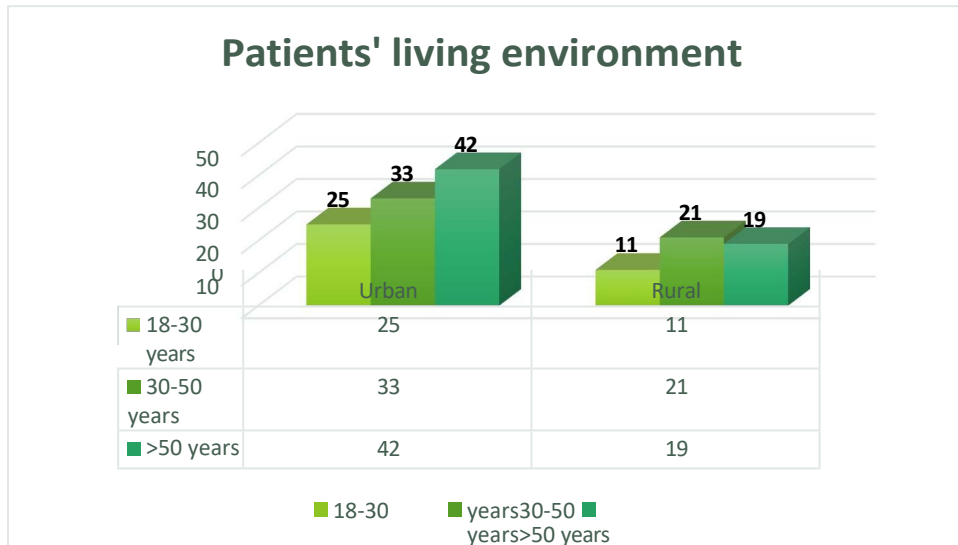


Fig. 5.2. Patients' living environment

Of the total number of patients with DVT (25 females and 30 males), 55 required neurosurgical intervention. For female operated patients, most interventions were in the age group 30-50 years, and for male patients most interventions were for the age group 18-30 years.

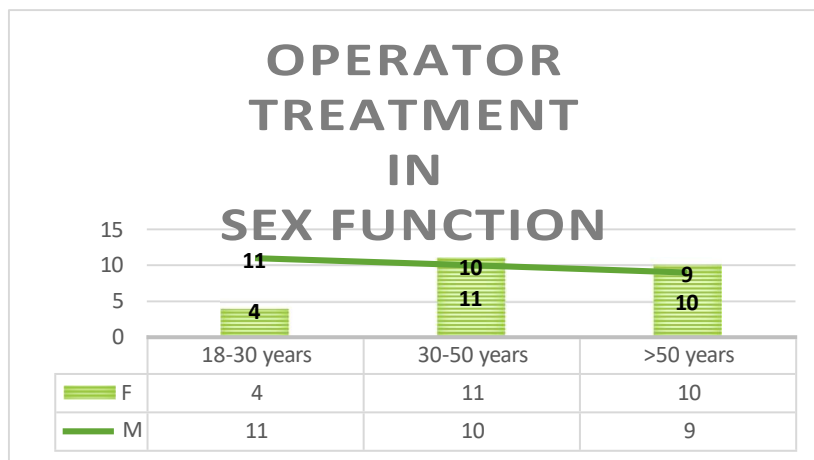


Fig. 5.3. Neurosurgical treatment by sex of patients

Neurosurgical treatment was mostly performed on urban patients (for all age groups), which also corresponds to the higher number of hospitalized patients from urban compared to rural areas.

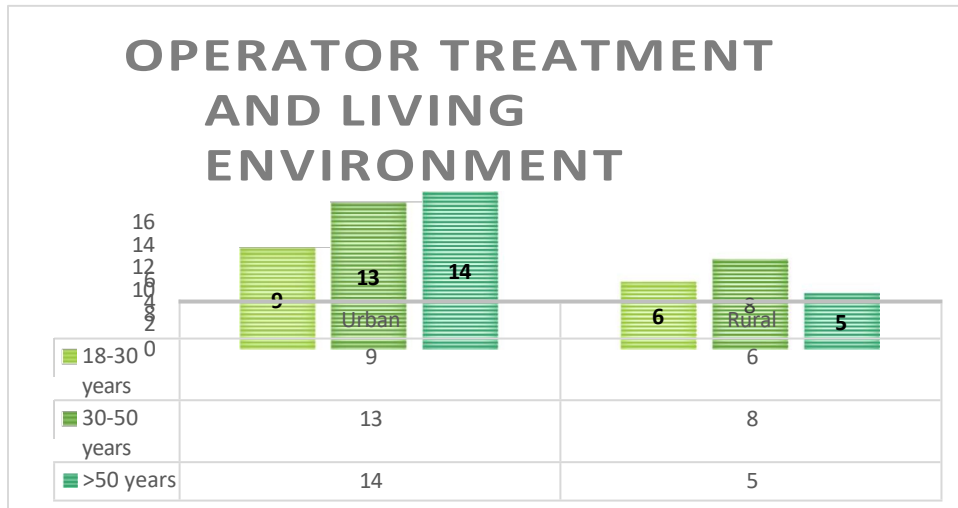


Fig 5.4. Neurosurgical treatment according to patients' living environment

Of the total number of patients hospitalized with acute DVT, 76 (26 women and 50 men) underwent psychotherapy and the remaining 75 patients (26 women and 49 men) did not undergo psychotherapy.

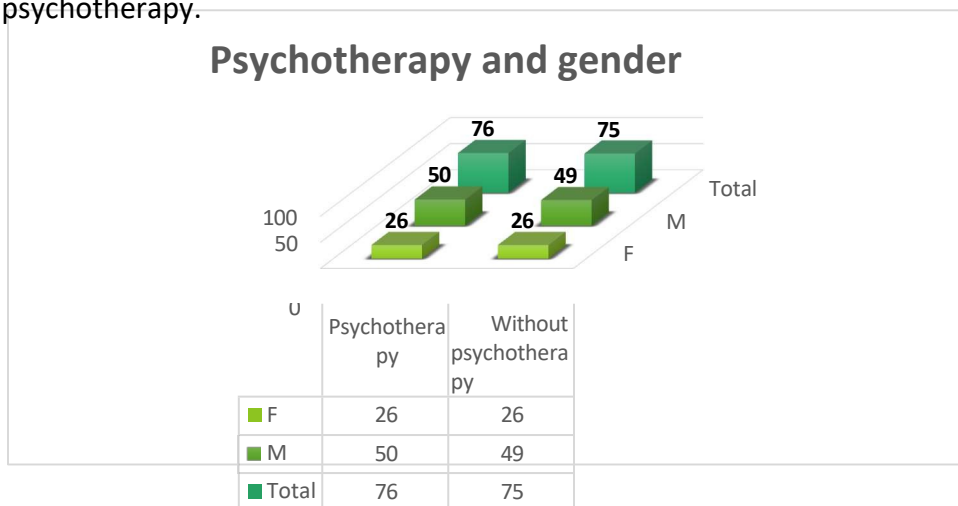


Fig.5.5. Psychotherapeutic treatment by sex of patients

The mean QoL of patients who did not undergo psychotherapy was 46 for females and 40 for males; while in the group of patients who underwent psychotherapy, the mean QoL increased from 49 to 61 for male patients and from 44 to 58 for female patients studied.

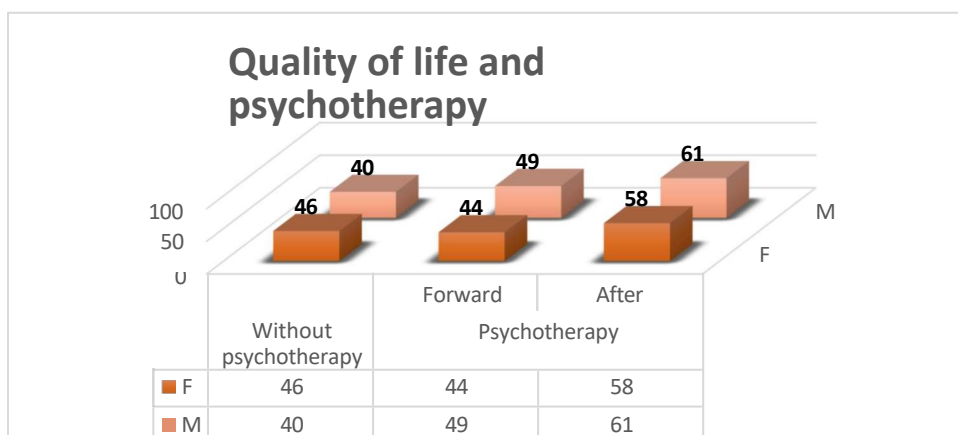


Fig. 5.6. Average quality of life and psychotherapy in the patients studied



**5.4. A study on the relationship between psychotherapy and quality of life of patients who underwent magnetic resonance imaging examinations between 2016- 2017**

During the magnetic resonance imaging (MRI) examination, it has been observed that patients are often emotionally distressed due to their medical condition and uncertainties related to the investigation process.

We evaluated 1484 patients (550 females and 934 males) hospitalized in the Neurosurgery Clinic 2 (including with diagnosis of spinal cord trauma) of "Bagdasar Arseni" Hospital underwent MRI examination in 2016 and 2017.

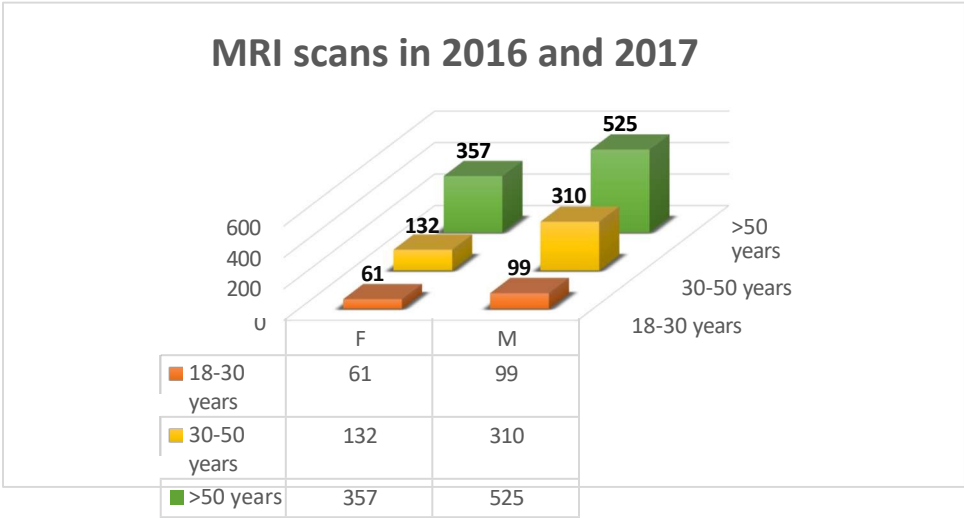


Fig. 5.7. MRI examinations in 2016 and 2017 by sex and age of patients

We observe that the main beneficiaries of MRI examinations were male patients over 50 years of age, followed by female patients in the same age group.

Under these circumstances it is to be emphasized that supportive psychotherapy to decrease periprocedural anxiety MRI should be adapted to mature adults and geriatric patients most often.

Of the 1484 patients who underwent MRI, 151 (about 10%) were diagnosed with acute DVT.

We have applied the following formula to calculate the effectiveness of psychotherapy in improving patients' quality of life:

$$\text{Efficiency of psychotherapy} = \frac{(\text{Qol before psychotherapy} - \text{Qol after psychotherapy})}{\text{Qol before psychotherapy}} * 100$$

Thus, the efficacy of psychotherapy in improving the quality of life of patients with DVT (who also underwent MRI examination) was 31.82% for female patients studied and 24.49% for male patients.

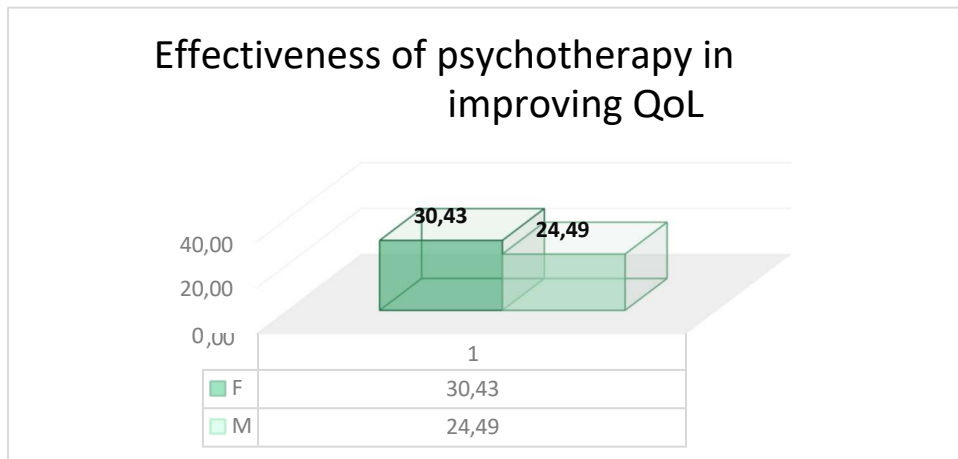


Fig 5.8. Effectiveness of psychotherapy in improving quality of life by sex of patients

### 5.5. Discuss

In this study we observe that the number of men with spinal cord injuries is higher than women, which is in line with known data from the scientific literature and could be explained by the male tendency to assume behavioral risks.

In the case of the female population, the majority group with an acute diagnosis of TVM is the 30-50 age group and could correspond to the stages of transition to menopause with all the behavioral disorders inherent to the path of rediscovery of the self.

Given that neurosurgical interventions also correlate with the severity of trauma, we can observe that young men (in the 18-30 age group) along with middle-aged women (in the 30-50 age group) suffered the most severe MST. This observation may be an additional argument for the observed terriblism in young men and the higher emotional lability in middle-aged women

The female patients studied were more compliant to the psychotherapeutic program, showing a better improvement in quality of life compared to male patients.

Quality of life was better (before and after psychotherapy) for male patients), which is different from the data in the literature (where women often had higher QoL values than men).

It is also noteworthy that: although male patients had higher quality of life scores than female patients, the effectiveness of psychotherapy was higher in female patients, showing a possible better therapeutic compliance of women.

### 5.6. Conclusions

In this study, we retrospectively evaluated 151 patients hospitalized in the Neurosurgery 2 clinic of "Bagdasar Arseni" Emergency Hospital in 2016-2017 for the treatment of acute DVT.

The study population was predominantly male (52 women and 99 men).

Patients were mainly from urban areas.

About one third of the patients (55) needed neurosurgical intervention (mostly performed on urban patients).

Of the total number of patients, 76 received psychotherapy, compared to 75 who did not.

Both female and male patients showed an increase in quality of life following prsihotherapy.

In 2016 and 2017, we also studied the impact of psychotherapy on quality of life in spinal cord injured patients undergoing MRI. Also in this case we observed the improvement of quality of life in both sexes, predominantly among male patients; but with better therapeutic compliance of the studied women.

## 6. Study 2-Prospective evaluation of depression, anxiety and stress in patients with MDVT in the period 2018-2023

### 6.1. Introduction (working hypothesis and specific objectives)

In order to adequately define the quality of life of patients with acute DVT, we performed the DASS- 21 assessment of all hospitalized patients with this diagnosis in the period 2018-2023.

The study also followed the effects of psychotherapy applied in such critical existential situations. Therefore, we followed DASS-21 testing before and at the end of individualized psychotherapy.

### 6.2. Patients and methods

We studied 382 patients (141 females and 241 males) hospitalized with acute DVT in the Neurosurgery 2 Clinic of the Bagdasar Arseni Emergency Hospital Bucharest between 2018 and 2023.

The patients studied were divided into a group that received psychotherapy (of 192 people) and a control group without psychological treatment (of 190 people).

The patients were dynamically assessed using the DASS-21 scale, and the results of the data were processed using the Excel program of the Windows Office 2021 package.

### 6.3. Results

Of the 382 patients with DVT, males were in the majority in all age groups. And the age group above 50 years comprised most female and male patients.

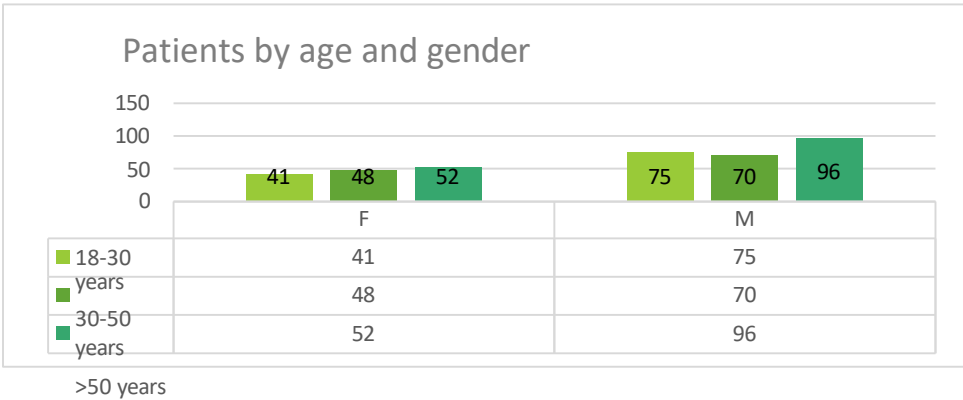


Fig. 6.1. Distribution of patients by age and sex

The distribution of patients was homogeneous in the years studied, with peak incidence in 2023 (when 76 patients were treated in the clinic).

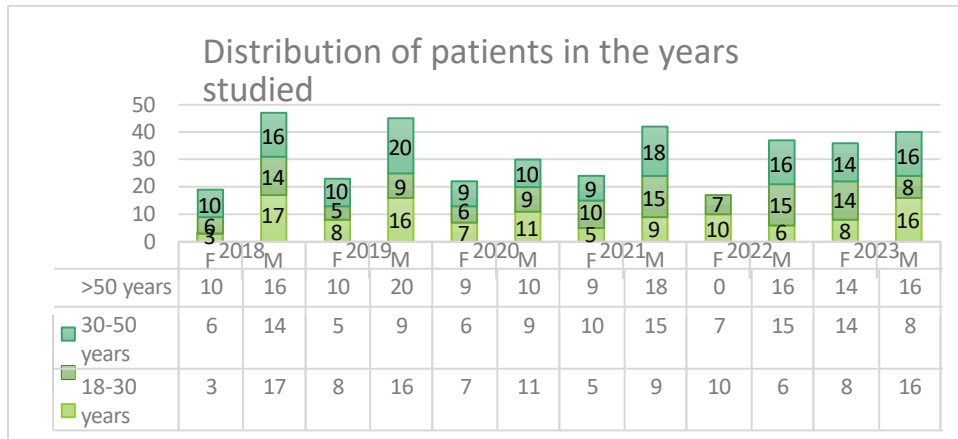


Fig.6.2. Distribution of patients in the years studied

The patients' background was approximately homogeneously distributed, with a slight predominance of city-dwellers (203 patients with a predominant distribution in patients older than 30 years); while 179 patients were from rural areas (being the majority for the 18-30 age group).

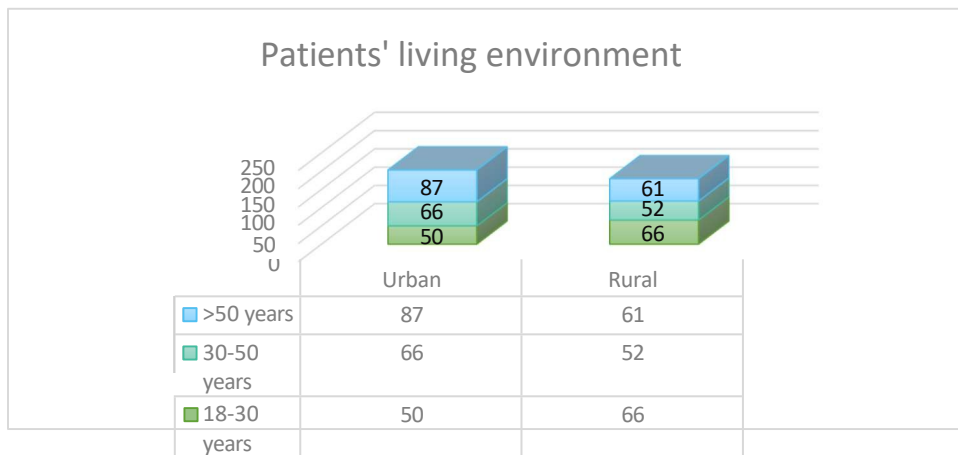
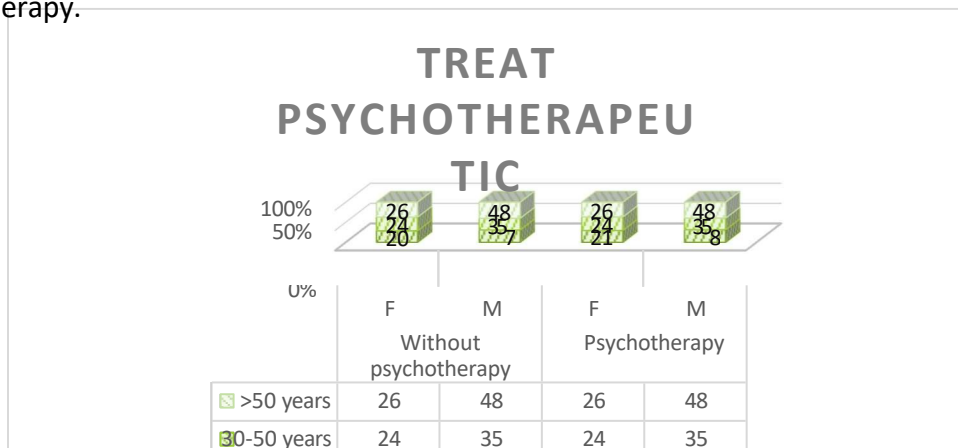


Fig.6.3. Patients' living environment

The groups of patients who underwent psychotherapy were relatively evenly distributed across the age groups of the patients. The situation was similar for patients without psychotherapy.



18-30 years	20	37	21	38
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Fig.6.4. Psychotherapeutic treatment of the patients studied

The mean depression score shifted from moderate to mild in male patients and in female patients who underwent inpatient psychotherapy.

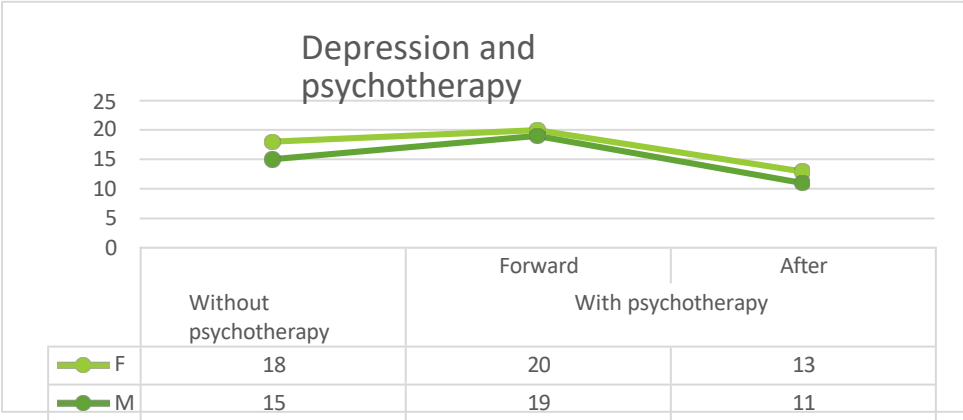


Fig.6.5. Change in mean depression score by sex and psychotherapy

The mean anxiety scores decreased (for women and men who underwent psychotherapy) from the severe category to moderate anxiety, particularly in male patients. The effectiveness of psychotherapy in relieving depression was 35% for female patients and 42.11% for male patients.

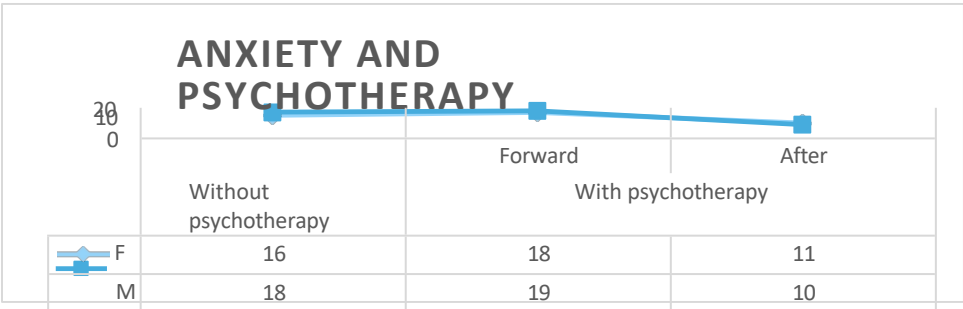


Fig.6.6. Variation in mean anxiety score by sex and psychotherapy

The mean stress score improved from severe to moderate stress in patients who received psychotherapy.

The efficiency of anxiety relief was 38.89% for female patients and 47.37% for male patients.

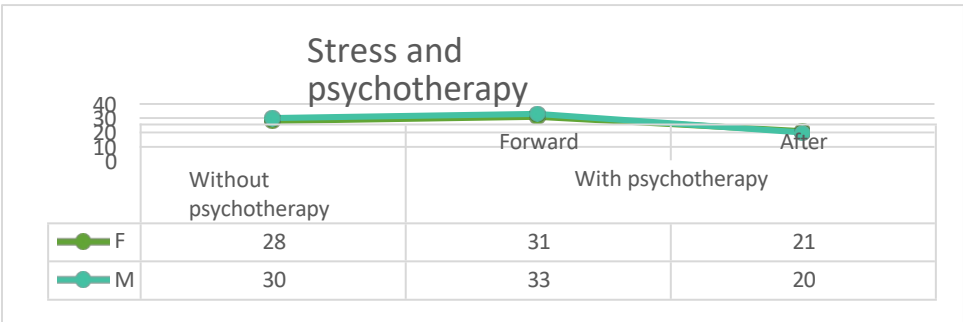


Fig .6.7. Variation in mean stress score according to psychotherapy and patients' sex  
Stress relief efficiency was 32.26% for female patients and 39.39% for male patients

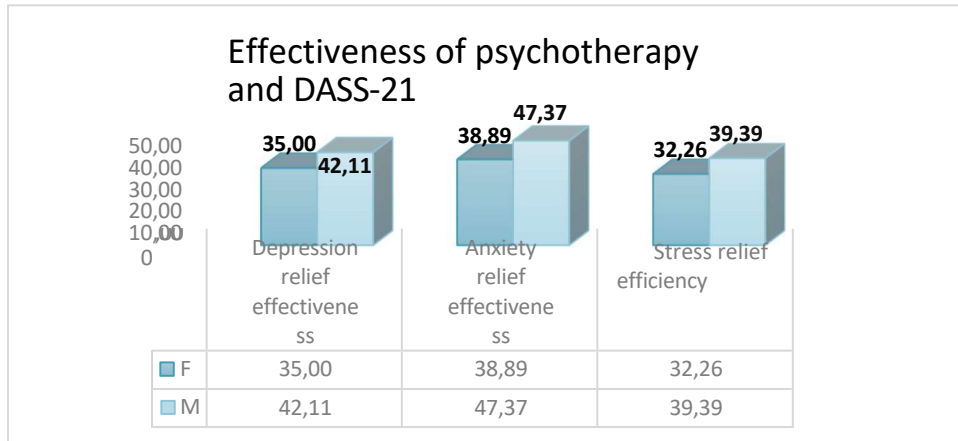


Fig. 6.8. Effectiveness of psychotherapy and DASS-21

#### 6.4. Discuss

Mostly male and female patients belonged to the age group over 50 years, showing possible complications of instability syndrome accompanied by repeated falls at this stage of life.

An element of novelty in this doctoral thesis is the better response of male patients (compared to female patients studied) to psychotherapeutic treatment, both for depression, anxiety and stress.

#### 6.5. Conclusions

Of the 382 prospectively studied DVT patients, males were in the majority in all age groups. And the age group above 50 years comprised most female and male patients.

The distribution of patients was homogeneous in the years studied, with peak incidence in 2023 (when 76 patients were treated in the clinic).

The patients' background was approximately homogeneously distributed, with a slight predominance of city-dwellers (203 patients with a predominant distribution in patients older than 30 years); while 179 patients were from rural areas (being the majority for the 18-30 age group).

The groups of patients who underwent psychotherapy were relatively evenly distributed across the age groups of the patients. The situation was similar for patients without psychotherapy.

On a population of 382 hospitalized during 2018-2023 with acute DVT we observed improvement in depression, anxiety and stress in male and female patients studied.

The effectiveness of psychotherapy in relieving depression was 35% for female patients and 42.11% for male patients.

The efficiency of anxiety relief was 38.89% for female patients and 47.37% for male patients.

Stress relief efficiency was 32.26% for female patients and 39.39% for male patients

## 7. Study 3- Improving the quality of life in patients with acute M DVT in the period 2018-2023

### 7.1. Introduction (working hypothesis and specific objectives)

In this study we evaluated the dynamics of quality of life of patients prospectively assessed by the DASS-21 test before and after psychotherapy or no psychotherapeutic treatment.

### 7.2. Patients and methods

For 382 patients hospitalized with acute DVT in the Neurosurgery 2 clinic of the "Bagdasar Arseni" Emergency Clinical Hospital, we evaluated the quality of life reported to the psychotherapeutic process individualized for each patient, and we processed the final data using the Excel program of the Windows Office 2021 package.

### 7.3. Results

We observe how the quality of life of patients hospitalized with acute DVT who underwent psychotherapy increased, both in the group of female and male patients.

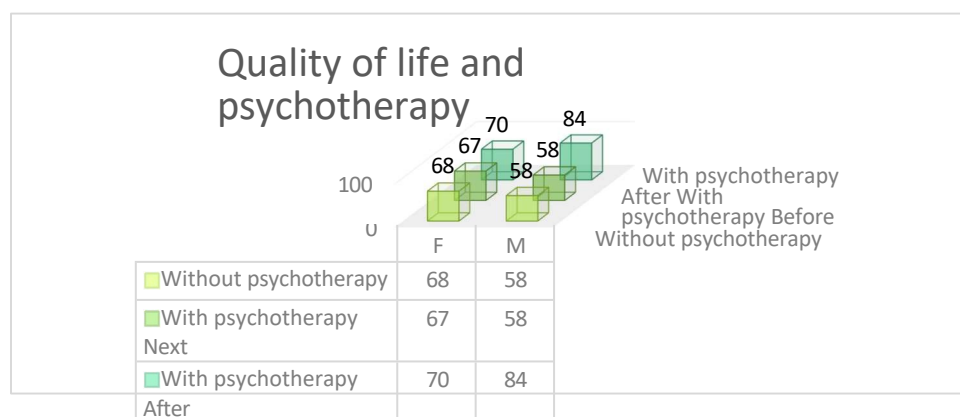


Fig.7.1. Evolution of mean quality of life according to psychotherapeutic treatment and sex of patients

The effectiveness of psychotherapy in improving the quality of life was higher in male patients (44.83%) than in female patients (4.48%).

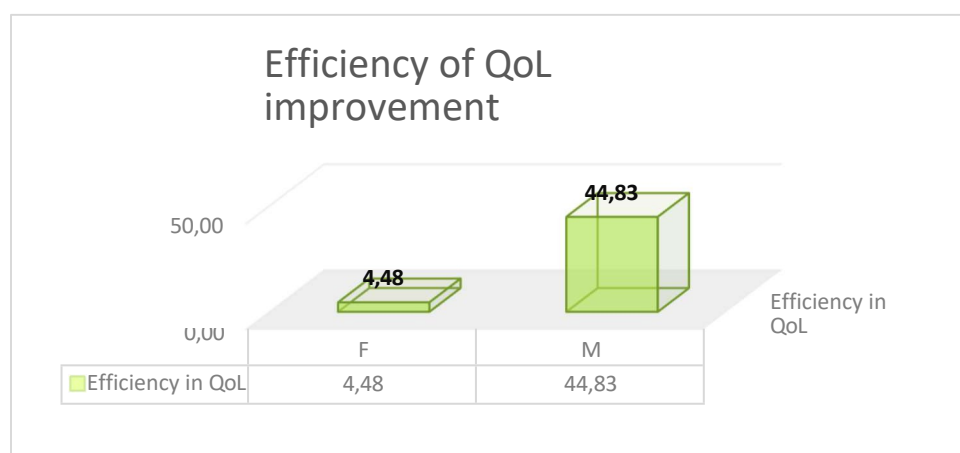


Fig 7.2. Effectiveness of psychotherapy in improving the quality of life of the patients studied



### 7.4. Study on the relationship between psychotherapy and quality of life of patients who underwent magnetic resonance imaging (MRI) between 2018-2023

Between 2018-2023, 4518 patients (including those with acute DVT) underwent imaging examinations in the Neurosurgery 2 clinic of the Bagdasar Arseni Emergency Hospital: 1834 women and 2684 men. Most patients who underwent MRI examination (both men and women) belonged to the age group over 50 years.

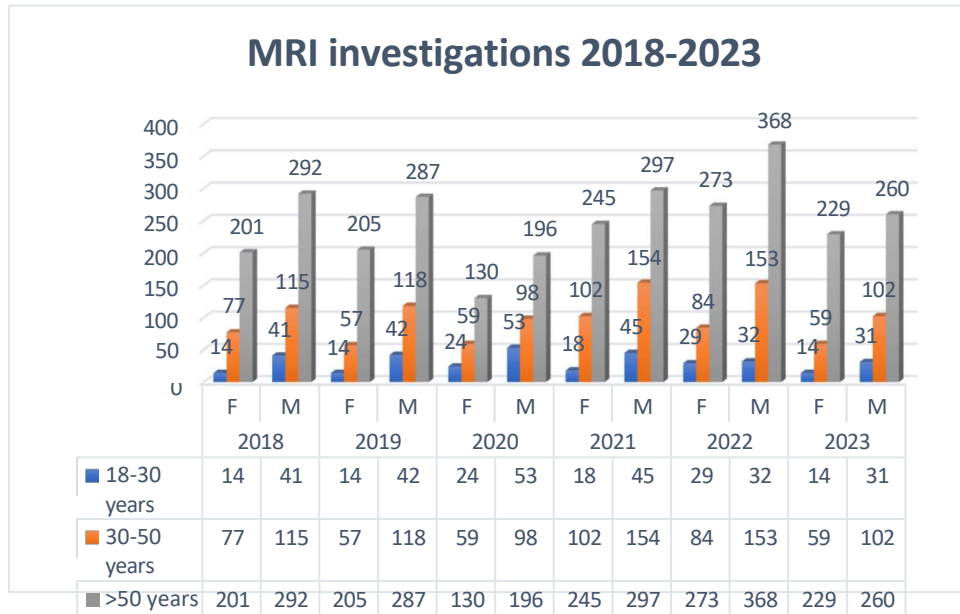


Fig. 7.3. MRI investigations 2018-2023

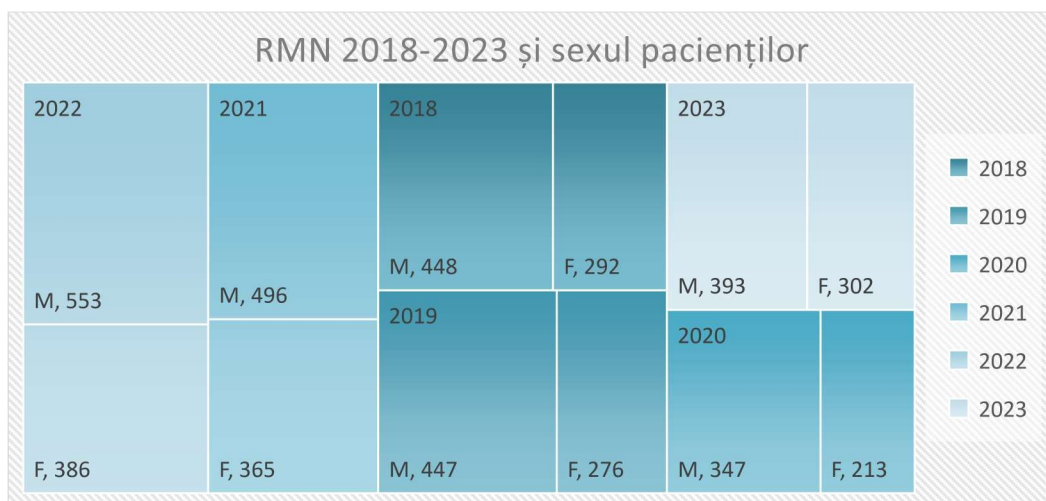


Fig 7.4. MRI investigations 2018-2023 by sex of patients

### 7.5. Discuss

Quality of life is an existential theoretical concept that attempts to describe complex dimensions of human psychological life in response to interaction with the environment.

For this reason, the quantification of a quality life goes beyond the material and involves how a person relates to what happens to them. Thus, (apparently) small-scale interventions such as psychotherapeutic interventions can be a fundamental element in redefining the relationship with the surrounding world (including in the case of disability faced by a patient with spinal cord injury).

As a peculiarity (compared to the literature), in this doctoral thesis psychotherapy improves the quality of life more effectively for male patients than for female patients.

For the patient admitted, investigated and scheduled for neurosurgical intervention, the daily interaction with the psychologist creates a basis of security thanks to the understanding, support and clarification (by validating or invalidating the symbolic analysis that the patient makes of his illness), with the verbalization of the patient's inner experiences. Fear of objects can be accompanied by claustrophobia, which can trigger panic attacks at the mere thought of an MRI scan. The psychologist's intervention is beneficial to the patient's psyche, and the examination is optimized after the psychologist's intervention.

## **7.6. Conclusions**

We observe how the quality of life of hospitalized patients with acute DVT who underwent psychotherapy increased, both in the female and the male patient groups.

The effectiveness of psychotherapy in improving the quality of life was higher in male patients (44.83%) than in female patients (4.48%).

(Apparently) small interventions such as psychotherapeutic interventions can represent a fundamental element in redefining the relationship with the surrounding world (including in the case of disability faced by a patient with spinal cord injury).

Most MRI investigations between 2018-2023 were performed for patients (women and men) over 50 years of age.

## **Conclusions, suggestions and proposals**

This doctoral study was conducted (retrospective and prospective) on 533 patients with vertebro-medullar trauma treated in the Neurosurgery Clinic 2 of the "Bagdasar- Arseni" Emergency Hospital Bucharest between 2017-2024.

We retrospectively evaluated 151 patients hospitalized in the Neurosurgery 2 clinic of "Bagdasar Arseni" Emergency Clinical Hospital in 2016-2017 for the treatment of acute DVT.

The study population was predominantly male (52 women and 99 men).

Patients were mainly from urban areas.

About one third of the patients (55) needed neurosurgical intervention (mostly performed on urban patients).

Of the total number of patients, 76 received psychotherapy, compared to 75 who did not.

Both female and male patients showed an increase in quality of life following prsihotherapy.

In 2016 and 2017, we also studied the impact of psychotherapy on quality of life in spinal cord injured patients undergoing MRI. Also in this case we observed improvement

quality of life in both sexes, predominantly among male patients; but with better therapeutic compliance of the women studied.

Of the 382 patients with DVT prospectively studied, males were in the majority in all age groups. And the age group above 50 years comprised most female and male patients.

The distribution of patients was homogeneous in the years studied, with peak incidence in 2023 (when 76 patients were treated in the clinic).

The patients' background was approximately homogeneously distributed, with a slight predominance of city-dwellers (203 patients with a predominant distribution in patients older than 30 years); while 179 patients were from rural areas (being the majority for the 18-30 age group).

The groups of patients who underwent psychotherapy were relatively evenly distributed across the age groups of the patients. The situation was similar for patients without psychotherapy.

On a population of 382 hospitalized during 2018-2023 with acute DVT we observed improvement in depression, anxiety and stress in male and female patients studied.

The effectiveness of psychotherapy in relieving depression was 35% for female patients and 42.11% for male patients.

The efficiency of anxiety relief was 38.89% for female patients and 47.37% for male patients.

The efficiency of stress relief was 32.26% for female patients and 39.39% for male patients.

We observe how the quality of life of patients hospitalized with acute DVT who underwent psychotherapy increased, both in the group of female and male patients.

The effectiveness of psychotherapy in improving the quality of life was higher in male patients (44.83%) than in female patients (4.48%).

(Apparently) small interventions such as psychotherapeutic interventions can represent a fundamental element in redefining the relationship with the surrounding world (including in the case of disability faced by a patient with spinal cord injury).

All research hypotheses have been confirmed.

## **Bibliography**

- [1] Nichols TR. Spinal Control of Motor Outputs: Distributed force feedback in the spinal cord and the regulation of limb mechanics. *J Neurophysiol* 2018;119:1186. <https://doi.org/10.1152/JN.00216.2017>. <https://doi.org/10.1152/JN.00216.2017>.
- [2] Bican O, Minagar A, Pruitt AA. The spinal cord: a review of functional neuroanatomy. *Neurol Clin* 2013;31:1-18. <https://doi.org/10.1016/J.NCL.2012.09.009>. <https://doi.org/10.1016/J.NCL.2012.09.009>.
- [3] Okazaki T, Kanchiku T, Nishida N, Ichihara K, Sakuramoto I, Ohgi J, et al. Age-related changes of the spinal cord: A biomechanical study. *Exp Ther Med* 2018;15:2824. <https://doi.org/10.3892/ETM.2018.5796>. <https://doi.org/10.3892/ETM.2018.5796>.

- [4] Anjum A, Yazid MD, Daud MF, Idris J, Hwei Ng AM, Naicker AS, et al. Spinal Cord Injury: Pathophysiology, Multimolecular Interactions, and Underlying Recovery Mechanisms. *Int J Mol Sci* 2020;21:1-35. <https://doi.org/10.3390/IJMS21207533>.  
<https://doi.org/10.3390/IJMS21207533>.
- [5] Alvi MA, Pedro KM, Quddusi AI, Fehlings MG. Advances and Challenges in Spinal Cord Injury Treatments. *J Clin Med* 2024;13:4101. <https://doi.org/10.3390/JCM13144101>.
- [6] Alizadeh A, Dyck SM, Karimi-Abdolrezaee S. Traumatic Spinal Cord Injury: An Overview of Pathophysiology, Models and Acute Injury Mechanisms. *Front Neurol* 2019;10:282. <https://doi.org/10.3389/FNEUR.2019.00282>. <https://doi.org/10.3389/FNEUR.2019.00282>.
- [7] Bourguignon L, Tong B, Geisler F, Schubert M, Röhrich F, Saur M, et al. International surveillance study in acute spinal cord injury confirms viability of multinational clinical trials. *BMC Med* 2022;20. <https://doi.org/10.1186/S12916-022-02395-0>.  
<https://doi.org/10.1186/S12916-022-02395-0>.
- [8] Robinson-Whelen S, Taylor H, Hughes R, Hughes R, Wenzel L, Nosek M. Depression and depression treatment in women with spinal cord injury. *Top Spinal Cord Inj Rehabil* 2014;20:23-31. <https://doi.org/10.1310/SCI2001-23>. <https://doi.org/10.1310/SCI2001-23>.
- [9] Wüthrich F, Lefebvre S, Mittal VA, Shankman SA, Alexander N, Brosch K, et al. The neural signature of psychomotor disturbance in depression. *Mol Psychiatry* 2024;29:317-26. <https://doi.org/10.1038/S41380-023-02327-1>. <https://doi.org/10.1038/S41380-023-02327-1>.
- [10] Pasipanodya E, Khong CM, Dirlikov B, Prutton M, Held M, Shem K. Telepsychology for Individuals With Spinal Cord Injury: Protocol for a Randomized Control Study of Video-Based Cognitive Behavioral Therapy. *Top Spinal Cord Inj Rehabil* 2022;28:56. <https://doi.org/10.46292/SCI22-00010>. <https://doi.org/10.46292/SCI22-00010>.
- [11] Bandelow B, Reitt M, Röver C, Michaelis S, Görlich Y, Wedekind D. Efficacy of treatments for anxiety disorders: a meta-analysis. *Int Clin Psychopharmacol* 2015;30:183-92. <https://doi.org/10.1097/YIC.0000000000000078>.  
<https://doi.org/10.1097/YIC.0000000000000078>.
- [12] Gunther MS. Psychiatric consultation in a rehabilitation hospital: a regress hypothesis. *Compr Psychiatry* 1971;12:572-85. [https://doi.org/10.1016/0010-440X\(71\)90040-X](https://doi.org/10.1016/0010-440X(71)90040-X).  
[https://doi.org/10.1016/0010-440X\(71\)90040-X](https://doi.org/10.1016/0010-440X(71)90040-X).
- [13] quality - definition and paradigm | dexonline n.d. <https://dexonline.ro/definitie/calitate> (accessed September 1, 2024).
- [14] life - definition and paradigm | dexonline n.d. <https://dexonline.ro/definitie/via%C8%9B%C4%83> (accessed September 1, 2024).
- [15] Biktimirov A, Bryukhovetskiy I, Sharma A, Sharma HS. Neuromodulation and quality of life for patient with spasticity after spinal cord injury. *Int Rev Neurobiol* 2023;172:79-99. <https://doi.org/10.1016/BS.IRN.2023.03.003>. <https://doi.org/10.1016/BS.IRN.2023.03.003>.
- [16] Ventegodt S, Merrick J, Andersen NJ. Quality of life theory III. Maslow revisited. *ScientificWorldJournal* 2003;3:1050–7. <https://doi.org/10.1100/TSW.2003.84>.
- [17] Duan R, Qu M, Yuan Y, Lin M, Liu T, Huang W, et al. Clinical Benefit of Rehabilitation Training in Spinal Cord Injury: A Systematic Review and Meta-Analysis. *Spine (Phila*

Pa 1976) 2021;46:E398-410. <https://doi.org/10.1097/BRS.0000000000003789>.

- [18] Hearn JH, Cross A. Mindfulness for pain, depression, anxiety, and quality of life in people with spinal cord injury: a systematic review. *BMC Neurol* 2020;20. <https://doi.org/10.1186/S12883-020-1619-5>. <https://doi.org/10.1186/S12883-020-1619-5>.

- [19] Kushner DS. Strategies to avoid a missed diagnosis of co-occurring concussion in post-acute patients having a spinal cord injury. *Neural Regen Res* 2015;10:859-61. <https://doi.org/10.4103/1673-5374.158329>. <https://doi.org/10.4103/1673-5374.158329>.
- [20] Migliorini CE, New PW, Tonge BJ. Comparison of depression, anxiety and stress in persons with traumatic and non-traumatic post-acute traumatic spinal cord injury. *Spinal Cord* 2009;47:783-8. <https://doi.org/10.1038/SC.2009.43>. <https://doi.org/10.1038/SC.2009.43>.