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PhD THESIS

Screening and psychological evaluation of patients with thyroid dysfunction

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INTRODUCTION

The concept of "*well being*" has led to increasingly diverse research fields such as health psychology, behavioral economics, social sciences or medical sciences. The common goal of these approaches is to explain the mechanisms underlying human behavior and mental processes in relation to internal and external environment (physical and social) and to find effective solutions to improve the quality of life.

A widespread category of people whose quality of life is affected by a medical condition is the one representing patients with disorders related to thyroid gland function. Described as having multiple causes (from iodine deficiency to post-partum status), thyroid disease affects a significant number of people and it can be seen in any age group. The challenges in front of a patient with thyroid dysfunction (TD) are the following: recording (qualitative or quantitative) alterations of hormonal secretion of the thyroid gland structure, identifying the type and intensity of psychological symptoms present, differentiation of psychological effects caused by the manifestation of the disease from the ones caused by specific medication and the importance the patient gives to life events. The triad endocrinologist - clinical psychologist - psychiatrist has the role to ensure the TD patient health premises for an optimal quality of life.

At present, undifferentiated psychological evaluation based on risk factors that lead to presumptive development towards psychiatric disorders of these patients and the lack of psychological screening protocol are reflected in "exploratory" therapeutic attitudes, whose aim would be an optimal response in terms of the well being of the patient, who not infrequently gives up treatment prematurely or "surrenders" himself/herself to a medical system which monitors the disease, becoming a passive recipient of specialized services and renouncing being proactive. In Romania we do not have a standardized system for psychological evaluation of patients with TD, which leads in most cases to the assessment of psychological problems by the endocrinologist or, possibly, by a psychiatrist, from a medical point of view, almost exclusively involving drug therapy.

In the practice of clinical psychology we meet procedural and instrumental difficulties on psychodiagnosing patients with thyroid dysfunction. This year, the mandatory psychological examination of patients with thyroid dysfunction who become unable to work (disability retirement), has made a relatively large number of persons to go to clinical psychology offices. Psychological evaluation can be very laborious, time consuming and costly for the patient, given the fact that there is no a settled legislation on reimbursing psychological services through Health Insurance.

A research question arising from the study of specific literature is if there is a specific maladaptive pattern for patients with thyroid dysfunction, or if the the fact of being sick itself causes the installation of mental disorders and psychological defenses specific for any patient with chronic illness. Psychological factors play potential or determinant roles at the beginning and in the evolution of most of the general medical conditions. It is necessary to identify and describe those situations in which psychological factors have a significant clinical effect on the development and outcome of general medical condition or when they expose an individual to a significantly increased risk of unfavourable outcome. There must be reasonable evidence to suggest an association between psychological factors and medical condition although most often it may not be possible to prove direct causality or mechanisms underlying the relationship.

The thesis discuss the psychological evaluation and screening process of patients with thyroid dysfunctions, aiming the identification of psychological dimensions involved in subjective experience of the disease, self-perception of well-being and clinical state evolution.

THEORETICAL FRAMEWORK

Health and disease models

The medical model addresses the patient as a problem. The patient must be adapted to the world where he lives, and if the adaptation can not be done, he/she must be kept at home or in specialized institutions where some of his/her needs are met. The focus is on *addictive behavior* which comes from stereotypes on *disability* which produce pity, fear or an attitude of guardianship (Paglierani, 2002). Attention is usually focused on the disability rather than on the individual's needs, the disability being necessary to be treated. Sarafino (2002) identifies two reasons for which this model is incomplete. Firstly, people can act for the purposes of prevention or detection of the disease in its early stages and these actions are governed by psychosocial processes. The second reason is the growing evidence that personality and psychological processes play an important role in health and disease. The role of healthy lifestyles and the differences between people regarding personality and mental processes are rarely included in the bio-medical model (Engel, 1977, 1980) and partly accepted by specialists in medical sciences.

The psychosomatic model arose from the junction of two concepts conveyed in the Western medical world: *psychogenesis* and *the holistic approach*. The basic result was the emergence of *psychosomatic illness* in the medical landscape - disease that has its etiology in psychological factors. In agreement with scientific thinking in recent years, a number of diseases are likely to be at least partially psychosomatic (Feld and Rüegg, 2005). The study on the relationship between stress and the endocrine system has a long history. Hormonal changes that occur in stressful situations have been especially considered, but lately research has moved towards studies regarding the bio-psychosocial model of stress, focusing on the action of various hormones on the mechanisms of stress management. The psychosomatic model can be criticised for being prone to the mental component in the etiology of mental illness (sometimes with little empirical evidence), ignoring etiological factors or pathogenic trauma so well described by medical science today.

The psychological model detaches itself from the psychosomatic one dealing in particular with the "person" as a disease carrier. More and more psychologists speak of the internal sense of coherence, defined as the ability to find meanings for things, the ability to understand the significance of the stresses to which the individual is subjected and the scrutiny and decision making ability. In psychoanalytic terms, the disease becomes the symbol of the individual's existence. In cognitivist terms, the disease could be the unique way of understanding life events and at the same time a unique way of restructuring the system to regain homeostasis. In our view, the role of psychological assessment and psychotherapeutic intervention is to help people to regain their status of internal coherence and reintegration in the environment with an optimal quality of life. The model can be criticised in terms of theory and empirical evidence.

The bio-psycho-social model places health and disease on a continuum, at one of the poles being death and at the other the quality of life. Sociocultural phenomena with pathogenic potential have a defining influence on the picture of contemporary pathology. It is important to specify that they must be viewed in the context of the fundamental values that define the modern civilization, i.e. materialistic mentality, performance psychosis, modern hedonism (Baban, 2000). As specialists we cannot address the increasingly rapid changes in human behavior and pathology just as an ascertained fact. It is required that we perform a continuing reviewing and adjustment of paradigms and theories in agreement with present changes, while retaining the roots of prior knowledge.

Phylogenetically and ontogenetically we witness a continuously improved process of keeping busy the resources of the psycho-physical human system depending on the requirements of space and time in which people perform their activities. Health is a state of

coherence between environmental requirements, the ability of the "software" to process information and the capacity of the "hardware" to provide the physical substratum (Figure 1). What happens when the three components lack synchronising? How to restore the balance? What are the parameters that change and in what order?

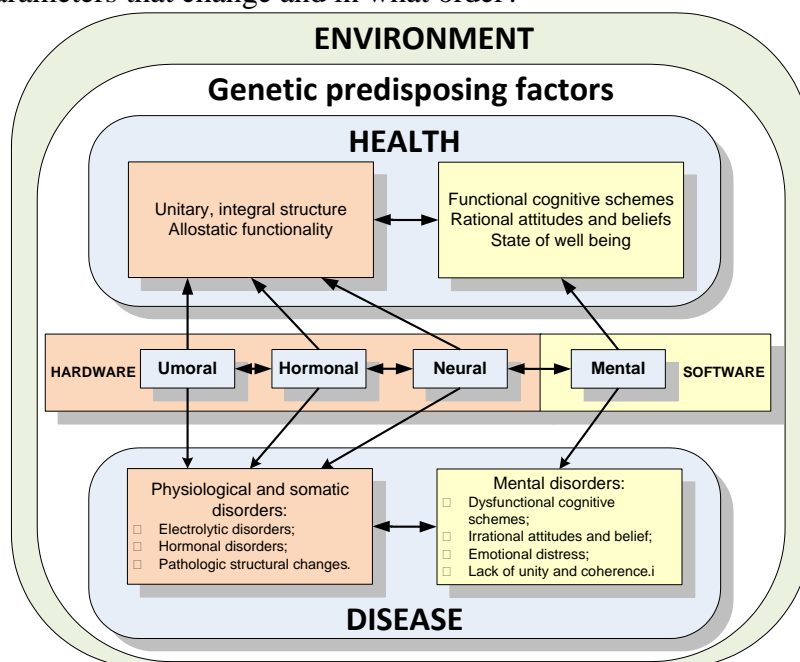


Figure 1. The relationship between predisposing factors (biological, psychological) and precipitating (environmental) factors in determining disease or maintaining health

In biological systems (systems close to equilibrium) the stability of the balance that provides survival is guaranteed by the continuity and fluidity of appropriate responses to requests from the internal and external environment, through self-regulation.

Stress, defense and coping

Although research on stress has moved to the laboratories of genetics and neurofunctional exploration, in daily life stress continues to have a huge impact in parallel with people's changing environment and lifestyle. One of the evidences for the continuing concerns of specialists about this phenomenon is its analysis in a separate chapter of pathology in the DSM. Experts unanimously agree that stress has a nonspecific role in the genesis of disease. Research shows a significant relationship between distress and thyroid gland function. Wang (2006) confirms the observation that many patients with hyperthyroidism have a history of major traumatic stress, in relation with control groups.

Mental defense takes two forms extensively discussed in the field of psychology - the mechanisms of defense (MD) and coping strategies. The MD concept which protects the individual from psychological risk associated with adversity is discussed in relation to four main processes: *risk mitigation*, *reduction of chain negative reactions*, *establishing and maintaining of self-esteem and self-efficacy* and *opening to opportunities*. The conclusions of the studies reveal that adaptive use of MD may be associated with better mental health and less distress translated into lower medical costs.

Coping means a "cognitive and behavioral effort to reduce, control or tolerate the internal or external demands that exceed personal resources" (Lazarus and Folkman, 1984). Biondi and Picardi (1999) argue that there is a large body of evidence testifying to the significant influence of coping strategies on hormonal response, met both in the laboratory and in everyday stress situations. Cramer (2000) compares the similarities and differences between MD and the coping process. MD are *unconscious, unintended, dispositional*,

hierarchical and associated to pathology whereas coping processes are conscious, intentionally used, situationally determined, unhierarchical and associated with normality.

Emotions are closely linked to cognition and their study should be contextual. Also, in the last 50 years, many researchers have established that the neuroendocrine system consistently reflects emotional reactions. This work will make extensive references to the interaction between emotion and cognitive patterns in patients with TD.

Disorder, disability, dysfunction

Disability is often found in psychological literature under the meaning of mental deficiency. In medicine the term is defined as the lack of anatomical or functional integrity of an organ. Often synonymous with failure, the term deficiency has many uses referring to either the mind or the body. In the present approach, we use the term in accordance with the medical sense, referring to the functional integrity of the psychic system.

The term *dysfunction* is used as a reduction of the capacity of a subsystem to adapt and integrate in the system whose part it is. In this case, this paper will refer to two different meanings of the term. Thyroid dysfunction will refer to the disorder of adaptation and integration of the thyroid gland in the overall functioning of the human endocrine system and the second will make reference to dysfunctional emotions as a type of negative emotions that lead to adaptation disorder and integration of cognitive component of emotions with behavioral response.

Depression has a correspondent in dysfunctional negative emotions, but the problem of causality between the two remains uncertain. According to Albert Ellis's theory depression is one dysfunctional emotion, but it also involves behavioral consequences and associated beliefs. In 1976 Aaron Beck defined the *Cognitive Depression Triad* involving negative thoughts about: self, world / life and the future.

Anxiety has a correspondent in perceiving the future in a way that implies potential loss of integrity (physical or mental), hostility (from others) and suffering.

The simultaneous presence in the clinical picture of features of anxiety and depression can be commented as a comorbidity or a combination of the two syndromes, thus being able to interpret it as categorical or dimensional (Tudose, 2005). When there is a complete clinical picture, be it anxious or depressed, we talk of comorbidity. The authors who are in favour of the dimensional model take into account the strong correlation between the two and support the term *anxious-depressive syndrome*.

Thyroid dysfunctions

Thyroid diseases may be caused by qualitative or quantitative alterations in hormonal secretion, the increase in size of the gland or both mechanisms. The shortage of thyroid hormones produces hypothyroidism and excessive secretion causes hyperthyroidism. Thyroidism includes disorders with various etiologies characterized by inflammation of the thyroid gland.

In *hypothyroidism*, the patient may present depression with sensory, cognitive and behavioral disturbances. In *hyperthyroidism* disorders are secondary to the direct effects of thyroid hormones and the indirect effects of catecholamines on nerve cells, expressing themselves by: schizoid and paranoid behaviour, obsessions, phobias, hysteroid discharges (Trzepacz, 1989).

In the absence of standardized psychological investigation of these patients we cannot have a true picture of psychological disorders in patients with TD. Therefore, a study is necessary to identify mental disorders through specific psychodiagnostic methods in patients diagnosed with thyroid function disorder. Further on, the etiology of these disorders and the extent to which stress is a pathogenetic factor should be investigated.

RESEARCH METHODOLOGY

General Objectives

- *Identifying the role of the clinical psychologist in the evaluation process of patients with TD.*
- *Description of the features of mental disorders in patients with TD.*
- *Translation and adaptation of the Defense Style Questionnaire (DSQ40) to evaluate patients with DT defensive style.*
- *Identifying a cognitive, emotional and psychological defense pattern, in patients with TD, to assist in the creation of procedures of screening and psychological evaluation.*
- *Studying the links between emotional stress level, dysfunctional cognitive schemes attitudes and beliefs, defensive style, anxiety and depression in patients with TD.*
- *Formulation of a protocol of screening and psychological evaluation for patients with TD.*

General Assumptions

- *The defensive style of patients with TD is similar to that of patients with chronic diseases.*
- *Depression and anxiety coexist in patients with TD, regardless of the nature of dysfunction.*
- *Patients with TD present a maladaptive profile regarding emotional distress, negative automatic thoughts, cognitive schemes, attitudes and beliefs.*

Participants

Case study 1 - Three patients with TD belonging to the following nosographic categories: hyperthyroidism, hypothyroidism, autoimmune thyroiditis - Hashimoto disease – (these patients were included a psychological assessment and intervention program) and 529 patients who came to BeldeanMed Ward Sibiu for endocrinological examination between January 2010 - April 2010. There were 19 men and 509 women interviewed.

Case study 2 - 110 patients with chronic diseases hospitalized in wards: CFR Sibiu Medical Hospital (29) Diabetes (5), Medical I (28), Medical II (19), Cardiology II (chronic) (29) Sibiu County Hospital, all of them forming a group available at the moment of the evaluation. The group included 46 women and 55 men with chronic diseases (other than thyroid disease).

Case study 3 - 33 patients diagnosed with hyperthyroidism or hypothyroidism in the Endocrine Disorders Clinic from Sibiu County Hospital and BeldeanMed Ward Sibiu. The group included 23 patients with hypothyroidism and 10 patients with hyperthyroidism.

Tools and materials

Case study 1 – Observation sheets and medical records (from the Department of Endocrine Diseases - Clinical Hospital Sibiu and BeldeanMed Ward Sibiu); Questionnaire for patients with DT; DSM-IV-TR; Hamilton Depression Rating Scale* (HRSD) , Hamilton Anxiety Scale* (HRSA); Emotional Distress Profile* (EDP); Questionnaire of cognitive schemes Young - short form* (YSQ-S3), Attitudes and Beliefs Scale 2* (ABS2).

Case study 2 - Defense Style Questionnaire (DSQ40); program SPSS 17.0; Computer

Case study 3 - The list of criteria for selection of cases; Psychological semi-structured interview scheme; Defensive Style Questionnaire (DSQ40) - Romanian version; Hamilton Anxiety Scale (HRSA), Emotional Distress Profile (EDP); Young Cognitive Schemes Questionnaire - short form (YSQ-S3), Automatic Thoughts Questionnaire (ATQ) Attitudes

and Beliefs Scale 2 (ABS2) Psychological Screening Report Form (Annex ...) Psychological Assessment Report Form; Program SPSS 17.0; Computer

** The scale is part of the Clinical Assessment System (David coord., 2007).*

Research design

Research design is structured on three case studies derived from the objectives.

The first case study was exploratory and aimed at documenting using archive records and medical records of the Endocrinology Ward at the County Hospital and BeldeanMed Ward Sibiu for identification of problems related to the incidence of thyroid dysfunction in the county of Sibiu, the distribution of hospitalizations and examinations within one year, and how patients with thyroid dysfunction are included in the system of assessment, diagnosis and treatment. Also, at this stage, an investigation was carried out aimed at finding out how TD patients perceive the need for evaluation and psychological intervention, and three representative case studies for the major nosological categories (subtle hyperthyroidism, hypothyroidism and autoimmune thyroiditis), aimed at psychological assessment, psychological intervention and evolution of the clinical status of patients in order to formulate research hypotheses and possible problems encountered by the clinician psychologist. Addressing clinical cases was cognitive-behavioral, including the assessment phase and psychodiagnostic, conceptualization, psychological intervention and reassessment.

The second study focused on the translation and adaptation of the self-report scale for the assessment of DSQ40 defensive style and the psychometric analysis of the instrument applied to patients with chronic diseases.

The third study (predictive) started from the assumptions made as a result of the case studies and it consisted of psychological evaluation of a group of 33 patients with TD and analysis of the correlations between the psychological dimensions involved. In the conclusions of this study predictions were made on the dynamics of psychiatric disorders in patients with TD, which led to the formulation of specific psychological dimensions for screening and psychological evaluation.

STUDY 1 – Identifying specific psychological dimensions of patients with TD.

Specific Objectives

- *Analysis of data bases on the incidence of thyroid dysfunctions in the county of Sibiu for a period of three years.*
- *Formulation and implementation of psychological assessment and intervention procedures in patients with TD in different nosological categories, in order to identify specific clinical pictures and psycho-social consequences of the clinical picture.*
- *Description of illness perception and involvement in the therapeutic approach of patients with TD.*
- *Identify how TD patients perceive and agree with psychological assessment and intervention.*

Description of the group of participants in Study 1

In the second phase of the study (objective 2) participated three adults with various thyroid disorders: one case of hyperthyroidism, one of hypothyroidism, and another case of Hashimoto disease. Participants signed an informed consent.

In the third stage of the study (objectives 3 and 4) took part in 529 adults who came to BeldeanMed Ward Sibiu for endocrinological advice, between January 2010 and April 2010. The patients selected were the ones with signs and symptoms of thyroid dysfunction.

Gender distribution of the group of participants is shown in Figure 2.

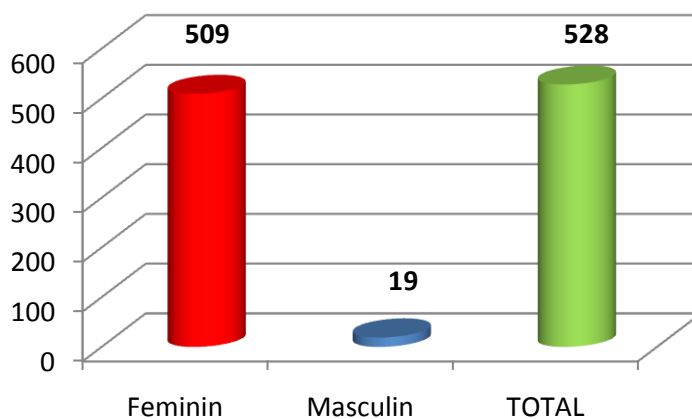


Figure 2. Gender distribution of the group of participants in Study 1

The average age of the participants was 48.7 years old, standard deviation 11.5.

Depending on the area of origin, the group of participants had the following structure: 427 participants from urban areas, 102 participants from rural areas (Figure 3).

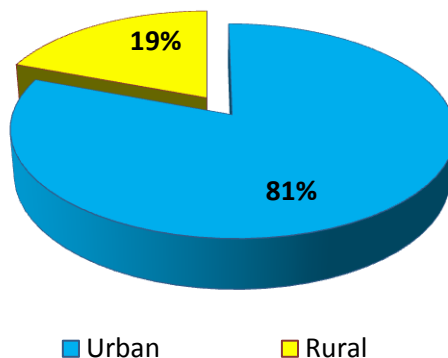


Figure 3. The structure of the group in Study 1 depending on the area of origin

The distribution is representative for the number of patients from urban / rural areas recorded in the medical records of the ward and the period during which the questionnaire was applied was chosen for the large number of medical consultations carried out in relation to other times of year.

Procedure

The study took place in several stages. The first stage was in September-October 2007 in Sibiu County Hospital Endocrinology Department, with the agreement of Ph.D. Professor Ion Totoianu head of department. Hospital records from the Endocrinology Clinic were consulted. The aim was to monitor the number of admissions, the incidence of hospitalizations for diseases of the thyroid from the total number of hospitalizations and monthly distribution of these admissions during three years (September 2004 – September 2007).

In the period May 2009 - September 2010 three case studies were conducted in Beldeanmed Ward Sibiu (a collaboration agreement was signed with Prof. Luminita Beldean, MD endocrinologist).

In the period January 2010 - April 2010 529 patients were surveyed. They came to BeldeanMed Ward Sibiu for medical consultation and had thyroid symptoms. The

questionnaire was applied by psychologists Bouleanu Elena and Gabriela Matei (employee of that ward) after the patients were consulted by the practitioner who recorded the medical (certainty) diagnosis.

Presentation of the results

Results obtained in the study of medical data bases

The study of the databases available in the Department of Endocrinology from County Hospital Sibiu in the period 1 October 2004 – 1 September 2007 revealed the following results (Figure 4):

- patients hospitalized in the clinic during the period of reference: **3384**
- patients whose medical diagnosis involves thyroid function disorders: **2645**

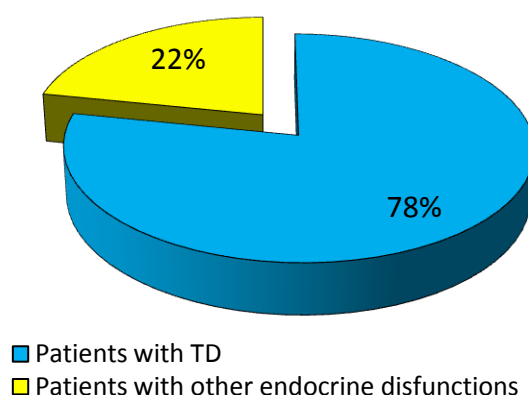


Figure 4. Patients hospitalized in the Endocrinology Department October 2004 - September 2007

The result is that the incidence of thyroid disease among patients hospitalized in the period is approximately 78%. For statistical analysis we also took into account patients admitted with primary diagnosis other than thyroid disorders, but for whom this diagnosis is found as secondary (the patients received tiro-regulating medication during hospitalization).

The distribution of hospitalizations for thyroid disorders according to the months of the year is presented in the following table.

Average number of admissions of patients with thyroid disorders in the Endocrinology Department in 2004 – 2007

Month	Average number of patients	Percentage of total admissions
January	89,5	82,5%
February	83,5	81%
March	84,5	82,4%
April	75	82,4%
May	85,5	81,8%
June	83	75,5%
July	46,5	73,2%
August	37,5	76,5%
September	51	75%
October	71,5	78,7%
November	92,5	73,7%
December	34,5	67,4%

An average was calculated for admissions of patients with thyroid disease compared to the total admissions in the Endocrinology Department for each month of the three-year analysis. The percentage ranges from 67.4% in July to 82.5% in January during three years for which records were studied.

Analysis of results for the study data bases

The analysis shows a higher incidence of admissions for disorders of thyroid function in January, February, March, April and May. In June and December, the proportion of hospitalizations in the Endocrinology Department of patients with thyroid disease decreases by 15% (in December). It is possible that this difference is given by the social nature of the activities of the population during these periods, but also by the holiday periods for medical staff, given that the total number of admissions decreased greatly in August, September and December. The increase in the proportion of hospitalizations of patients with thyroid disease in the months from January to May remains a significant phenomenon.

We have no comparative data available for the equivalent admissions in other regions of the country, which does not allow reliable conclusions on the issue of certain features of the population with TD in Sibiu county. The medical reports show that the incidence of thyroid disease is higher in Sibiu County because it is situated in a high risk area due to iodine deficiency (Rusu, ...).

A speculative conclusion could be drawn on the increased risk of developing thyroid disease or deepening of symptoms in patients who have had this disease for a longer period of time. It is psychologically important to track (through processes of screening) the dynamics of any mental disorder in these periods to determine if there is a maladaptive pattern associated with an increased number of hospitalizations (and specialized checkups). These results will direct the study on a group of patients who were hospitalized or were examined by specialists at this time of the year.

For most patients, in the list of secondary diagnoses appeared the anxious-depressive disorder, which is why we conclude that TD patients are often associated with affective psychiatric manifestations. The depressive or anxious intensity of the disorder is not specified, so that the study will continue to follow the psychological evaluation of this issue and the dynamics of the intensity depending on the age of the thyroid disease.

CASE STUDY 1

General information: Name: M. A., Date of birth: January 24, 1959 (50 years old)

Address: Sibiu; Job: operator COMPA Sibiu, Level of education: Economic Highschool

Social status: married

Case history

- *Main symptoms*

History of present disorder

The client comes to the psychologist in May 2009 on the recommendation of the endocrinologist.

Personal and Social History

She has been married for 30 years and has a very good couple relationship. She has been in a dispute with a former employer for breach of employee rights for three years. She has been working as an operator in a factory in Sibiu for two years and now she has been on sick leave of 21 days.

Medical history

In 1994 he underwent surgery for removal of a fibroadenom from the left breast (benign

tumor).

In 1999 he was diagnosed with hyperthyroidism.

In 2007 he was diagnosed with autoimmune thyroiditis (Hashimoto disease).

On 14 May 2009 shows the following values of laboratory tests: cholesterol = 266.3 mg / dl, HDL cholesterol = 59 mg / dl, TSH = 2.30 micro / ml, T3 = 1.32 ng / ml, FT4 = 1 , 35 ng / ml, ATPO = 1424.2 IU / ml (normal values <5.6 IU / ml).

At the date of the measurement she is under antipsychotic, anxiolytic and hypnotic medication.

Mental Status

On the first assessment the client is oriented in space and time and has a correct perception of herself and the environment. She has consistent thoughts with a relatively slow pace. The information obtained from the initial interview shows that the patient is aware of the disease and says that she is willing to cooperate in order to balance her mental state.

DSM-IV Diagnosis

- *Axis I - depressive disorder severe episode, anxiety due to thyroid dysfunction, conversion disorder with sensory symptoms (touch);*
- *Axis II - no diagnosis;*
- *Axis III - autoimmune thyroiditis;*
- *Axis IV - problems related to the interaction with the legal system (ongoing litigation);*
- *Axis V - has not been assessed.*

Case conceptualization

Etiological factors

- *Thyroid dysfunction;*
- *Significant negative life events.*

Evaluation of current cognition and behavior

The following psychological dimensions have been evaluated: cognition, emotional distress, anxiety, depression.

Longitudinal assessment of cognition and behavior

She describes her behavior previous to the existing disorders as fair, rigorous, active. She often says that before the disease her personal motto was, "*honesty and fairness.*"

Positive aspects and strengths of the client

Decision-making capacity, high motivation to overcome the obstacle (the ongoing trial) and the disease status, intelligence above average, personal discipline, family support.

Hypothesis

The client shows depressive symptoms as a result of thyroid disorder (hyperthyroidism now) and because of negative life events that took place for a period of 12 years (husband's going abroad for two years, losing a building in court, her mother-in-law's disease, breeding and care of her four children, the pressures at the previous workplace resulting in unfair dismissal and the opening of a civil lawsuit against the employer).

Personal perfectionist and rigid attitude, very high requirements transferred to children as well and dissatisfaction related to the impossibility of continuing education have resulted in a long series of frustrations that she has not complied with, but which have developed psychic tension over time and led to anxious-depressive symptoms.

Intervention Plan

List of issues

- *Symptoms of depression and anxiety;*
- *Side effects of hormonal medication and antidepressants;*
- *distress caused by involvement in criminal trial and tense relationship with the lawyer.*

Therapeutic Targets

- *Reduction of distorted thinking about the inability to cope with negative life events*

(disease, trial);

- *Stress management and reduction of dysfunctional negative emotions;*
- *Obtaining relaxation and decreasing the extent of psychosomatic symptoms;*
- *Increased adherence to treatment.*

Planning intervention

The intervention took place during 14 sessions (with two breaks of three and two weeks).

For depression we used techniques for restructuring irrational cognitive schemes related to poor self-performance (family and work), inhibition and weakness. During the 14 weeks, antidepressant medication was changed three times by the psychiatrist. An educational program on mental hygiene has consistently been applied together with the need for compliance with drug therapy (the client often attempts to renounce to this treatment and adjust the dosage).

The treatment of sleep disorders (other than medication which was not often respected) consisted of relaxation techniques and mental imagery.

To manage stress and lower levels of negative dysfunctional emotions rational-emotional techniques were applied. Assertive training was used to overcome the impasse of the ongoing trial. The client thoroughly disliked the lawyer she had hired for the trial two years before.

Throughout therapy, the client completed a personal diary in which she described daily personal experiences, results and tasks.

A reassessment of emotional distress and the depression and anxiety level was made in meeting number 9. Total Score = Score 76 PDA (high); HRDS - score 15 (mild depression), HRSA - 12 score (intensity of anxiety below the clinical level).

The conclusion was made during three sessions (after two weeks , after three weeks and after one month). A relapse prevention program and another meeting were established in three months' time.

Barriers to intervention

Medical condition and adverse effects of medication were the main barriers to intervention. Lack of adherence to initial treatment was another important factor. The continuation of the trial and the difficulties of communication with her lawyer were also obstacles during the intervention.

Results and observation of the client's evolution

On reassessment after three months:

- *Depressive symptoms HRSD - total score 10 (mild depression);*
- *Anxiety symptoms HRSA - 12 score (anxiety under the clinic level)*
- *Emotional distress PDA - total score of 52 (medium), dysfunctional negative emotions - Score 19 (medium).*

The trial was completed and the client resigned from her previous job. She obtained a contract to work abroad where she will go together with her husband. She is under supportive hormone treatment.

CASE STUDY 2

General information: Name: S.E, Date of birth: 18 January 1974 (36 years old)
Address: Sibiu, Occupation: Nurse, level of education: Post-high school for nurses
Social status: Married

Case history

- Main symptoms

History of present disorder

The client comes to the psychologist in April 2010 on her own initiative. On first review

the client says that, for about three months, she has had a very high state of verbal irritability, and physical aggression, anxiety (to panic) about the health of the child, worry and fear at work, emotional lability associated with very frequent expression of negative emotions and crying, indifference to physical appearance (clothing, makeup, hairdressing), lack of motivation for any household or professional activity, decreased interest in sexual activity, straining relations with parents (especially father), avoiding contact with friends and acquaintances.

After the fourth session (after analysing the case history, the clinical interview and affective and cognitive assessment) endocrinological consultation was recommended.

Personal and Social History

She has been married for 5 years and has a very good couple relationship. She graduated from a post high school for nurses and she is a nurse in a respiratory ward where she has been working for 13 years.

He comes from a rural family with an alcoholic father and mother with heart problems (can not indicate the nature of the disease). She has a brother with whom she has had poor communication for about two years. In childhood and adolescence she repeatedly witnessed scenes of physical and verbal aggression from her father towards the mother and brother. She feels responsible for the condition of the father (now chronic alcoholism and liver cirrhosis).

Medical history

She denies the existence chronic disease or surgery. She has never used medication for anxiety or depression and is not under medication for another medical condition. In June 2010, following endocrinological consultation she was diagnosed with hypothyroidism. Laboratory samples showed: TSH = 9.6 IU / ml (VN 0.4 to 4 IU / ml), ATPO = 16.4 IU / ml (VN 0-35 IU / ml). The medical treatment was Eutirox 3x ½ pills/ day.

Mental Status

On the first assessment the client is oriented in space and time and has a correct perception of one's body and the environment, coherent, contextual thoughts. Difficulty in keeping attention focused.

Case conceptualization

Etiological factors

- *Thyroid dysfunction;*
- *Tense relationship with parents.*

Evaluation of current cognition and behavior

The following psychological dimensions were evaluated: cognition, emotional distress, negative automatic thoughts, anxiety and depression.

YSQ-S3 results - initial assessment case study 2

Name of the cognitive scheme	Score	Level
Abandon / Instability (AB)	10	High
Mistrust / Abuse (MA)	16	Very high
Emotional deprivation (ED)	10	Very high
Deficiency / Shame (DS)	11	High
Social isolation / Alienation (SI)	12	Very High
Dependence / incompetence (DI)	13	Very High
Vulnerability to hazards (VH)	15	Very High
Protectionism / Emaciated personality (EM)	11	High
Failure (FA)	15	Very high
Claiming Personal Rights / Dominance (ET)	18	High
Lack of self-control and self-discipline (IS)	17	High
Subjugation (SB)	14	Very high
Self-sacrifice (SS)	20	High
Social undesirability / Need for Approval (SU / AS)	59	Very high
Negativity / Passivity (NP)	45	Very high

Emotional Inhibition / Exaggerated self-control (EI)	18	Very high
Unrealistic standards / Exigency (US)	18	High
Punishment (PU)	39	High
Total Score	370	

The client has a deeply dysfunctional cognitive schemes profile, scoring very high (most schemes) or high.

After hypothyroidism diagnosing, before drug treatment (the intervention is at its seventh session), negative automatic thoughts (ATQ score = 20 - low level) and symptoms of anxiety (HRSA score = 15 - below the level of clinical intensity) were reassessed. There was a clinically significant reduction of the two psychological dimensions assessed before starting medical treatment. We cannot draw conclusions on causality between the decreased in depressive and anxious symptoms and the psychological intervention given that an experimental design was not made, but we note the improvement of the client's emotional state.

Longitudinal assessment of cognition and behavior

The client has had a conflict at the psychological level (expressed as early as adolescence) between her feelings of pity for her father's alcoholic behavior on the one hand and admiration for his intellectual capacity, on the other hand. She asserts that she would like her father to be proud of her, of what she has done, but this one is not willing to have an open discussion. She often argues with her mother for not having divorced but she also thinks that her mother's absence would mean her father's imminent death.

Positive aspects and strengths of the client

Intellectual capacity, supporting her husband, recognizing that there is a problem that she cannot face alone and requires specialized personal assistance.

Hypothesis

The client shows anxiety symptoms probably as a result of thyroid disorder and possibly the history of a child of an alcoholic parent. Depressive symptoms (assessed by observation only and ATQ scale - negative automatic thoughts, which correlates with depressive symptoms (Hollon and Kendall, 2007) has a subclinical intensity.

Intervention Plan

List of problems

- *Symptoms of anxiety with occasional feelings of panic;*
- *Vegetative and behavioral reactions that interfere with daily occupational and domestic activities (especially permanent feeling cold and uncontrollable crying)*
- *Profoundly maladaptive cognitive schemes;*
- *Conflict relationship with parents and her brother.*

Therapeutic Targets

- *Reducing the level of anxiety;*
- *Reducing the negative distorted thinking.*

Planning intervention

The intervention took place during 14 sessions (weekly). For anxious-depressive symptoms cognitive restructuring techniques (reducing automatic thoughts) and breath control techniques and relaxation (Schultz autogenic training) were applied. For matters relating to communication with parents and brother assertiveness developing techniques and mental imagery ("Why would I do that I feel if I were ...") were used.

The end of the intervention took place during two sessions scheduled two weeks away. In the penultimate session cognitive schemes, attitudes and beliefs were revalued.

Barriers to intervention

Not knowing about the condition of prolonged thyroid dysfunction from the beginning led to the extension of the period for the assessment of cognition and behavior and

identification of etiological factors of anxiety-depressive symptoms.

Results and observation of the client’s evolution

At the end of the intervention, the client presents the following Scores on YSQ-S3, PDAs, and Abssi ATQ Scales.

- PDAs total score - high, low-level dysfunctional negative emotions, negative functional emotions - low;
- Abssi: irrationality - low, high rationality) scores high level only for BAD dimension.
- ATQ low.

YSQ-S3 results – reevaluation case study 2

Name of the cognitive scheme	Score	Level
Abandon / Instability (AB)	5	Low
Mistrust / Abuse (MA)	7	Low
Emotional deprivation (ED)	12	High
Deficiency / Shame (DS)	5	Medium
Social isolation / Alienation (SI)	10	Medium
Dependence / incompetence (DI)	7	Medium
Vulnerability to hazards (VH)	6	Medium
Protectionism / Emaciated personality (EM)	6	Low/ Medium
Failure (FA)	7	Medium
Claiming Personal Rights / Dominance (ET)	14	Medium /High
Lack of self-control and self-discipline (IS)	11	Medium
Subjugation (SB)	6	Low/ Medium
Self-sacrifice (SS)	9	Low
Social undesirability / Need for Approval (SU / AS)	25	High
Negativity / Passivity (NP)	18	Medium
Emotional Inhibition / Exaggerated self-control (EI)	10	Medium /High
Unrealistic standards / Exigency (U.S.)	7	Low
Punishment (PU)	18	Low
Total Score	181	

The client has reestablished optimal control of emotions and behavior in professionally stressful situations. She managed to share with her father her thoughts and feelings about his being an alcoholic and the experiences derived from this aspect during her life, through a letter she handed him. Her relationship with her mother improved considerably by communicating weekly and planning support for her father’s rehabilitation in a specialized drug center - The Blue Cross. She is under supportive thyroid function treatment.

CASE STUDY 3

General information: Name: L.M.; Date of birth: 18 January 1947 (62 years)

Address: Sibiu, Occupation: retired (age limit), level of education: secondary

Social status: Married

Case history

- Main symptoms

History of present disorder

The client is presented to the psychologist in August 2009 following an acquaintance’s recommendation.

Two weeks ago she was diagnosed with *Rough Hyperthyroidism*. He says that he has come to a psychologist because she is in a “terrible” situation caused by the sale of a property and the claim of another and “she feels she can no longer cope with stress and effort”.

Personal and Social History

The client says that during her lifetime she has met a lot of situations where the stress level was very high (death of a child six weeks after birth, she moved four times in different locations, she was hospitalized twice for emergency anaphylactic shock with high risk of exitus).

Medical history

The client states that she does not suffer from chronic diseases and had a cystocele surgery 10 years ago. She is allergic to some substances (chlorine, acetone) and medicines (Aspirin, Furazolidone). She has never used anxiolytic medication, antidepressants or sleeping pills. She is currently under medical treatment prescribed by her endocrinologist (3x1 Tyrozol pills / day, metoprolol 2x1 pills / day and Gerodorm - if needed). Laboratory samples showed: TSH <0.01 IU / ml (VN 0.4 to 4 IU / ml), FT4 = 2.18 ng / dl (VN 0.71 to 1.85 ng / dl), FT3 = 9.73 pg / ml (VN 1.45 to 3.48 pg / ml).

Mental Status

On the first assessment the client is oriented in space and time and has a correct perception of her body, of herself and the environment. Logical, contextual thinking. Anxious-depressive mood.

Case conceptualization

Etiological factors

- *Thyroid dysfunction;*
- *Stress due to life events.*

Evaluation of current cognition and behavior

The following psychological dimensions were assessed: emotional stress, anxious and depressive symptoms, negative automatic thoughts, cognitive schemes, attitudes and beliefs.

- *Emotional Distress level was: very high PDA, dysfunctional negative emotions – very high, functional negative emotions - very high.*
- *anxiety symptoms were assessed with the HRSA Scale - anxiety disorder of clinical intensity; depressive symptoms were assessed with the HRSD Scale - moderate depression.*
- *negative thinking - ATQ - very high level of negative automatic thoughts.*
- *cognitive schemes - YSQ-S3 - The results are presented below.*

YSQ-S3 Results - initial assessment case study 3

Name of the cognitive scheme	Score	Level
Abandon / Instability (AB)	13	Very high
Mistrust / Abuse (MA)	17	Very high
Emotional deprivation (ED)	18	Very high
Deficiency / Shame (DS)	15	High
Social isolation / Alienation (SI)	10	High
Dependence / incompetence (DI)	19	Very high
Vulnerability to hazards (VH)	17	Very high
Protectionism / Emaciated personality (EM)	14	Very high
Failure (FA)	16	Very high
Claiming Personal Rights / Dominance (ET)	16	High
Lack of self-control and self-discipline (IS)	19	Very high
Subjugation (SB)	14	Very high
Self-sacrifice (SS)	15	Medium
Social undesirability / Need for Approval (SU / AS)	46	Very high
Negativity / Passivity (NP)	40	Very high
Emotional Inhibition / Exaggerated self-control (EI)	15	Very high
Unrealistic standards / Exigency (U.S.)	15	Medium
Punishment (PU)	45	High
Total Score	357	

The client has a deeply dysfunctional cognitive schemes profile, accounting for very

high (most schemes) or high level.

Longitudinal assessment of cognition and behavior

The client has completed the seventh grade education (with poor results) and attended the Red Cross School at the age of 30 years old. She describes herself as being fair, punctual and having always managed to achieve her objectives. Until the installation of disease, she had a very high resistance to effort (physical or cognitive) and often involved in assisting persons with deficiencies (very old or ill neighbours). She was emotionally balanced managing to overcome any problem with lucidity and self-confidence. She often showed compassion and altruistic behavior to others and has a well defined set of moral values. In the intensely stressful situations she used to rely on social support and dealt with the problem until a solution was found. She has a very high affinity for religion and states that early in life she often overcame her problems by invoking divine help.

Positive aspects and strengths of the client

Large capacity of decision, problem recognition and acceptance of specialized aid, family support, strong religious beliefs.

Hypothesis

The client shows anxious-depressive symptoms following (probably) a thyroid disorder and life events regarding administrative-legal problems. Difficulties in controlling vegetative responses and behavior are signs of clinical features of the person with hyperthyroidism on the one hand, emphasized by feelings of anxiety caused by socio-economic problems.

Intervention Plan

List of issues

- *Anxious-depressive symptoms;*
- *Behavioral reactions that interfere with daily activities;*
- *Dysfunctional cognitive schemes;*
- *Conflict with the person who bought the property.*

Therapeutic Targets

- *Reducing anxiety and depression;*
- *Reducing the negative distorted thinking;*
- *Increase assertiveness.*

Planning intervention

The intervention lasted for 16 sessions (weekly). We applied cognitive restructuring techniques (reduction of automatic thoughts), assertiveness techniques and development of bio-feedback techniques (the client has purchased a portable bio-feedback device).

The ending of the intervention took place during three sessions scheduled two weeks away. In meeting 13 cognitive schemes, attitudes and beliefs, emotional distress and negative automatic thoughts were reviewed.

Barriers to intervention

Initial failure to relax (the first four sessions). The client said that she was afraid to close her eyes and relax because she had the feeling of losing control, so that the following techniques were used alternatively: Jacobson progressive muscle relaxation technique, mental imagery and Schultz autogenic training. During the intervention there were two situations that had a significant negative emotional response.

Results and observation of the client's evolution

At the end of the intervention, the client presents the following Scores on YSQ-S3, PDAs, ATQ, HRSA and HRSD.

- *PDA-high level; dysfunctional negative emotions - low-level; negative functional emotions – medium level;*
- *ATQ - low;*
- *HRSA - sub-clinical anxiety;*

- *HRSD - mild depression.*
- *For the cognitive schemes profile YSQ-S3, the results are presented in the following table.*

YSQ-S3 Results – revaluation case study 3

Name of the cognitive scheme	Score	Level
Abandon / Instability (AB)	5	Low
Mistrust / Abuse (MA)	10	Medium
Emotional deprivation (ED)	10	High
Deficiency / Shame (DS)	5	Low / Medium
Social isolation / Alienation (SI)	5	Low
Dependence / incompetence (DI)	5	Low
Vulnerability to hazards (VH)	6	Medium / High
Protectionism / Emaciated personality (EM)	5	Low
Failure (FA)	6	Medium
Claiming Personal Rights / Dominance (ET)	9	Low
Lack of self-control and self-discipline (IS)	6	Low
Subjugation (SB)	6	Low / Medium
Self-sacrifice (SS)	25	Very High
Social undesirability / Need for Approval (SU / AS)	20	Low
Negativity / Passivity (NP)	18	Low
Emotional Inhibition / Exaggerated self-control (EI)	13	High
Unrealistic standards / Exigency (U.S.)	8	Low
Punishment (PU)	31	Medium
Total Score	191	

The client has recovered for most of the time the control on vegetative responses and emotions. She withdrew accusations to the person with whom she had been in conflict and restored social ties. Anxious symptoms sometimes appear, but she is still practising relaxation techniques (autogenic Schultztraining) and regularly attends religious services. The treatment consists of Tyrozol (1pill/day) and Metoprolol (2x ½ pills/ day).

Questionnaire results for patients with DT

The questionnaire included demographic data (gender, age, urban / rural), employment status, duration of thyroid disease (the date of first diagnosis), medical diagnosis awareness of the patient and three questions referring to the appeal to psychological intervention or assessment services.

For *question 1* on the age of the disorder (aproximately estimated in most cases), we obtained an average of *12.7 years old* with a standard deviation;

For *question 2* on knowledge of medical diagnosis by patients, the results are summarized in Table 3. The question aimed at assessing the extent to which the patient is interested and involved in the diagnosis and treatment and identification of the thyroid disorders most frequently reported.

Thyroid Disorser Types

No.	Nature of thyroid disorder	No. of cases
1	Hypothyroidism	192
2	Hyperthyroidism	48
3	Autoimmune thyroiditis	21
4	Goiter	119
5	Thyroid Neoplasm	4
6	Goiter with Hypothyroidism	72
7	Do not know	73
TOTAL		529

For *question 3* on the *employment status* results are summarized in the following table.

Employment status

Nr.	Statutul ocupațional	Nr. cazuri
1	Employee	144
2	Unemployed	1
3	Unemployed / Housewife	48
4	Disability Retired	288
5	Old Age Retired	48
TOTAL		529

It is noted that a very high percentage (54.4%) of the patients with thyroid disease are disability pensioners.

For *question 4* on the *visit to a psychologist* for psychological problems arising after the diagnosis of thyroid disorder, 95 of the participants responded affirmatively, the remaining 434 giving a negative answer.

For *question 5* (answered by the 95 participants who answered yes to question 4), the choice was made on how patients came to seek psychological services. Responses referred to recommendation coming from doctors of different specialties, the recommendation of another person or own initiative. The results in percentages for responses to question 5 are presented in the in Figure 5.

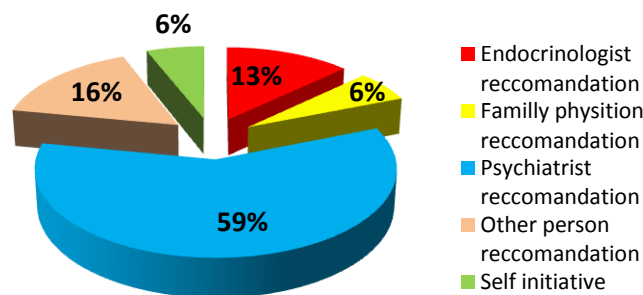


Figure 5. The results of responses to question 5

Question 6 (answered by the 95 participants who answered yes to question 4) focused on the type of psychological service requested. The vast majority of patients who have used the psychologist's advice (95%) requested psychological evaluation. The remaining 5% sought psychological intervention (counseling / psychotherapy).



Figure 6. The results of responses to question 6

Responses to *question 7* (answered by the 434 participants who responded negatively to question 4), about the reasons for which *patients have resorted to the psychologist*, are collected in the following table.

The incidence of the reasons why participants did not appeal to psychological services

No.	Reasons for which patients have not appealed to the psychologist	No. of answers
1	I do not know what a psychologist is or what he/she does	10
2	I do not think I need him/her	86
3	I did know that I could appeal to a psychologist	210
4	I do not trust psychologists	8
5	I do not have financial resources	120
TOTAL		434

Question 8 (answered by the 434 participants who responded negatively to question 4) on the patient's option to call or not a psychologist, following the doctor's recommendation, 84% responded yes, 6% negatively and 10% said I do not know. We believe that this shows great confidence the patient has in the doctor.

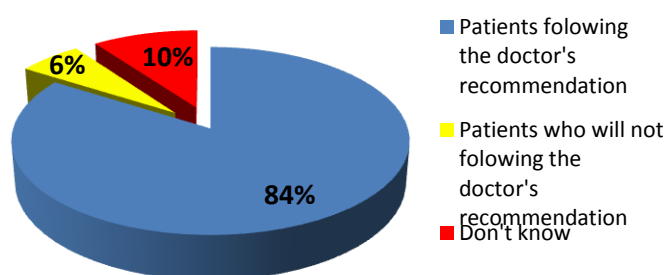


Figure 7. The results of responses to question 8

Analysis of the results of the questionnaire for patients with TD

With regard to the questionnaire results for patients with TD, we can see that the incidence of examinations for women and men (including illness) is higher than the proportion shown by various authors who range the prevalence of the illness on an average 8:1 ratio (F / M). In the present study the proportion of female / male was 27:1. The reason may firstly be the relatively short period of time in which the survey was conducted and on the other hand the fact that only one endocrinology ward was concerned with selecting participants. To determine if the result is nationally representative, or a local or situational characteristic, the investigation could take place in several offices, clinics and Endocrinology wards.

A relatively large number of participants said they did not know what the thyroid dysfunction they are suffering from is. In many cases they said that the physician is required to know the diagnosis and what to do. From these patients there was often a negative response about the possibility of consulting a psychologist, even if the recommendation were made by the doctor.

The large number of participants whose employment status is the disability retirement is the evidence that thyroid disease is an often disabling condition, which is significant given that the average age group of participants was 48.7 years old, value that falls 11.3 years of

below women's retirement age and 16.3 years below men's retirement age. This may be one more reason to support the complex effort of recovery of these patients with the aim of recovering working capacity and optimal quality of life. With the cessation of active professional life, the person adds the stress caused by the change of lifestyle and the sense of defeat / failure to the specific clinical picture of the disease. In addition, for patients with TD that are professionally active, the need for job changes often occurs because of the inability to further cope with job demands. This may alter the self-image, and sometimes on revenue. Days of sick leave represent another dimension of social and personal costs for patients with TD.

A very high percentage (82%) of the participants said they have never appealed to a psychologist, and among those who have turned to psychological services, 59% had requested psychological evaluation at the psychiatrist's recommendation. In most cases the psychological evaluation was requested to obtain psychological evaluation report requested by the medical committee of expertise for keeping records for disability retirement, or reassessing old files.

We can provide an interpretation of these results on the perception of patients of psychologists in general, which can be compared to the perception of the general population and the demand for the psychologist's services in the general population. We could not find any specific studies on the Romanian population showing this aspect, which is why this interpretation is intuitive.

The main reasons why patients TD do not appeal to the psychologist are: lack of awareness of the possibility or the necessity to consult a psychologist and limited financial resources. We believe that on the one hand there is a great lack of correct information from psychologists both to the public and to the doctors about psychological practice based on sound scientific evidence and on the other hand, there is a reluctance gained during the long periods in which psychology was removed from the fields of academic training in Romania. Recovering this space requires extra effort and a delineation of the subject and tools / techniques specific, especially in the field of clinical psychology.

Reporting some psychological problems identified in patients with TD (for cases in which it was made) unfortunately remains at the level of formal documents, without further recommendations for natural recovery by specific interventions. The absence of the psychologist from many hospital wards where patients whose diseases are known to have significant effects on the psychological level are admitted, is experienced as an attitude of resignation or suspicion in patients.

From the answers given by patients with TD, a very high percentage (84%) said they would turn to a psychologist if a doctor recommended it. No doubt the doctor is the team leader for evaluation and treatment for illness, but we must not neglect the patient's mental component, which apart from his illness, remains a person with a psychological dimension, social, professional and cultural dimension. If the medical model offers increasingly spectacular solutions in recovery and healing, the psychological model provides a resizing of the person who has suffered a lot in relation to the disease and the changes caused by it.

Often when filling out the questionnaire, patients with TD said that *once they learned that they are "gland" sick, they knew that their lives would become increasingly difficult and not have much to do in this respect, but they would need to talk about their problems with someone who would understand and might guide them. Another common attitude was that the patients (mostly with hypothyroidism) stated that the disability retirement is all they have and if they were not included in a pensionable degree of disability, they could not be accepted to work anywhere. It is a social reality within the jurisdiction of other social services, but helps to maintain mental poor health and condition of this patient.* Following these reflections, the idea of case studies covering different ways of psychological assessment and intervention in patients with thyroid dysfunction was outlined. Romanian literature in recent years points to

some interesting studies (Luchian and Ox, 2007, Chirita, Paralirov and Panait, 2008) on specific mental disorders in thyroid dysfunction and outcomes of psychotherapeutic interventions. We noted, however, an approach to the assessment of the psychological scales usually restricted to disorders of social status or functionality.

Conclusions on Study 1

Thyroid disease is at the top in the category of endocrine diseases for which patients come to the endocrinologist. Sibiu County is an area with a higher incidence of these diseases than the rest of the country, taking into account the etiological factors related to iodine deficiency. The study was conducted only in Sibiu, but it is possible that some patients with thyroid disease may require care in other cities in the county (Medias, Cisnădie, Agnita, Avrig, Dumbrăveni).

Information obtained by a thorough psychological evaluation could facilitate targeting the patient towards psychiatric consultation and specialized treatment, or to the psychologist, and implicitly psychological intervention for patients who have emotional, behavioral or cognitive disorders. The almost unanimous opinion of the physicians is that patients with hypothyroidism are those who raise the most psychological problems. Doctors, other than psychiatry specialists tend to classify mental disorders in neurotic and psychotic disorders, although DSM-IV does not address the nosological category of neuroses.

Therapeutic medical practice is based primarily on reducing symptoms and adjustment of imbalanced functions. Many of these therapeutic conducts have these components, which is derived from the medical model. The dysfunction is the subject and focus of therapeutic activities. The therapeutic medical act as shown by the vast majority of endocrinologists, also involves monitoring other indicators in the patient. *In some cases the psychological component may play an important role in the therapeutic behaviour and it certainly plays an important role in the subjective perception of the quality of life of patients with TD.*

The fact that a large number of participants did not know their medical diagnosis may have a direct effect on how patients perceive and monitor their symptoms and the personal involvement in the therapeutic plan proposed by endocrinologist. The patient's attitude of passive 'receiver' of health services was seen more often in patients with hypothyroidism and patients coming from rural areas. In the latter case there is a very pronounced tendency to perceive doctor as the only person in charge with their health status and rejection of psychological interventions.

The cases presented in this research are clear in terms of the benefits of short-term psychological intervention, focused on cognitive-behavioral change and relaxation techniques.

As shown by the reevaluation of psychological dimensions, clinical status (objective and subjective) has improved significantly. In all cases there were significant cognitive changes, changes in emotional behavior, engaging in tasks for cases 1 and 2, decision making (case 1), significant reduction of negative automatic thoughts (more prominent in case 3). All these changes have occurred amid obvious adherence to treatment (especially in case 1).

We can make further experiments with a single subject or with nosological groups to determine a possible causal relationship between psychotherapeutic intervention and clinical evolution of patients with TD, and the effect produced.

The cases presented were aimed at addressing different ways (using different models and tools) of psychological assessment and identification of psychological dimensions whose alteration may lead to important clinical disturbances of patients with TD. Although the results cannot be generalized, customize some clinical pictures of the three nosological categories under discussion.

We may make the assumption that depression and anxiety symptoms coexist in patients with

TD, regardless of the nature of dysfunction. Thus, psychological assessment and psychotherapeutic approach should include both pathologies. Also, a profoundly maladaptive profile of cognitive schemes in patients with TD is outlined, regardless of the nature of dysfunction. This leads to the orientation of psychological assessment to assessment tools derived from the cognitive-behavioral paradigm, which offers the possibility to measure the types of maladaptive schemes and track their dynamics in the clinical picture.

Another psychological dimension altered in patients with TD was identified as emotional distress, with high prevalence of dysfunctional negative emotions. For the cases studied psychological defense was not assessed (defense mechanisms / coping style), but from the clinical evolution we may draw a individually significant difference in the effectiveness – ineffectiveness of some stress adapting behaviours, derived from probably different defensive styles. The long-term development of the disorder in private situations and failure to respect some therapy supportive schemes, the patient with TD may be classified as a chronically ill patient. Thus, we can predict that the mental defense picture developed by these patients during the disease is similar to that of patients with other chronic diseases. Therefore, maladaptive psychological defense could be due to being a patient with chronic disease and may not be a feature of patients with TD.

To test this hypothesis it is necessary to use a measuring instrument of defense mechanisms or coping style, with parametric measurements made on clinical populations (patients with chronic diseases) in Romania.

STUDY 2 - Translation, adaptation and validation of DSQ40

Specific Objectives

- Translation and adaptation of DSQ40;
- Validation of DSQ40 Romanian version for patients with chronic diseases.

Description of the group of participants for Case study 2

The 110 participants were hospitalized patients with chronic diseases in sections: Health - Hospital CFR Sibiu (29), Department of Diabetes (5), Medical I (28), Medical II (19), Cardiology II (chronic) (29) Sibiu County Hospital, providing a lot of availability at the time of evaluation. The distribution of participants, patients with chronic disease, according to the department where they were hospitalized at the time the assessment is presented below.

The distribution of patients with chronic diseases according to the department in which they were admitted

No.	Department	Number of patients
1	Medicală (CFR Hospital and Sibiu County Hospital)	76
2	Cardiology (chronic)	29
3	Diabetes	5
TOTAL		110

- The group of participants included 46 women and 55 men. The average age was 56.1 years old with a standard deviation of 9.9.

Tools and materials

The English version of DSQ40 is available upon request and it was taken from PhD Michael Sheppard, who used the English version of the questionnaire in his survey conducted in 2010 for his doctoral thesis at the University of Saskatchewan, Canada.

Translation and adaptation design for DSQ40

Due to the necessity of using a defensive style assessment tool, the Defensive Style Questionnaire - short form (DSQ40) was taken in English and its translation and adaptation was made using the *translation - retranslation method*, using a team of three translators (two

translators specialized in English language and a bilingual person - British English - Romanian).

Translation and adaptation of DSQ40

The first translation was done by Andrew Simona, certified translator for English. We obtained the first Romanian-language version of the questionnaire. This version was given for retranslation in English to a bilingual person - English - Romanian (Zechariah Mags), independent of the first translator. The version retranslated into English was retranslated in Romanian by a second translator, Amalia Lebu (English language interpreter for the European Commission, Brussels), resulting edited version for application.

The questionnaire was applied to 10 patients with chronic diseases, in assessing the potential difficulties of interpretation of terms. Terms that were analyzed had difficulty understanding and making changes were required, thus resulting the final version of the translation.

Analysis and adaptation of difficult terms

The terms anxious / anxiety were reported as ambiguous by four of the ten participants who received the first version (with unchanged terms) in Romanian. All four participants said they did not know exactly what they meant and demanded explanations. The terms were still retained in that form, since the terms anxiety and fear appear to other items with slightly a different meaning.

The term "Superman" in item 9 was replaced in the final version with the Romanian compound word "supra-om" because the three participants did not understand its meaning.

Item 10 ("I pride myself on my ability to cut people down to size") was originally translated as, "I take pride in my ability to make people recognize their true value". After retranslation into English, it was decided that the meaning has changed to become: "I pride myself in my ability to make people realise their true value", which radically changed the original meaning of the statement. The item was reworded as, "I take pride in my ability to show people their right place". The wording is in agreement with the defense mechanism that it measures (devaluation).

Item 25 ("I can keep the lid on my feelings out if letting them would interfere with what I'm doing") was originally translated as "I can master my feelings in a situation where, if I give them free rein, they would not be compatible with my work". This version of the item proved difficult to understand by six of the participants, so that was redrafted version, "I can master my feelings in a situation where, if I give them free rein, they would affect my work". The formulation is in agreement with the defense mechanism that we measured (suppression).

Procedure for validation of DSQ40

For data parametric analysis of the Romanian version the DSQ40 questionnaire was applied to 110 patients with chronic diseases in County Hospital Sibiu (four sections) and CFR Hospital Sibiu (one section), in February 2011 (2 weeks). For this stage of access requests were made for the two hospitals, signed by each of the doctors heads of departments and the general manager. The questionnaire was given to patients in the group (in a hospital ward) in the presence of the researcher. Participation in the study was voluntary, all patients who participated signing an agreement. The participants answered the questionnaire between 3:30 p.m. to 5:30 p.m. to avoid disruption to treatment and medical intervention program.

Presenting the results of parametric measurements DSQ40

Of the total 110 questionnaires nine questionnaires were invalidated for incomplete data, so that the statistical analysis was made for 101 participants.

Analysis of internal consistency for the items DSQ40

Chronbach alpha test results for the analysis of scale items accuracy is shown in the table below.

*Internal consistency of the items (Accuracy Alpha
Chronbach – DSQ 40 items)*

Alpha Cronbach	N
0,870	40

The accuracy of DSQ40 items was also measured by the split-half method and the results are presented below.

Split half – DSQ 40 items

Alpha Cronbach	Part 1	Value	0,741
		N items	20 ^a
	Part 2	Value	0,790
		N items	20 ^b
	Total N items		40
	Correlation between forms		0,783
Spearman-Brown Coefficient	Equal length		0,878
	Unequal length		0,878
Guttman Split-Half Coefficient			0,875

a. Items part 1: DSQ_i1, DSQ_i2, DSQ_i3, DSQ_i4, DSQ_i5, DSQ_i6, DSQ_i7, DSQ_i8, DSQ_i9, DSQ_i10, DSQ_i11, DSQ_i12, DSQ_i13, DSQ_i14, DSQ_i15, DSQ_i16, DSQ_i17, DSQ_i18, DSQ_i19, DSQ_i20.

b. Items part 2: DSQ_i21, DSQ_i22, DSQ_i23, DSQ_i24, DSQ_i25, DSQ_i26, DSQ_i27, DSQ_i28, DSQ_i29, DSQ_i30, DSQ_i31, DSQ_i32, DSQ_i33, DSQ_i34, DSQ_i35, DSQ_i36, DSQ_i37, DSQ_i38, DSQ_i39, DSQ_i40.

Internal consistency analysis for DSQ40 factors

The accuracy analysis was conducted for each factor of the scale (defensive styles), through Chronbach alpha and split-half methods.

MATURE STYLE

Statistical accuracy (mature style)

Alpha Cronbach	N items
0,701	8

Accuracy analysis results of Mature Style subscale through the split-half method are presented in the following table.

Statistical accuracy Split Half – Mature Style

Alpha Cronbach	Part1	Value	0,508
		N items	4 ^a
	Part 2	Value	0,462
		N items	4 ^b
	Total N items		8
	Correlation between forms		0,638

Spearman-Brown Coefficient	Equal length	0,779
	Unequal length	0,779
Guttman Split-Half Coefficient		0,776

a. The items were: DSQ_i2, DSQ_i3, DSQ_i5, DSQ_i25.

b. The items were: DSQ_i26, DSQ_i30, DSQ_i35, DSQ_i38.

The result is a solid Guttman split-half coefficient for Mature Style subscale.

NEUROTIC STYLE

For neurotic style Chronbah alpha test results for internal consistency of the subscale are presented in the following table.

Statistical accuracy (Neurotic Style)

Alpha Cronbach	N items
0,566	8

The accuracy analysis results of neurotic style subscale through split-half method are presented in the following table.

Statistical accuracy (Split Half - Neurotic Style)

Alpha Cronbach	Part 1	Value	0,321
		N items	4 ^a
	Part 2	Value	0,379
		N items	4 ^b
	Total N items		8
	Correlation between forms		0,463
Spearman-Brown Coefficient		Equal length	0,633
		Unequal length	0,633
Guttman Split-Half Coefficient			0,631

a. Items: DSQ_i1, DSQ_i7, DSQ_i21, DSQ_i24.

b. Items: DSQ_i28, DSQ_i32, DSQ_i39, DSQ_i40.

There is a good Guttman split-half coefficient, but weaker than the one for Mature Style subscale, similar results also being recorded for the original scale.

IMMATURE STYLE

For the immature style internal consistency alpha Chronbah of subscale test results are presented in the following table.

Statistical Accuracy (Immature Style)

Alpha Cronbach	N Items
0,820	24

Accuracy analysis results of immature style subscale through split-half method are presented in the following table.

Statistical Accuracy (Split Half - Immature Style)

Alpha Cronbach	Part 1	Value	0,664
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		N items	12 ^a
	Part 2	Value	0,710
		N items	12 ^b
	Total N items		24
	Correlation between forms		0,723
Spearman-Brown Coefficient	Equal length		0,839
	Unequal length		0,839
Guttman Split- Half Coefficient			0,836

a. Items: DSQ_i4, DSQ_i6, DSQ_i8, DSQ_i9, DSQ_i10, DSQ_i11, DSQ_i12, DSQ_i13, DSQ_i14, DSQ_i15, DSQ_i16, DSQ_i17.

b. Items: DSQ_i18, DSQ_i19, DSQ_i20, DSQ_i22, DSQ_i23, DSQ_i27, DSQ_i29, DSQ_i31, DSQ_i33, DSQ_i34, DSQ_i36, DSQ_i37.

There is a very good Guttman split-half coefficient. Better consistent internal results recorded for immature style subscale are due to a sufficient number of items (24 items) compared to the other two subscales (8 items each).

We tested the null hypothesis for differences between female / male chronic patients to determine whether for case study 3 we will use three comparisons of the group of patients with DT with all the chronic patients' group. Statistical results are presented below.

Differences between female / male patients with chronic diseases for DSQ40 subscales

Score DSQ 40	Mature Style		Neurotic Style		Immature Style	
	Homogeneous assumed variances	Homogeneous unassumed variances	Homogeneous assumed variances	Homogeneous unassumed variances	Homogeneous assumed variances	Homogeneous unassumed variances
Levene Test for homogeneous variances	2,684		0,001		0,021	
	0,105		0,980		,885	
T Test pentru environment equality	-2,163	-2,207	-0,539	-0,540	-0,404	-0,400
	99	98,785	99	96,812	99	91,320
	0,033	0,030	0,591	0,590	0,687	0,690

The results show that the null hypothesis is rejected for mature style, which shows differences in this factor for female / male patients with chronic diseases.

The analysis was performed for the differences between female / male chronic patients for DSQ40 factors (defensive style) and the 20 defense mechanisms. Nonparametric tests were used since the distribution of cases is not normal. The statistical analysis results for nonparametric tests measuring the difference between women and men patients with chronic diseases are presented in the following table.

Test statistics

DSQ 40 Score	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Sublimation	1155,500	2695,500	-0,750	0,453
Humor	938,000	2478,000	-2,238	0,025

Anticipation (unidirectional)	981,000	2521,000	-1,945	0,052
Suppression	1115,000	2655,000	-1,026	0,305
Cancelling	1260,000	2800,000	-0,034	0,973
Pseudo-altruism	1033,500	2573,500	-1,593	0,111
Idealization (unidirectional)	1005,500	2086,500	-1,779	0,075
Reaction forming (unidirectional)	1024,000	2564,000	-1,652	0,099
Projection	1097,000	2178,000	-1,151	0,250
Passive Aggression	1222,000	2303,000	-0,294	0,769
Action	1198,500	2279,500	-0,455	0,649
Isolation (unidirectional)	1027,500	2567,500	-1,626	0,104
Devaluation	1049,500	2130,500	-1,478	0,139
Autistic fantasy	963,500	2503,500	-2,062	0,039
Disclaimer	1264,000	2345,000	-0,007	0,995
Replacement	1206,000	2287,000	-0,405	0,685
Dissociation	1197,000	2737,000	-0,466	0,641
Splitting	1222,500	2762,500	-0,292	0,770
Rationalization	1064,500	2604,500	-1,373	0,170
Somatization	1233,500	2773,500	-0,216	0,829
Mature Style (unidirectional)	1028,500	2568,500	-1,614	0,107
Neuroticism Factor	1242,000	2782,000	-0,157	0,875
Immaturity Factor	1259,000	2799,000	-0,041	0,967

a. Grouping Variable: Gender

Parametric Analysis for DSQ40

The data analysis results in a high internal consistency of the 40 items for both DSQ40 Chronbach Alpha coefficient ($\alpha = 0.87$) and split-half (Guttman Split-Half = 0.875 ($\alpha = 0.741$, Part 1, Part 2, $\alpha = 0.790$)).

The analysis of internal consistency for the three factors of the scale shows solid results for Mature style - Mature Style ($\alpha = 0.701$; Guttman Split-Half = 0.776) and Immature Style factor ($\alpha = 0.820$; Guttman Split-Half = 0.836). For the Neurotic Style factor, the data show a less solid internal consistency ($\alpha = 0.566$; Guttman Split-Half = 0.631). The values obtained are similar to those presented by Andrews, Singh and Bond (1993) who present the following results: for immature style $\alpha = 0.80$, for Mature style $\alpha = 0.59$ and $\alpha = 0.54$ for Neurotic Style. The relatively small number of items for Neurotic and Mature styles (8 for each factor) may be a cause of lower consistency than that of immature style (20 items).

Although the authors of the questionnaire present the validation data the study on the internal consistency of items for each defense mechanism, we believe that they would not be representative because each defense mechanism is evaluated only through two items.

T test for difference in environment female / male chronic patients rejected the null hypothesis for immature style, so the differences were analyzed female / male for all DSQ40 defense mechanisms, using nonparametric tests (Mann-Whitney).

Regarding the differences between women / men, significant results were obtained for the following defense mechanisms: humor, anticipation and autistic fantasy (bidirectional), women obtaining higher scores; anticipation, idealization, isolation and Immature Style (unidirectional,) women also obtaining higher scores.

STUDY 3 –Analysis of specific psychological dimensions in patients with TD

Specific objectives

- *Comparative analysis of defensive style in patients with TD and patients with other chronic diseases.*
- *Assessment of the level of depression and anxiety, cognitive schemes, attitudes and beliefs, emotional distress profile, negative automatic thoughts and defensive style in patients with TD.*
- *Analysis of cognitive strategies, defensive style emotions dynamics in relation to the duration of disease in patients with TD for whom anxiety-depression comorbidity is recorded.*
- *Identifying the specific dimensions of psychological screening and evaluation for patients with TD*
- *Identifying ways to integrate psychotherapy in the psychotherapeutic treatment plan for patients with TD.*

Specific Assumptions

- *Defensive style in patients with TD is similar to the one in patients with other chronic diseases.*
- *Depression and anxiety are present in patients with TD, regardless of the nosological category.*
- *Depression and anxiety decrease with the duration of the disease in patients with TD.*
- *Patients with TD have maladaptive cognitive schemes in relation to non-clinical population.*
- *Patients with hypothyroidism have irrational attitudes and beliefs such as and self-devaluation while hyperthyroidism patients will present irrational attitudes and beliefs such as low tolerance to frustration and categorical requirements.*
- *Patients with TD present emotional distress regardless of the duration of the disease.*
- *In patients with TD negative automatic thoughts correlate with the defensive style.*

Description of participants in the study group 3

A multiphase sampling has been developed. In the first stage we used a sampling by applying some selection criteria. The population included 3174 patients with thyroid disorders (2645 patients from the clinic's medical records Endocrine Diseases Clinical Hospital Sibiu County from October 1, 2007 to September 1, 2010 and 529 patients in the records of BeldeanMed Ward Sibiu from 01 January 2010 to April 30, 2010. After applying the first set of selection criteria the result was an unprobable sample of 2430 participants. Further on a probabilistic sample selection was developed by applying systematic random-start 10 step counting selection. The result is a sample of 243 participants who were contacted by telephone for participation in research. 78 participants who responded to the invitation were interviewed according to the research plan. Following semi-structured interviews for further study 33 participants were selected (23 patients with hypothyroidism, 10 patients with hyperthyroidism) who met all criteria for research.

Design

This was a predictive study using standardized tests and questionnaires and a semi-structured psychological interview. The results were interpreted qualitatively and quantitatively, resulting in a description of the features of cognition, emotional stress profile, defensive style and depressive and anxiety disorders in patients with thyroid dysfunction. The data obtained were subject to a correlative study, in order to identify possible links between several variables: cognitive schemes, anxiety, depression, emotional stress and defensive style. The study of correlation in independent study groups investigating the relationship between defensive style in patients with thyroid dysfunction and defensive style in patients

with chronic diseases.

Procedure

The study was conducted during February-April 2011, in the Endocrinology Department and psychological ward (private training). Patients who accepted participation in the study signed an informed consent and were assessed individually by a psychological semi-structured interview and the seven psychological scales described above. During the interview testing was done and notes were taken on the behavior of the participant. The assessment lasted for two hours on average for each patient.

Results

Differences between the DSQ40 averages for the group of chronically ill patients and patients with TD

Given the results for women - men with chronic diseases, the comparative in the analysis of patients with TD (31 women) we selected only cases of women with chronic illness. The results are shown in the table below.

Average difference of defense mechanisms and defensive style in women with chronic disease compared with women with TD

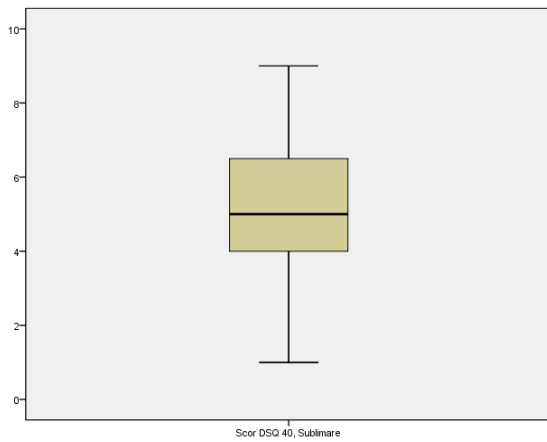
DSQ 40 Score	F	Sig.	t	Sig. (2-tailed)
Sublimation	0,59	0,442	2,84	0,006
Humor	3,51	0,065	0,07	0,940
Anticipation	0,39	0,530	4,39	0,000
Suppression	5,95	0,017	0,25	0,802
Cancelling	0,11	0,737	-0,42	0,670
Pseudo-altruism	0,64	0,426	0,98	0,329
Idealization	0,32	0,569	0,11	0,911
Reaction forming	1,73	0,191	-1,95	0,054
DSQ 40 Score, Projection	0,56	0,454	0,67	0,504
Passive Aggression	0,00	0,974	1,94	0,055
Action	0,08	0,766	0,26	0,794
Isolation	0,05	0,808	1,73	0,087
Devaluation	0,12	0,725	-2,46	0,016
Autistic fantasy	0,00	0,990	1,77	0,079
Disclaimer	0,92	0,339	-0,12	0,901
Replacement	0,58	0,448	0,33	0,740
Dissociation	0,57	0,451	0,67	0,502
DSQ 40Score , Splitting	0,33	0,563	0,75	0,453
Rationalization	0,42	0,518	1,09	0,277
Somatization	1,80	0,183	0,89	0,374
Mature Style	0,63	0,427	2,48	0,015
Neurotic Style	0,21	0,646	-0,45	0,654
Immature Style	0,45	0,504	1,07	0,288

Confidence interval of difference 95%, Equal variance assumed, df = 75

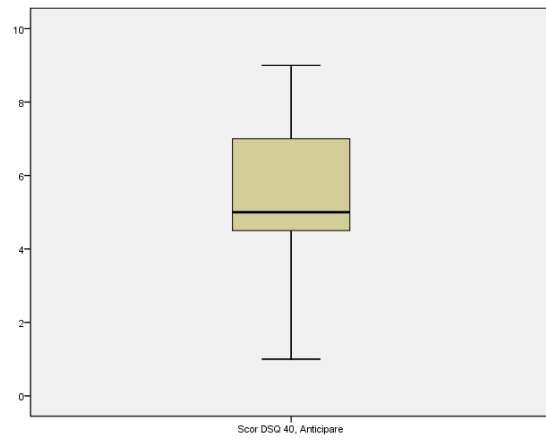
From the data presented some significant differences emerge for defense mechanisms in patients with chronic disease compared to patients with TD. Significant results were

highlighted in the table and will be discussed in the chapter Analysis of reSults.

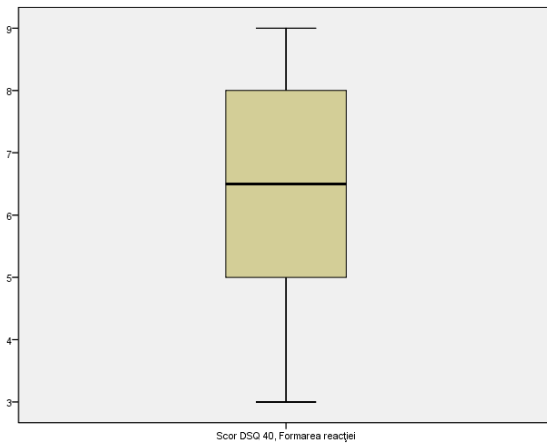
Figure 8 illustrates the distribution of scores for subscales identified as showing significant differences in test t.



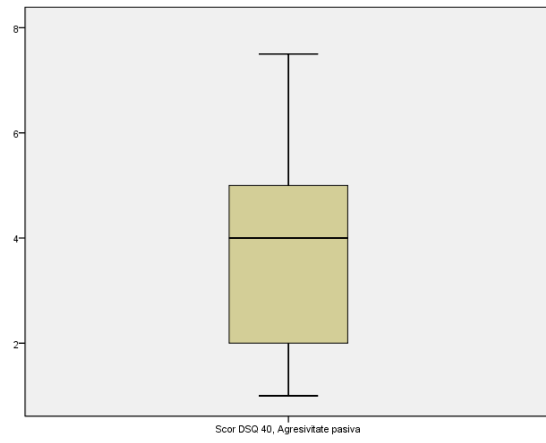
a) Sublimation



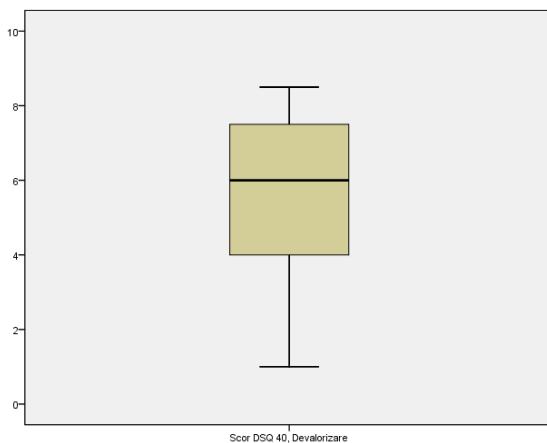
b) Anticipation



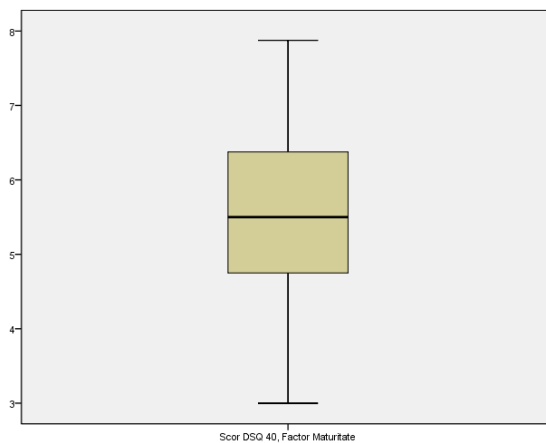
c) Reaction forming



d) Passive Aggression



e) Devaluation



f) Maturity Factor

Figure 8. Distribution of scores for the DSQ 40 subscales identified as having significant differences in t test

Since distribution of cases is not completely symmetrical, and differences were analyzed by the method of nonparametric tests, results are presented in the following table.

Nonparametric tests for differences between women with chronic disease and women with TD

DSQ 40Score	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Sublimation	453,50	949,50	-2,71	0,007
Humor	705,00	1786,00	-0,08	0,933
Anticipation	344,00	840,00	-3,85	0,000
Suppression	662,00	1158,00	-0,53	0,595
Cancelling	675,00	1756,00	-0,39	0,691
Pseudo-altruism	605,50	1101,50	-1,12	0,261
Idealization	706,00	1202,00	-0,07	0,942
Reaction forming	524,00	1605,00	-1,97	0,048
Projection	664,50	1160,50	-0,50	0,613
Passive Aggression	541,00	1037,00	-1,79	0,072
Action	688,50	1184,50	-0,25	0,798
Isolation	524,50	1020,50	-1,96	0,049
Devaluation	478,50	1559,50	-2,44	0,014
Autistic fantasy	540,00	1036,00	-1,80	0,071
Disclaimer	706,00	1787,00	-0,07	0,942
Replacement	679,50	1175,50	-0,34	0,727
Dissociation	662,50	1158,50	-0,52	0,598
Splitting	671,00	1167,00	-0,44	0,658
Rationalization	556,00	1052,00	-1,63	0,101
Somatization	646,00	1142,00	-0,69	0,484
Maturity Factor	492,00	988,00	-2,27	0,022
Nevrotism factor	649,00	1730,00	-0,66	0,506
Immaturity factor	636,50	1132,50	-0,79	0,427

Grouping variable: chronicle women - thyroid women

The correlation between defensive style and age group participants in relation to chronic patients vs patients with TD (Spearman's rho, 0 = chronic patients, n = 101; 1 = T Dpatient, n = 33):

Correlations between age and defensive style in patients with chronic disease and patients with TD

DSQ 40 Score		Mature Style	Neyrotic Style	Immature Style
Age – chronic patients	Correlation Coefficient	0,154	0,099	0,289**
	Sig. (2-tailed)	0,123	0,323	0,003
Age – TD patients	Correlation Coefficient	-0,213	0,220	0,113
	Sig. (2-tailed)	0,234	0,218	0,530

** p < 0.01

From the analysis of correlations reported in **Error! Reference source not found...**,

the we understand that there is a significant direct relationship between the age of patients with chronic diseases and immature defense style (Spearman's rho = 0.289, p = 0.003). For patients in the TD group, this correlation is no longer recorded. TD patients record higher scores.

Differences recorded in the psychological dimensions evaluated for groups of groups hypothyroidism/ hyperthyroidism patients.

• *Differences of anxiety and depression scales*

For the analysis of all differences nonparametric tests were used (Mann-Whitney test), given the small number of participants for the two nosological categories (23 participants - hypothyroidism, hyperthyroidism - 10 participants). The following table shows results of nonparametric tests on differences between groups of hypothyroidism and hyperthyroidism patients.

Nonparametric tests statistics for anxiety and depression scales

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2*(1-tailed Sig.)]
Hamilton Anxiety Score	113,000	168,000	-0,079	0,937	0,954*
Hamilton Depression Score	98,500	374,500	-0,648	0,517	0,524*

Grouping Variable: Thyroid dysfunction * without correction

It is noted that *there is no significant difference between hyperthyroidism and hypothyroidism patients regarding anxiety and depression scales.*

• Differences for scales DSQ40

The following table shows results for nonaramentric tests on differences between groups hypothyroidism and hyperthyroidism patients, in terms of defense mechanisms and defensive style.

Test statistics for DSQ40 scale

DSQ 40 Score	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2*(1-tailed Sig.)]*
Sublimation	110,00	165,00	-0,197	0,843	0,862
Humor	111,50	166,50	-0,138	0,890	0,893
Anticipation	108,50	384,50	-0,258	0,797	0,802
Suppression	91,00	367,00	-0,945	0,345	0,363
Cancelling	80,50	356,50	-1,368	0,171	0,180
Pseudo-altruism	113,50	168,50	-0,059	0,953	0,954
Idealization	85,00	361,00	-1,180	0,238	0,253
Reaction forming	105,00	160,00	-0,394	0,694	0,714
Projection	96,00	151,00	-0,748	0,454	0,475
Passive Aggression	105,50	160,50	-0,375	0,707	0,714
Action	83,50	359,50	-1,242	0,214	0,221
Isolation (unidirectional)	72,00	127,00	-1,695	0,090	0,096
Devaluation	85,00	140,00	-1,181	0,238	0,253
Autistic fantasy	98,00	153,00	-0,676	0,499	0,524
Disclaimer	99,00	375,00	-0,628	0,530	0,550

Replacement	101,00	156,00	-0,552	0,581	0,603
Dissociation	102,00	157,00	-0,511	0,609	0,630
Splitting	81,00	357,00	-1,367	0,172	0,193
Rationalization	101,00	156,00	-0,555	0,579	0,603
Somatization	93,00	148,00	-0,869	0,385	0,406
Maturity Factor	109,50	385,50	-0,216	0,829	0,832
Nevrotism Factor	88,50	364,50	-1,039	0,299	0,305
Immaturity Factor	105,00	160,00	-0,392	0,695	0,714

Grouping variable: Thyroid dysfunction * Uncorrected values

There is a difference between patients with hyperthyroidism / hypothyroidism in relation to defense mechanisms for isolation only (unidirectional) as an immature defense mechanism, patients with hypothyroidism achieving higher scores (for the group studied).

• *Differences for ABS2scales*

The following table shows results for nonparametric tests on differences between groups of hypothyroidism and hyperthyroidism patients, in terms of attitudes and beliefs scale ABS2.

Test statistics for the ABS2 scale

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2*(1-tailed Sig.)]*
Absolutist requirements	112,50	167,50	-0,09	0,922	0,923
Negative overall assessment	105,50	160,50	-0,37	0,710	0,714
Low frustration tolerance	96,50	151,50	-0,72	0,468	0,475
Catastrophing	106,00	161,00	-0,35	0,724	0,743
Comfort necessities	113,50	389,50	-0,05	0,953	0,954
Achievement	92,50	147,50	-0,88	0,376	0,384
Approval	99,50	154,50	-0,60	0,543	0,550
Irrationality	112,00	167,00	-0,11	0,906	0,923
Rationality	92,50	147,50	-0,88	0,378	0,384
ABS2 Score	98,50	153,50	-0,64	0,518	0,524

Grouping Variable: Thyroid dysfunction * Uncorrected values

As for the profile of attitudes and beliefs, we do not record any significant difference for patients with hyperthyroidism / hypothyroidism (for the group studied).

• *Differences in the ATQ scale*

Rank analysis results for the two groups ABS2 scale are presented in Table 46.

Ranks Mann - Whitney test for the ATQ scale

	Thyroid dysfunction	N	Rank average	Rank Sum
Automatic negative thoughts	hypothyroidism	23	17,09	393,00
	hyperthyroidism	10	16,80	168,00

Table 47 presents results for nonparametric tests on differences between groups of hypothyroidism and hyperthyroidism patients, in terms of ATQ scale.

ATQ scale test statistics

	Automatic negative thoughts
Mann-Whitney U	113,000
Wilcoxon W	168,000
Z	-0,078
Asymp. Sig. (2-tailed)	0,938
Exact Sig. [2*(1-tailed Sig.)]	0,954*

Grouping Variable: Thyroid dysfunction * Uncorrected values

There is no statistically significant difference in terms of negative automatic thoughts and thyroid dysfunction (hypothyroidism / hyperthyroidism), for the group studied.

• PDA scale differences

The following table shows nonparametric tests results for differences between groups hypothyroidism and hyperthyroidism patients, in terms of the PDA scale.

Test statistics for the PDA Scale

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2x(1-tailed Sig.)]*
Positive emotions	107,50	383,50	-0,29	0,769	0,773
Dysfunctional negative emotions	94,00	149,00	-0,82	0,410	0,428
Functional negative emotions	99,00	154,00	-0,62	0,530	0,550
Emotional distress profile score	102,00	157,00	-0,50	0,610	0,630

Grouping Variable: Thyroid dysfunction * Uncorrected values

As for the emotional distress profile there are no statistically significant differences between patients with hyperthyroidism and hypothyroidism.

• Differences for the YSQ-S3scale

The following table shows nonparametric tests on differences between groups of hypothyroidism and hyperthyroidism patients in scale YSQ-S3.

Test statistics for the YSQ-S3scale

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2x(1-tailed Sig.)]*
Emotional deprivation	111,00	387,00	-0,157	0,875	0,893
Abandonment / Instability	110,50	165,50	-0,178	0,859	0,862
Mistrust / Abuse	94,00	149,00	-0,827	0,408	0,428
Social Isolation / Alienation	85,00	140,00	-1,194	0,232	0,253
Deficiency / Shame	93,00	148,00	-0,884	0,377	0,406
Failure	92,50	147,50	-0,885	0,376	0,384
Dependence / incompetence	81,00	136,00	-1,335	0,182	0,193
Vulnerability to hazards	100,50	155,50	-0,571	0,568	0,576
Protectionism / Atrophied personality	90,50	366,50	-0,964	0,335	0,343
Subjugation	82,00	358,00	-1,304	0,192	0,207

Self-sacrifice	100,50	155,50	-0,570	0,569	0,576
Emotional inhibition / Exaggerated self-control	106,00	161,00	-0,353	0,724	0,743
Unrealistic standards / Rigour	113,50	389,50	-0,059	0,953	0,954
Claiming Personal Rights / Dominance	99,00	375,00	-0,629	0,529	0,550
Lack of self-control and self-discipline	96,00	372,00	-0,747	0,455	0,475
Social undesirability / Need for approval	97,50	373,50	-0,686	0,493	0,499
Negativity / Passivity	108,50	384,50	-0,255	0,799	0,802
Punishment	112,50	388,50	-0,098	0,922	0,923

Grouping variable: Thyroid dysfunction * Uncorrected values

In terms of cognitive schemes there are no significant differences between patients with hyperthyroidism and hypothyroidism for the group studied.

Given the results presented in terms of differences between the group of patients with hypothyroidism and hyperthyroidism patients, the subsequent analysis of correlations between the scales used was made considering patients with TD as one group (N = 33).

Correlations between the psychological dimensions assessed in patients with DT

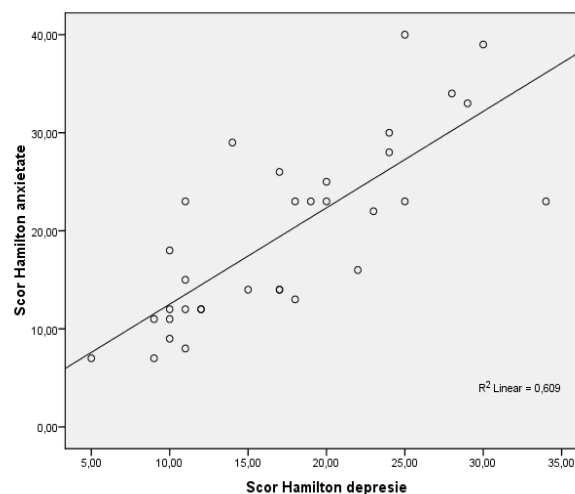
- *Correlations anxiety - depression HRSA – HRSD*

The following table presents the results of the test correlation between anxiety and depression scales in patients with DT.

Anxiety – depression correlation in patients with TD

		Hamilton Anxiety Score	Hamilton Depression Score
Hamilton Anxiety Score	Pearson Correlation	1	0,780**
	Sig. (2-tailed)		0,000

** p < 0,01, N=33



Correlation anxiety - depression Graph for patients with TD

As expected, there is a strong positive correlation (explaining 60% of cases) between the anxiety and depression levels for patients with DT, the two disorders co-occurring both in patients with hypothyroidism and hyperthyroidism.

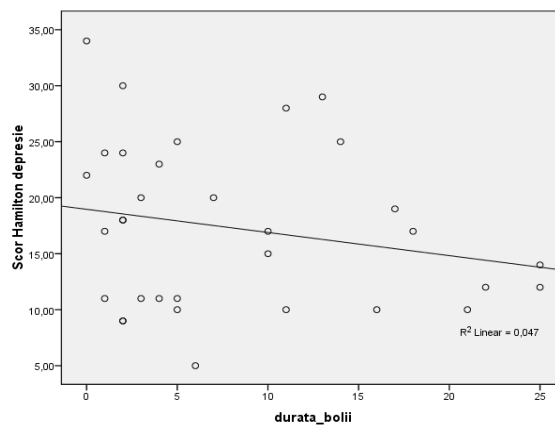
- Anxiety – depression correlations according to duration of the disease in patients with TD

We also investigated the correlation between anxiety - depression scales with the duration of disease in patients with TD assuming that drug intervention may significantly influence the level of anxiety / depression meaning that the level goes downward for both scales.

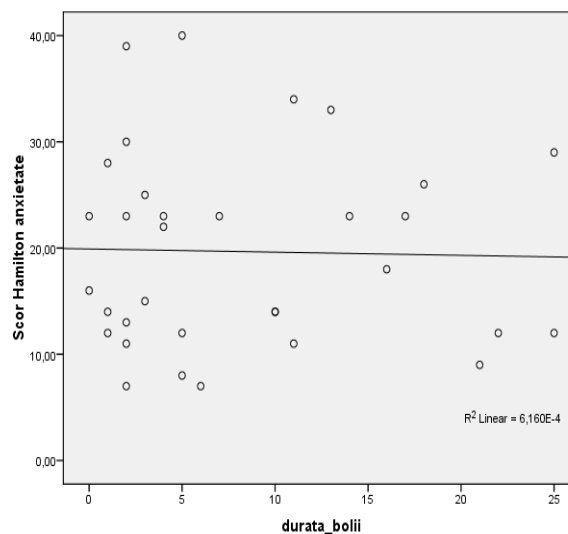
Depression and anxiety correlations with the duration of disease

		Hamilton Anxiety Score	Hamilton Depression Score	Duration of the disease
Hamilton Anxiety Score	Pearson Correlation	1	0,780 ^{**}	-0,025
	Sig. (2-tailed)		0,000	0,891
Hamilton Depression Score	Pearson Correlation		1	-0,217
	Sig. (2-tailed)			0,225

** p < 0,01 , N =33



Depression - duration of disease correlation in patients with TD



Anxiety - duration of disease correlation in patients with DT

As it is apparent from both values shown, there is no statistically significant correlation between depression and the age of the patients with TD, which shows a retention of approximately constant level of depression during the illness. There is a slight downward trend in the longer duration of disease, but it is no overt reduction, maintaining the same picture of the state of disorder. We also notice that there is no correlation with the duration of the disease at the anxiety level. Patients with TD maintain a limited level of intensity of clinical and subclinical anxiety disorder.

- *Correlations YSQ-S3 according to the duration of disease in patients with DT*

In Table 54 are presented correlations for subscales YSQ-S3 in patients with less than six years TD disease. In Table 55 correlations are presented for the subscales YSQ-S3 in patients with more than six years TD disease. The division into two periods of disease duration was achieved by calculating the median for the diagnosis period. A more detailed discussion is presented in the analysis of the results in Case study in 3.

YSQ-S3 Correlations depending on the disease duration in TD paciencsu (less than 6 years)

		ED	AB	MA	SI	DS	FA	DI	VH	EM	SB	SS	EI	US	ET	IS	AS	NP	PU	YSQ-S3
ED	Pearson	1	,79**	,54*	,66**	,58*	,50*	,39	,57*	,58*	,69**	,35	,48*	,77**	,66**	,85**	,62**	,71**	,66**	,81**
	Sig.		,000	,019	,003	,011	,031	,10	,013	,010	,001	,148	,043	,000	,003	,000	,005	,001	,003	,000
AB	Pearson		1	,77**	,79**	,78**	,59**	,48*	,80**	,53*	,81**	,24	,65**	,81**	,66**	,74**	,68**	,84**	,80**	,91**
	Sig.			,000	,000	,000	,009	,040	,000	,023	,000	,332	,003	,000	,003	,000	,002	,000	,000	,000
MA	Pearson			1	,73**	,71**	,46	,44	,79**	,46	,76**	,43	,67**	,72**	,47*	,50*	,48*	,67**	,65**	,78**
	Sig.				,001	,001	,053	,066	,000	,053	,000	,070	,002	,001	,047	,032	,041	,002	,003	,000
SI	Pearson				1	,85**	,48*	,45	,63**	,53*	,81**	,08	,61**	,67**	,46	,57*	,38	,59**	,70**	,76**
	Sig.					,000	,040	,057	,004	,021	,000	,737	,007	,002	,054	,012	,120	,009	,001	,000
DS	Pearson					1	,52*	,58*	,74**	,43	,79**	,13	,76**	,63**	,41	,52*	,56*	,69**	,71**	,80**
	Sig.						,024	,010	,000	,074	,000	,601	,000	,005	,087	,024	,016	,002	,001	,000
FA	Pearson						1	,89**	,57*	,20	,43	,20	,16	,47*	,05	,26	,44	,46	,45	,57*
	Sig.							,000	,012	,413	,068	,416	,508	,044	,820	,287	,063	,054	,060	,012
DI	Pearson							1	,57*	,15	,45	,12	,28	,32	-,07	,16	,42	,42	,41	,52*
	Sig.								,013	,546	,058	,626	,247	,193	,760	,520	,081	,078	,090	,026
VH	Pearson								1	,34	,72**	,26	,64**	,70**	,42	,46	,71**	,88**	,67**	,83**
	Sig.									,164	,001	,293	,004	,001	,077	,053	,001	,000	,002	,000
EM	Pearson									1	,78**	,17	,40	,54*	,65**	,66**	,51*	,55*	,74**	,66**
	Sig.										,000	,477	,098	,018	,003	,003	,030	,017	,000	,003
SB	Pearson										1	,31	,71**	,70**	,60**	,69**	,69**	,79**	,88**	,90**
	Sig.											,204	,001	,001	,008	,001	,001	,000	,000	,000
SS	Pearson											1	,40	,55*	,31	,42	,35	,34	,31	,41
	Sig.												,100	,016	,207	,083	,151	,156	,202	,085
EI	Pearson												1	,59**	,44	,54*	,52*	,73**	,69**	,73**
	Sig.													,009	,062	,020	,025	,001	,001	,000
US	Pearson													1	,75**	,80**	,64**	,79**	,72**	,86**
	Sig.														,000	,000	,004	,000	,001	,000
ET	Pearson														1	,90**	,68**	,68**	,73**	,72**
	Sig.															,000	,002	,002	,001	,001
IS	Pearson															1	,68**	,74**	,77**	,81**
	Sig.																,002	,000	,000	,000
AS	Pearson																1	,86**	,79**	,84**
	Sig.																	,000	,000	,000
NP	Pearson																	1	,85**	,93**
	Sig.																		,000	,000
PU	Pearson																		1	,92**
	Sig.																			,000
YSQ-S3	Pearson																			1
	Sig.																			

**p < 0.01; * p < 0.05; Disease duration = less than 6 years, N = 18

YSQ-S3 Correlations depending on the disease duration in TD paciencsu (more than 6 years)

		ED	AB	MA	SI	DS	FA	DI	VH	EM	SB	SS	EI	US	ET	IS	AS	NP	PU	YSQ -S3
ED	Corel. c	1	,88**	,83**	,62*	,83**	,50	,59*	,82**	,77**	,71**	,02	,63*	,40	,61*	,88**	,68**	,89**	,74**	,88**
	Sig. (2t)	.	,000	,000	,014	,000	,05	,020	,000	,001	,00	,93	,01	,13	,014	,000	,005	,000	,00	,000
AB	Corel. c		1	,87**	,75**	,83**	,55*	,58*	,75**	,72**	,75**	-.1	,40	,14	,54*	,78**	,62*	,85**	,50	,81**
	Sig. (2t)	.	.	,000	,001	,000	,03	,024	,001	,002	,00	,60	,136	,61	,035	,001	,013	,000	,055	,000
MA	Corel. c			1	,66**	,71**	,49	,55*	,69**	,59*	,78**	-.0	,403	,08	,58*	,80**	,73**	,83**	,58*	,81**
	Sig. (2t)			.	,006	,003	,06	,032	,004	,020	,00	,74	,136	,76	,022	,000	,002	,000	,023	,000
SI	Corel. c				1	,64*	,42	,38	,68**	,33	,44	-.2	,32	,16	,51*	,61*	,58*	,63*	,40	,64**
	Sig. (2t)				.	,010	,113	,161	,005	,227	,095	,29	,236	,56	,049	,014	,022	,011	,137	,010
DS	Corel. c					1	,53*	,65**	,79**	,64**	,65**	-.1	,56*	,26	,54*	,86**	,66**	,79**	,57*	,80**
	Sig. (2t)					.	,039	,008	,000	,010	,008	,69	,029	,34	,034	,000	,007	,000	,026	,000
FA	Corel. c						1	,45	,47	,43	,52*	-.2	,41	,19	,31	,50	,53*	,52*	,60*	,53*
	Sig. (2t)						.	,089	,076	,103	,043	,37	,121	,48	,251	,055	,040	,046	,017	,041
DI	Corel. c							1	,70**	,71**	,46	,25	,34	,15	,27	,64**	,52*	,73**	,48	,72**
	Sig. (2t)							.	,003	,003	,083	,36	,208	,57	,313	,009	,045	,002	,067	,002
VH	Corel. c								1	,58*	,51*	-.1	,58*	,12	,43	,78**	,60*	,85**	,61*	,79**
	Sig. (2t)								.	,021	,048	,67	,023	,65	,109	,000	,016	,000	,015	,000
EM	Corel. c									1	,73**	,30	,49	,41	,54*	,71**	,61*	,71**	,61*	,80**
	Sig. (2t)									.	,002	,26	,063	,12	,036	,003	,016	,003	,015	,000
SB	Corel. c										1	,07	,50	,18	,56*	,74**	,77**	,65**	,56*	,73**
	Sig. (2t)										.	,79	,058	,50	,029	,002	,001	,008	,029	,002
SS	Corel. c											1	,22	,37	,06	,02	,12	-.02	,04	,13
	Sig. (2t)											.	,430	,17	,811	,944	,647	,927	,881	,628
EI	Corel. c												1	,43	,56*	,74**	,76**	,62*	,82**	,72**
	Sig. (2t)												.	,10	,030	,001	,001	,013	,000	,002
US	Corel. c													1	,28	,31	,28	,11	,46	,29
	Sig. (2t)													.	,299	,251	,305	,690	,081	,280
ET	Corel. c														1	,78**	,80**	,61*	,69**	,78**
	Sig. (2t)														.	,000	,000	,015	,004	,001
IS	Corel. c															1	,88**	,91**	,84**	,95**
	Sig. (2t)															.	,000	,000	,000	,000
AS	Corel. c																1	,73**	,79**	,89**
	Sig. (2t)																.	,002	,000	,000
NP	Corel. c																	1	,76**	,92**
	Sig. (2t)																	.	,001	,000
PU	Corel. c																		1	,81**
	Sig. (2t)																		.	,000
YSQ -S3	Corel. c																			1
	Sig. (2t)																			.

**p < 0.01; * p < 0.05; Disease duration = more than 6 years, N = 15

Given that the defensive style is relatively stable in size throughout life, we made an

analysis of DSQ40 correlations with the other psychological dimensions evaluated in patients with TD present in the study to determine whether it is associated with a specific maladaptive profile of patients with DT.

- Correlations of defensive style (DSQ40) with the other psychological dimensions assessed in patients with DT

The following table presents the results of correlations between defensive style and the scale of attitudes and beliefs ABS2.

Correlations defensive style(DSQ40) with ABS2 in TD patients

		Mature style	Neurotic style	Immature style	DEM	SD /GE	LFT	AWF	Comfort needs	Achieved needs	Approved needs	I	R	ABS2 Score
Mature Style	Pearson	1	,19	,22	-,45**	-,37*	-,47**	-,44**	-,45**	-,42*	-,4*	-,08	-,73**	-,48**
	Sig.		,279	,210	,008	,034	,005	,009	,007	,015	,020	,635	,000	,005
Neurotic Style	Pearson		1	,25	,08	,37*	,12	,29	,21	,29	,23	,41*	-,04	,27
	Sig.			,157	,626	,032	,493	,091	,226	,091	,183	,017	,822	,115
Immature Style	Pearson			1	,32	,41*	,39*	,31	,31	,33	,43*	,51**	,06	,41*
	Sig.				,061	,018	,023	,074	,074	,054	,011	,002	,722	,017

**p < 0.01; * p < 0.05; N = 33

Significant negative correlations are noted between mature defensive style, and all the other four attitudes and irrational beliefs (categorical requirements, overall negative evaluation, low frustration tolerance and catastrophing. Also we recorded significant negative correlations between mature defensive style and the need for comfort, achievement and approval. The strongest negative correlation was recorded between the mature defense style and level of rationality. A significant direct correlation was obtained between immature defense style and irrationality subscale of the questionnaire. The fewest correlations are recorded in neurotic style.

The following table presents the results of correlations between defensive style and negative automatic thoughts.

Correlations defensive style (DSQ40) with ATQ in TD patients

		Scor DSQ 40	Maturity Factor	Neurotism Factor	Immaturity Factor	Automatic Negative Thoughts
Mature Style	Pearson	1		,194	,224	-,181
	Sig.			,279	,210	,313
Neurotic Style	Pearson		1		,252	,336
	Sig.				,157	,056
Immature Style	Pearson				1	,515**
	Sig.					,002

**p < 0.01; N=33

There was a strong positive correlation between immature defense style and the level of negative automatic thoughts.

The following table presents the results of correlations between the defense style and the level of anxiety - depression in patients with TD.

Correlations defensive style (DSQ40) with anxiety and depression in patients with TD

		Mature Style	Neurotic Style	Immature Style	HRSA	HRSD
Mature Style	Pearson	1	,194	,224	-,246	-,136
	Sig.		,279	,210	,167	,450
Neurotic Style	Pearson		1	,252	,062	,096
	Sig.		-	,157	,733	,595
Immature Style	Pearson			1	,387*	,508**
	Sig.			-	,026	,003

**p < 0.01; * p < 0.05; N = 33

Results show a positive correlation between immature defense style and both anxiety - depression scales, with a stronger correlation at depression level.

Correlations between defensive style and emotional distress profile are presented in the following table.

Correlations defensive style (DSQ40) with PDA in patients with TD

		Mature Style	Neurotic Style	Immature Style	Positive emotions	Dysfunctional neg. emotions.	Functional neg. emotions	PDA Score
Mature Style	Pearson	1	,194	,224	-,057	-,122	-,016	-,075
	Sig.		,279	,210	,752	,500	,929	,677
Neurotic Style	Pearson		1	,252	,367*	,355*	,230	,352*
	Sig.			,157	,036	,043	,197	,045
Immature Style	Pearson			1	,346*	,523**	,484**	,504**
	Sig.				,049	,002	,004	,003

**p < 0.01; * p < 0.05; N = 33

The immature defense style is positively correlated with the presence of highly dysfunctional negative emotions, negative functional emotions and the total score of PDA. The neurotic style is positively correlated with total scores of emotional distress profile, with positive and negative dysfunctional emotions.

The correlations between defensive style and cognitive schemes are presented in the following table.

Correlations defensive style (DSQ40) with YSQ-S3 in patients with TD

		ED	AB	MA	SI	DS	FA	DI	VH	EM	SB	SS	EI	US	ET	IS	AS	NP	PU
Mature Style	Pearson	-,05	-,09	-,12	-,08	-,07	-,1	,03	,00	,35*	,09	,04	-,05	-,03	,08	,13	,03	,05	,05
	Sig.	,74	,61	,47	,63	,68	,4	,84	,99	,04	,5	,81	,76	,859	,640	,441	,869	,751	,762
Neurotic Style	Pearson	,17	,32	,26	,24	,43*	,36*	,52**	,55**	,30	,48**	,11	,38*	,12	,02	,23	,35*	,47**	,36*
	Sig.	,326	,069	,132	,165	,011	,035	,002	,001	,087	,005	,537	,026	,499	,884	,188	,043	,005	,037
Immature Style	Pearson	,58**	,56**	,45**	,56**	,64**	,24	,25	,58**	,58**	,56**	,01	,62**	,32	,52**	,63**	,48**	,59**	,64**
	Sig.	,000	,001	,007	,001	,000	,17	,153	,000	,000	,00	,928	,000	,065	,002	,000	,004	,000	,000

**p < 0.01; * p < 0.05; N = 33

It may be noted that immature defensive style strongly correlates positively with most of the dysfunctional cognitive patterns in patients with TD.

Discussions on the defensive style in patients with TD

Since the questionnaire was used only on clinical populations, there have been tests of validity and reliability only for this category of the population, the questionnaire only serving our research purposes. A future research will aim to apply the instrument on non-clinical population as well and to do a parametric analysis of general population.

By analyzing the results obtained in particular for defensive style in patients with thyroid dysfunction, we intuitively found a pattern of psychological defense as a whole correlated with the other psychological dimensions assessed. Although we do not recommend the general usage of DSQ40 average score for defensive style, we performed an analysis of the correlations of this dimension with other psychological dimensions assessed in patients with TD.

The significant results for correlations between overall score DSQ40 and YSQ-S3 scores are presented in the following table.

Significant correlations overall score DSQ40 - YSQ-S3

Cognitive scheme		General medium DSQ40 score
Abandonment / Instability	Pearson	,376*
	Sig.	,031
Social Isolation / Alienation	Pearson	,345*
	Sig.	,049
Deficiency / Shame	Pearson	,477**
	Sig.	,005
Dependence / Incompetence	Pearson	,379*
	Sig.	,029
Vulnerability to hazards	Pearson	,538**
	Sig.	,001
Protectionism / Personality atrophied	Pearson	,604**
	Sig.	,000
Subjugation	Pearson	,539**
	Sig.	,001
Emotional Inhibition / Exaggerated self-control	Pearson	,452**
	Sig.	,008
Lack of self-control and self-discipline	Pearson	,485**
	Sig.	,004
Social undesirability / Need for approval	Pearson	,414*
	Sig.	,016
Negativity / Passivity	Pearson	,534**
	Sig.	,001
Punishment	Pearson	,510**
	Sig.	,002
Total Score YSQ-S3	Pearson	,515**
	Sig.	,002

* p <0.05, ** p <0.01, N = 33

The results can be interpreted in terms of unadaptability that defense mechanisms

produce, regardless of the defensive style used by the person.

The following table presents the results of correlation between the DSQ 40 overall average score and the PDA average score respectively score for functional negative emotions.

Correlations between the DSQ 40 overall average score and the PDA average score, respectively score for functional negative emotions

		General medium DSQ40 score
Total PDA Score	Pearson	,369*
	Sig.	,035
Dysfunctional negative emotions	Pearson	,357*
	Sig.	,041

* p < 0,05; N = 33

There is also a positive correlation with the DSQ40 emotional distress profile, indicating a high level of emotions (especially dysfunctional negative emotions) in patients with TD showing great mental defense.

The evaluation of defensive style in patients with TD can bring significant information about the adaptive or maladaptive aspects, being a very sensitive instrument that captures high psychological dimensions: anxiety, depression, cognitive schemes, negative automatic thoughts and attitudes and beliefs.

If thyroid dysfunction is the result of various bio-physiological mechanisms, the mechanisms of defense against cognitive assessments conducted by a person under stress may significantly influence both the psychological and the physiological state. In these circumstances, the therapeutic drug aid aimed at regulating thyroid function in the absence of changing maladaptive cognitive schemes aimed stressors may be insufficient or temporary. Repeated thyroid crisis associated with stressful periods in the patient's life, even under tireo-regulating treatment, in our opinion is an indicator that the thyroid hormone physiology consistently reacts to balance the state of mental pressure, regardless of drug adjustments after the body has "learned" a specific chemical pattern determined by their presence.

We can predict that healing thyroid dysfunction can occur only when, in addition to hormonal and symptomatic treatment, the person builds effective adjustments and adaptations occurring as a result of positive cognitive evaluation of personal resources.

Analysis of results for Study 3

Of the 33 participants, five directly appealed to the endocrinologist services, coming to be examined on their own initiative or upon some acquaintances' recommendation. The distribution of patients examined outlines the type of signs and symptoms that accompany thyroid dysfunction. As expected, the appointments to the general physician recorded the highest number, given the need to submit the reference ticket to the endocrinologist because the investigation is covered by Health Insurance. Next in the frequency of previous checkups is cardiology, a fact explained by cardiovascular symptoms recorded in most cases, followed by Internal Diseases, Rheumatology / Physiotherapy and Psychiatry, specializations that expresses most of the signs and symptoms associated with thyroid dysfunction.

The result for consulting specialists in alternative therapies is not surprising, noting that a relatively large number of patients did not report such consulting services in the questionnaire for confidentiality reasons.

Most participants said they had consulted the triad GP, cardiologist and physician before being directed to a specialist in endocrine diseases.

Our investigation sought a thoroughly detailed description of the paths the thyroid dysfunction person has before beginning a specialized treatment and identifying "gaps" in the model medical in which Psychology can provide information. The following differences of defensive style were identified between the group of the chronic patients and patients with TD.

Comparative assessment of defensive style in chronic patients and patients with TD

Defensive Style	t	p
Sublimation	2,76	0,007
Anticipation	3,55	0,001
Reaction forming	-2,04	0,043
Projection	1,96 (unilateral)	0,026
Passive Aggression	2,41	0,019
Devaluation	-1,66 (unilateral)	0,042
Mature Style	1,80 (unilateral)	0,037

For sublimation, anticipation, projection, passive aggression (as defense mechanisms) and mature style (as Controlling Factor) higher scores were recorded in chronic patients, while for forming the devaluation reaction higher scores were recorded in patients with TD.

For the comparison, hyperthyroidism and hypothyroidism the following results were recorded in nonparametric tests. Statistically significant differences between patients with hyperthyroidism and hypothyroidism were detected only for "isolation" as a defense mechanism, ($U = 72.000$, $n_1 = 23$, $n_2 = 10$ $p = 0.045$), people with hypothyroidism getting higher scores.

The following statistically significant associations were caught between depression and anxiety with the dimensions of emotional distress, cognitive schemes, attitudes and beliefs, negative automatic thoughts, depending on the duration of the disease (below six years and more than six years).

The association profile *depression and anxiety* with YSQ-S3, PDA, ABS2, ATQ in patients with TD depending on the duration of the disease is shown in the following table.

Correlation matrix (Spearman's rho) HRSD and HRSA scores - YSQ-S3, PDA, ABS2, ATQ

	Patients with DT Under six years disorderduration , N = 18		Patients with DT Over six years disorderduration , N=15		
	HRSD	HRSA	HRSD	HRSA	
HRSD		,838**		,824**	HRSD
HRSA	,838**		,824**		HRSA
Emotional distress profile score	,479*	,480*	,658**	,586*	Emotional Distress Profile Score
Immaturity factor DSQ 40 score	,555*	,396	,582*	,203	Immaturity factor DSQ 40 score
Emotional deprivation	,743**	,710**	,597*	,309	Nevrotism Factor DSQ 40 score
Abandonment / Instability	,569*	,429	,616*	,453	Deficiency / Shame
Social Isolation / Alienation	,523*	,481*	,566*	,339	Dependence / Incompetence
Unrealistic standards / Rigour	,593**	,617**			
Claiming Personal Rights / Dominance	,577*	,338	,757**	,501	Vulnerability to hazards
Lack of self-control and self-discipline	,750**	,679**			
Negativity / Passivity	,511*	,456	,539*	,211	Negativity / Passivity
Punishment	,523*	,319	,720**	,689**	Dysfunctional negative emotions
YSQ-S3 Score	,511*	,431	,560*	,468	Positive Emotions

Functional negative emotions	,479*	,390	,679**	,576*	Functional negative emotions
Absolutist requirements	,521*	,681**	,685**	,513	Overall negative assessment
Need for achievement	,428	,594**	,575*	,532*	Need for achievement
Need for approval	,565*	,609**			
Irrationality	,475*	,524*			
ABS2 score	,444	,513*			
Negative automatic thoughts	,502*	,558*	,613*	,495	Negative automatic thoughts

*p<0,05;**p<0,01

There is a very strong association between *depression and anxiety* scores recorded in different stages of the disease.

In relation to depression we can observe that there are different cognitive dysfunctional strategies depending on the duration of the disease. In patients with the disease under six years old, the areas of dysfunctional cognitive schemes are separation / rejection, faulty limits, and hypervigilance / inhibition. For a duration of the disease for more than six years, the main area of dysfunctional cognitive schemes is poor autonomy and performance.

In terms of emotional distress profile, a disease longer than six years leads to significant correlations with all types of emotions (positive, negative, functional and negative dysfunctional), in relation to depression, compared with patients with an age of disease under six years with significant correlation in relation to depression, there were only functional negative emotions.

Attitudes and irrational beliefs in relation to depression in patients with the disease under six years old, is manifested in the form of absolutist requirements while in patients with the disease over six years this manifests as negative overall assessment. The need for achievement correlates with depression regardless of the duration of the disease, while the need for approval and irrationality significantly correlate with depression only in patients with a length of disease less than 6 years.

From the perspective of defensive style, for patients with DT and the age of disease more than six years, we report a statistically significant association between depression level and factors 2 and 3 (style neurotic and immature style), while for patients with an age of disease under six years, direct correlation is recorded only with factor 3 (immature style).

Comparative analysis of patients with TD depending on the age of the disease

n₁=18 n₂=15	Mann-Whitney U	P Two-tailed
Positive Emotions	70,00	0,019
Functional negative emotions	76,50	0,034
Emotional Distress Profile Score	71,50	0,022

Differences lead to the assumption made that stress adjustment occurs in the emotional areas because of the maintenance of a high level of dysfunctional negative emotions (according to standard PDA).

By following the clinical significance of changes to the psychological dimensions assessed, we see an overlap with statistical significance for functional negative emotions and also developments in relation to standard scales (cognitive dysfunctionality decrease) for disease duration more than 6 years, shown in Figure 9.

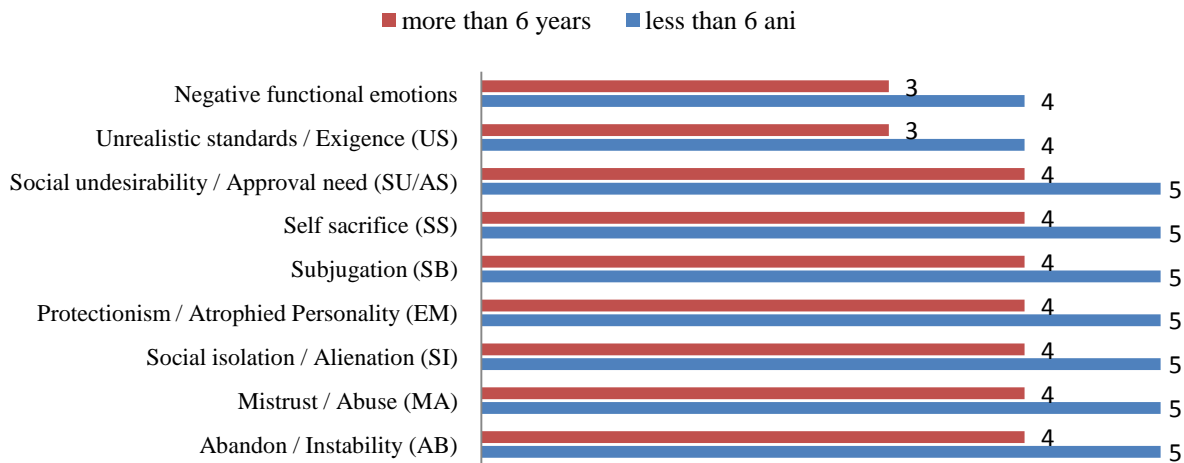


Figure 9. Comparative Profile - Dysfunctional cognitions - emotions, TD patients according to the duration of the disease (1-very low, 2 low, 3 medium, 4 high, 5-very high)

In clinical practice it is generally accepted that patients with hypothyroidism raise larger issues of evolution and long-term treatment. Therefore, for this nosological category the changes of psychological dimensions measured in terms of duration of disease were tracked.

Differences in patients with hypothyroidism depending on duration of the disease (less than six years / more than six years)

$n_1=10; n_2=13$	Mann-Whitney U	p
Emotional deprivation	36,50	,038 (unidirectional)
Abandonment / Instability	35,50	,032 (unidirectional)
Mistrust / Abuse	28,00	,021
YSQ-S3 Score	36,00	,036 (unidirectional)
Positive Emotions	28,00	,022
Dysfunctional negative emotions	38,50	,05 (unidirectional)
Functional negative emotions	25,00	,013
EMOTIONAL distress profile score	28,50	,023
DSQ 40 Score, Reaction forming	26,50	,016

Of the four defense mechanisms subordinate to style neurotic style (cancelling, pseudo-altruism, idealization, reaction forming), reaction forming responses have significantly higher scores in patients with hypothyroidism with a length of the disease more than six years.

GENERAL CONCLUSIONS

The analysis of the results for the two nosological categories (hypothyroidism - hyperthyroidism) showed no significant differences compared with the scales assessed, which led to the analysis of the participants as one group. Although endocrinologists report a clear difference between patients with hypothyroidism and those with hyperthyroidism, from the psychological point of view both nosological categories are in a situation of (personal, professional or socio-cultural) failure, emotional distress (different polarities) and subjective experience of the illness.

Somewhat surprising is the fact that levels of depression (moderate) and anxiety (subclinical) remain constant, despite the slight decrease in the level of dysfunctional cognitive schemes (from very high in most schemes to high), along with the length of the

disorder. If we look at the emotional distress profile, we note a decrease in time in the level of functional negative emotions, while negative dysfunctional emotions remain constant at high level. Thus, we can say that anxiety-depressive disorder is maintained because of a growing self-perceived vulnerability to emotional stressors, at the same time with the decrease in the patient's expectations regarding the need for approval, and maintaining the same (high) level of negative automatic thoughts. The complexity of mental life does not allow generation of flexible models of reflection of reality (subjectively mediated) leading to uncertainty. Reducing uncertainty manifests itself as seen through the intervention of psychological defense.

A possible explanation for the registration of higher scores for neurotic defense mechanism reaction formation, for a longer duration of disease, derives from the description of this defense mechanism in the DSM-IV-TR. The individual resolves the emotional conflict or internal or external stressors by substituting behaviors, thoughts and feelings opposite to his own thoughts or feelings that are unacceptable (this usually occurs in connection with their discharge). In a cognitive approach, we can speak of reinterpreting reality in terms which cancel its disruptive effect, by the anticipation of memories (Kahneman, 2010) with positive ending for the person, thus preserving the consistency of self-image.

The change of the defensive style in relation to thyroid disease duration, captures a significant pattern in the dynamics of depression. The overclassification model of defense mechanisms in factors, defines and ranks the three defensive styles (Andrews, Singh, Bond, 1993): Functional (F1 - mature style), intermediate (F2 - neurotic style) and dysfunctional (F3 - immature style). Thus, the combination depression - immature and neurotic style in patients with TD and long-length disease, suggest a psychological model of transition to a neurotic defense style, amid increasing resilience. Defense mechanisms seem to remain constant in the mental lives of patients, offsetting to some extent self-perceive high emotional distress.

Anxiety-depressive disorder becomes permanent, leading over time to identifying a thyroid patient (especially the one with hypothyroidism) with self-perceived pain. The comparison seems not to be made with an earlier well-being state, but with a constantly updated state of weakness, dependency and vulnerability.

Stress provides a very good image of compensation operation of the human subsystems. Distress will involve a series of adjustments designed to reduce or eliminate the disruptive effect of stress factors received as a threat. An important conclusion is derived from correlations between the depression-anxiety level and emotional distress profile. Surprisingly, for a longer duration of disease, depression correlates significantly with positive emotions (obviously with the negative functional and dysfunctionals, as well). On first examination, the presence of positive emotions in the context of depression (HRSD as moderate) would seem a nonsense! In order to bring arguments to the conclusions, we make a brief reference to the internal sense of coherence and how to approach self-report questionnaires. The internal sense of coherence is the ability to find meanings to things, the ability to understand the significance of the stress to which the individual is subjected and scrutiny and decision making ability. The concept of sense of coherence has similarities with other theories of resistance to stress such as: the ability of control, own effectiveness, the concept of power and dispositional optimism. However, the internal sense of coherence is a broader concept than either of them, including the social dimension of individual applications, thus making the concept applicable to different cultures. The internal sense of coherence is a summary of the person's idea of the world (Tudose, 2006, p. 45).

Aldwin and Yancura (2006) draw attention to misleading results on the effects of coping, using self-report evidence. After considering personality factors as covariate variables, the effect of coping on health has vanished.

The temporal improvement of cognitive strategies profile leads to the assumption that an early psychological intervention focused on problem-solving therapy and self-

management/self-control therapies based on strong support in clinical research could bring considerable benefits to the evolution of the disease and thus to the quality of life of these patients by shortening the period of disruption due to psychological subjective perception of the disease and the action of hormone secretion on mental functions.

In our opinion, the current anxiety-depressive disorder in patients with thyroid dysfunction is due to poor management of stressful situations as a result on the one hand of a compensatory functioning of the endocrine system, which is obliged to respond specifically to this type of aggression and on the other hand, of the inefficient evaluations of life events by the person's psychological system, grafted onto a central system of irrational beliefs about self, world and life. Therefore, regulatory intervention is required both at the endocrine system level by specific chemical agents, and at the mental level by information at the whose effect is to remove inefficient evaluations and their replacement with efficient models.

In patients with TD, the ability to adjust to stress is exceeded in relation to current requirements, which leads to the need for increasingly elaborate processing, without being able to access resources at the pace required for optimal adaptation.

In clinical practice, in patients with TD, we often met an attitude of 'resistance' to the psychological problems they have by developing, as shown in the present research, maladaptive cognitive schemes such as poor autonomy and performance or the type of inhibition and hypervigilance.

Very often, a visit to a psychiatrist is a label difficult to remove, which in some cases leads to the patient's anchoring him/herself in an position of incurable 'neurotic', or at other times, on the contrary, refusing a psychological regulatory drug intervention required. The educative role psychological intervention can have in the equation of treatment for these patients can bring real benefits to the process of restoring health and improving quality of life.

Some of our personal cases in the last four years refer to of a disability retired persons who sought psychological evaluation to complete the documentation needed to assess the disability by the Medical Commission. The responsibility of the clinical psychologist is to provide detailed information on the psychological components of disease according to the condition of the patient. The decision of specialists on ranking the person in a particular category of disability retiree depends to a certain extent (at least at the declarative level) on the honesty of this approach. We will not make a social or economic debate, but we report a common phenomenon in the circumstances mentioned.

A person who is present to the psychologist for such an assessment, is primarily confused about the role of the psychologist. 'I do not know why I was sent to you since I have just been to the psychiatrist and he/ she wrote my diagnosis". Clinical psychologists certainly recognize this response. What else is to say after the patient has got a psychiatric diagnosis? In some cases the psychologist seeks the disorder in DSM-IV and lists diagnosis criteria. In other cases he/she provides a multiaxial diagnosis using DSM-IV, the problem occurring when the patient is announced that this document should be endorsed by the psychiatrist to be accepted. In our opinion this is also due to the lack of an attitude of professionalism and ethics of the clinical psychologist who provides psychological assessment and intervention services chosen arbitrarily or incorrectly.

The approach taken during this year by the Commission of Clinical Psychology of the Psychologists' College in Romania regarding the publication of General Guidelines for Good Clinical Practice* in the field added to the clarification and standardization of clinical practice¹. The Report of Psychodiagnostic and Clinical and/or Educational Evaluation published by the same committee, was the basis of the format of the report that I made from the research conducted on the psychological assessment and screening in patients with DT.

¹ For detailed information: <http://www.copsi.ro>

Limits and new research directions

It should be noted that the gender distribution does not allow a meaningful female-male analysis, since the group of patients with thyroid dysfunction were only two male participants (one case of hypothyroidism, a case of hyperthyroidism). Analyzed separately, the averages obtained on all scales measured are not significantly different from the averages obtained by the group of female patients, which led to the unitary analysis of the group. But the generalization of results for both sexes is not certain.

Dividing patients according to disease duration in Case study 3 resulted from the distribution of the cases under study. To establish a temporal marker of differentiation in capturing changes in cognitive strategies, larger studies are needed. A more rigorous approach (controlled clinical study) could be undertaken taking into account the level of TSH, FT3, FT4 and hormone medication.

The relatively small number of participants in study 3 may be a cause of the distortion of statistical results provided in particular on differences between patients with hyperthyroidism and hypothyroidism. A further extension of the group of participants could provide validity of the results obtained in this stage of research.

The trend in recent years in evaluating the mental state is to measure the bio-physiological hard through doses of physiological markers. Such a study could make an even better clarification of the moral-hormonal and neural-psyche relationships and providing by psychology empirically based explanations for improved screening and effective therapeutic interventions aiming at improving quality of life of patients with TD.

Building a computer program for psychological screening for patients with TD to be administered by a clinical psychologist in the hospital or clinics / offices of psychology to identify types of psychological disorders and possibly directing psychological intervention to this population could be another further target research.

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