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OPTIMIZING THE HEALTH CARE FOR ONCOLOGICAL PATIENTS THROUGH DISTRESS ASSESSMENT

DISSERTATION SUMMARY

FOR THE ACQUISITION OF THE EDUCATIONAL AND
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"DOCTOR (PhD)"

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CONTENTS

I.   *INTRODUCTION*

The progress in scientific research and technologies, combined with the increased incidence and prevalence of oncological diseases, have led to a significant expansion of the role of the nurse, who must meet the growing demands and expectations of people affected by cancer. The continuous changes in the healthcare system as well as the new scientific discoveries integrated into the care of oncological patients indicate that the role of the oncological nurse will continue to develop. Enhancing their qualification level and expanding their competences, nurses perform their professional duties better and better. The nurse, exercising her professional duties, develops and deepens her relationship with the patients and their relatives.

The interest towards screening for distress with oncological patients is growing significantly, but there are issues in understanding and implementing programs to identify it. The reactions to distress are diverse, and they also lead to different adaptation phenomena. The screening for a specific disease or health issue depends on several key factors, such as the health issue itself, the type of screening test, and the national health care system. It has been proven that patients with oncological diseases experience distress, the intensity of which varies widely depending on individual characteristics and the characteristics of the disease itself. Identifying patients with distress, providing adequate psychosocial assistance, lack of information, fear of contact with specialists offering psychological or psychiatric assistance are significant issues. The distress depends on a variety of parameters, such as location, stage, gender, ethnicity, age of the patient and others. The distress also affects the family members of the oncological patient. Its assessment and early prevention are significant not only for patients, but also for their relatives.

The assessing and combating distress is part of the overall care for oncological patients, due to the risk of its development during the course of the disease. The nurse plays a key role in the care of the patient diagnosed with oncological disease and provides him with the necessary information, according to her professional competences. The oncological nurse, through her interpersonal communication skills and active listening, assesses the patient's needs and his psychological and emotional state. Health care professionals monitor and assess patient's needs before, during and after chemotherapy. The interdisciplinary knowledge supports the overall nursing care accompanied by a sense of empathy, readiness for personal commitment and understanding of patient's needs. The health care provided by the oncological nurse is not limited only to skills related to medical manipulations, knowledge of drug therapy, nutrition and others, but is wide-ranging, including communication and interaction not only with the patient, but also with his relatives. By supporting patient's relatives in caring for the patient and assessing the presence of distress in the relatives, nurses could provide care, make recommendations, educate and counsel their oncological patients, through their relatives.

The oncological nurses play a role in supporting the patients throughout their journey fighting the oncological disease. They are faced with dealing daily with the many issues that patients and their families face as a result of cancer or its treatment.

Apart from their knowledge of assessing patient needs, the modern oncological nurses also need to assess the practical, physical, emotional, family issues to determine the level of distress that will support patient care and well-being. The screening information assists nurses in understanding and analyzing distress, assessing the need for supportive care and for further referral to a specialist. Thus, nurses have a higher degree of usefulness in professional practice, when meeting with patients, and when solving issues that arise.

The assessment of distress in oncological patients is a prerequisite for optimizing nursing care, which would improve their quality of life.

The analysis of the literary sources demonstrates that in our country, studies in the field of distress

in patients with oncological diseases and assessment of issues in their daily life, as well as the role of the oncological nurse, have not been thoroughly, comprehensively and systematically studied.

Clarifying the role of the oncological nurse in the assessment of distress in patients with oncological diseases, revealing the difficulties and issues in nursing practice, reveal the opportunities to improve the condition of the patient with oncological disease and increase his quality of life.

In the conditions of a progressive increase in the number of patients with oncological diseases, the studied and analyzed issues become particularly relevant. The study of the issue of the assessment of distress in patients with oncological diseases and the offering of specific practical approaches is an actual and significant issue in modern nursing theory and practice. All this motivate us to choose the topic of a dissertation work.

II.METHODOLOGY AND ORGANIZATION OF SCIENTIFIC RESEARCH

2.1.Aim, objectives and hypotheses of the study

The aim of the present study is to identify and assess the level of distress in cancer patients with a view to optimizing health care.

To achieve our goal, we set the following tasks:

- To explore the international experience and the role of the nurse in the assessment of distress in cancer patients.
- To study and establish the relationship between type of cancer, general condition, stage of cancer and the level of distress, before and after chemotherapy.
- To study and establish the relationship between socio-demographic factors and the level of distress in patients with oncological diseases.
- To study and establish the level of distress in the relatives of patients with oncological diseases, considering their care and interaction.
- To reveal the relationship between practical, family, emotional, physical problems, spiritual/religious concerns of patients and the level of distress.
- To conduct observation in a real working environment, tracking the patient's behavioural reactions during the period of hospitalization.
- To explore and assess the need to implement opportunities to optimize the nursing distress thermometer in daily nursing work and care for patients with distress.

To develop practical approaches to optimize the activity of the nurse in patients with oncological diseases is a distress.

Based on the studied literature and the set goal of the dissertation research, the following hypotheses were formulated:

- General condition, type and stage of cancer and socio-demographic factors increase the level of distress in cancer patients.
- Patients' practical, family, emotional, physical problems, spiritual/religious concerns affect the level of distress.
- Relatives of patients diagnosed with cancer are also affected by distress.

2.2. Organization, time and place of the dissertation study

The subject of the present study is the assessment and analysis of distress among cancer patients.

Target of the study:

- Patients with histologically proven oncological disease and referred for treatment to the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment - Varna.
- Family members of patients referred for treatment at the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment - Varna.
- Nurses practicing in the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment - Varna.

Scope of study

A total of 597 respondents were included in the survey, divided into three groups:

- First group - patients (n = 374) with proven oncological disease and referred for treatment to the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna
- Second group – family members (n= 200) of the patient with proven oncological di assigned referred to treatment at the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment - Varna
- Third group - Medical nurses working in the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna

Logical units of study

- First logical unit - with proven oncological disease and referred for treatment to the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna
- Second logical unit - family member (relative) of the patient with proven oncological disease assigned referred to treatment at the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna
- Third logical unit - Medical nurses working in the Medical Oncology Clinic at the St. Marina EAD University Multiprofile Hospital for Active Treatment - Varna

Signs of logical units

Signs of the first logical unit

- related to the role of cancer on the level of distress in cancer patients,
- related to the age, gender, lifestyle, family status, professed religion, ethnic affiliation, education, location of primary caregiver, stage of injury and performance status of patients with oncological diseases affecting the level of distress,
- related to practical, family, emotional, physical problems, spiritual/religious concerns of cancer patients affecting the level of distress.

Signs of the second logical unit

- concerning the role of cancer disease in the level of distress in relatives caring for the patient,
- related to age, gender, place of residence, marital status, professed religion, ethnicity, education and family relationship among relatives, caring for the patient, affecting the level of distress.

Signs of the third logical unit

- related to the role of the nurse in the process of providing care and assessing distress in oncological patients
Place of the study: The study was conducted at the Medical Oncology Clinic at St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna

Eligibility criteria for the study:

Criteria for completion of the Distress Thermometer by patients:
Inclusive criteria for patients:

- Persons over 18 years of age, diagnosed with an oncological disease;

- Histologically confirmed oncological disease;

- Patients of the Medical Oncology Clinic at St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna;

- Patients starting their first course of neoadjuvant, adjuvant, or second-line chemotherapy;

- Patients undergone evaluation after completing a full volume of prescribed therapy (full number of courses of therapy that were assigned by the Oncology Committee on Chemotherapy);

Exclusive criteria for patients:

- Persons who have been identified as endangered populations (persons under 18 years of age, pregnant, persons deprived of liberty, socially weak);

- Without proven cancer;

- With proven psychiatric illness;

- Patients of other institutions.

- **Criteria for completing the Distress Thermometer by patient's relatives:**

Including criteria for relatives:

- Relatives of patients treated at the Medical Oncology Clinic at St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna;

- Persons over 18 years of age;

- No histologically confirmed cancer at the time of completing the Distress Thermometer

Exclusion criteria for relatives:

- Persons under 18 years of age

- Without proven cancer

- With proven psychiatric illness

- Relatives of patients of other institutions

- **Criteria for completing the "Problem Assessment Questionnaire" by the patient:**

Inclusive criteria for patients:

- Persons over 18 years of age, diagnosed with an oncological disease;

- Histologically confirmed oncological disease;

- Patients of the Medical Oncology Clinic at St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna;

- Patients starting their first course of neoadjuvant, adjuvant, or second-line chemotherapy;

- Patients undergone evaluation after completing a full volume of prescribed therapy (full number of courses of therapy that were assigned by the Oncology Committee on Chemotherapy);

Exclusive criteria for patients:

- Persons who have been identified as endangered populations (persons under 18 years of age, pregnant, persons deprived of liberty, socially weak);

- Without proven cancer;

- Patients of other institutions;

- Concomitant illness leading to distress - cardiac, neurological, rheumatological and/or proven psychiatric illness;

- Evidence of distress and a visit to a psychologist before the study began;

- Withdrawal of consent to participate in the study;

- Incomplete information in the documentation that compromises the analysis.

- **Criteria for participation in the observation of patient behavioural responses:**

Inclusion criteria for patients:

- All patients who have filled out the questionnaire for the assessment of problems at the first admission to the department (first stage of the study);

Exclusion criteria for patients:

- Who have not completed a questionnaire for the assessment of problems at the first admission to the ward (first stage of the study), given the exclusion criteria;

Criteria for participation of nurses in the interview:
Inclusion criteria for nurses:

- All nurses working in the ward, over one year;

- All nurses working in the ward who have not been absent from work (less than one year).

Exclusion criteria for nurses:

- All nurses working in the ward, with experience of less than one year and absent from work for more than one year.

Research bodies

The main part of the study was carried out independently by the author, in a real hospital environment.

The study was carried out in eight stages, and the tools, place and period of implementation were determined, presented in Table 1.

Table 1. Stages of the study

STAGE	Activity	Tools	Venue	Period
STAGE I	Research the relevance of the problem. Formulation of research topic and methodology. Selection and development of appropriate tools for distress assessment. Preparation of the literature review	Literary sources on the subject, articles, publications. International Distress Screening Programs; Current programs and guidelines for distress screening and action in Bulgaria. Hospital records were used to collect additional information	Varna	February 2019 - April 2019
STAGE II	Conducting a pilot study, evaluation and correction according to the methodology; Work on the literature review.	Literary sources on the subject; international distress screening programs; Current programs and guidelines for distress screening and action in Bulgaria. Distress thermometer, Questionnaire card, Check sheet	Varna	May 2019 - July 2019
STAGE III	Conducting actual survey of respondents. Processing and analysis of the received data using the selected analysis methods. Description of results and interdependencies. The summarized data are described in detail in order to reveal the essence of the observed phenomena and interdependencies. Drawing conclusions. Conducting a face-to-face interview to investigate nurses' opinion on the applicability of distress thermometer in daily work. Processing and analysis of the received data and development of specific practical approaches.	Distress thermometer to collect information from the patient; Questionnaire card for assessment of patient problems; A checklist for monitoring the patient's behavioral responses; Distress thermometer to collect information from the patient's relatives; Questionnaire for conducting a face to face interview SPSS v 23 Microsoft Excel	Clinic of medical oncology at St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna	July 2019 - September 2022
STAGE IV	Processing and analysis of the data obtained by the selected methods of analysis. Description of results and interdependencies. The aggregated data are detailed with a view to revealing the nature of the observed phenomena and the interdependencies. Derivation of conclusions	SPSS v 23 Microsoft Excel	Clinic of medical oncology at St. Marina EAD University Multiprofile Hospital for Active Treatment – Varna	September 2021- December 2022

2.3. Research methods

The target of the present study necessitated the use of a variety of methods:

- **Documentary method** — international and national literary sources were analysed; International Distress Screening Programs; Currently operating programs and guidelines for screening and action in case of distress in Bulgaria;
Hospital records were used to collect additional information.

• **Sociological methods***:*

- Survey research to collect, aggregate and analyse information about opinion and ratings through a direct, anonymous, individual survey provided.

- Distress Thermometer to gather information from:

- Patients - to evaluate and analyse the measured levels of distress;

- Patient's relatives - to evaluate and analyse the measured levels of distress;

- Face-to-face interview - to explore the opinion of nurses about the applicability of the distress thermometer in daily work and possibilities to optimize nursing care for distressed patients.

- Monitoring - It is carried out through a working checklist, in which the observed verbal and non-verbal reactions of the patients are noted. The checklist covers the entire period of hospitalization - from the moment the patients are admitted to the clinic, during their stay in the hospital until the day of their discharge. The developed Checklist aims to reveal and complement the psycho-emotional status of each patient. The checklist contains 30 observed reactions grouped into 3 sections (10 each) depending on the period of observed verbal and non-verbal behavioural reactions in oncological patients.

- **Methods of statistical processing of data:** Methods of statistical processing of data and interpretation of results:

- *Method of statistical grouping of data* - arrangement of signs according to their type in variational, interval, categorical, degree and dynamic, statistical rows.

- *Graphical method* - use of linear and planar graphs, pie and pie charts, stereograms and symbol charts.

- *Non-parametric analyses* - for evaluation of categorical features - Pearson's $x2$ (chi-square) criterion. For gender and age group comparisons - Mann-Whitney and Kruskal-Wallis non-parametric tests.

- *Correlation analysis* - to determine univariate Pearson linear correlation coefficients. Partial multiple correlation analysis is also used in the assessment of some signs.

- *Analysis of Variance* - when comparing continuous variables, the Student-Fisher t-test for independent samples will be used. In multiple comparisons of features with several categories, a correction will be made to the value of p under Bonferroni acc. to the number of comparisons.

- Analysis of Variance - One-way analysis of variance (ANOVA) will be used when evaluating

laboratory tests and other continuous variables.

2.4. Survey Toolkit

To achieve the research goals and tasks have been developed:

- **Distress Thermometer to collect patient information using a standard** NCCN instrument with additional information on survey needs with social and demographic characteristics. The distress thermometer is for self-assessment of the level of distress on a visual-analog scale from 0 to 10, which is a line graphed from 0 to 10. Zero (0) corresponds to the lowest level of the investigated problem, and ten (10) to the highest the high. The patient chooses and notes the number that best describes it the degree of emotional anxiety he experienced during the past week, including on the day of completing the survey. Before completing the Distress Thermometer, all participants were explained what the term "distress" means, the difference between a state of stress and distress.

Assessment of patient distress was conducted in two stages.

- *First stage* - To determine the initial level of distress (at the beginning of chemotherapy - neoadjuvant, adjuvant or consecutive line) of patients.

- *Second stage* - Use of a standard questionnaire to determine the level of distress of patients after completion of the assigned chemotherapy treatment.

- **Questionnaire card for assessment of patient problems** - includes 36 statements divided into five categories: Practical problems - 5 questions; Family problems - 3 questions; Emotional problems - 6 questions; Spiritual/religious concerns - 1 question; Physical problems - 21 questions.

A checklist for monitoring patient behavioural responses

Observational Design: 225 cancer patients who completed the Distress Thermometer and met the inclusion criteria for the Patient Concerns Questionnaire were observed.

The purpose of monitoring is to reveal and complement the patient's psycho-emotional status in order to optimize nursing care and assist the patient in adapting to the hospital environment.

Patient observation was performed independently by the author and was conducted in a real hospital setting. Carried out stage-wise, with a single observation - in three STAGEs - at the first admission of the patients, during the hospital stay and at the time of discharge. In the checklist, the observed verbal and non-verbal reactions of the patients are recorded. The evaluation of the results of the Checklist will show the emotional status of each patient and will support the professional activity of the nurse in providing effective oncology care. The checklist makes it possible to quickly and easily identify the main emotional reactions of the patient and will support the period of adaptation, not only to the hospital environment, but also to the treatment administered.

The checklist contains 30 observed reactions grouped into 3 sections (10 each) depending on the period of observed verbal and non-verbal behavioural reactions.

First group (on admission to the clinic) - sadness/crying, nervousness, anger, aggression, calmness, resignation, joy, euphoria, talkativeness, taciturnity.

Second group (during hospitalization) - desire to communicate with the nurse, desire to communicate with other patients, desire to talk about their illness with the nurse, desire to talk about his illness with the other patients, willingness to stay in the hospital, willingness to leave the clinic before being discharged, willingness to strictly follow the chemotherapy regimen, willingness to adjust the system with cytostatics to expire faster than the standard, a desire to receive more information about the assigned therapy and the presence of a smile.

Third group (during dehospitalization) - gratitude to the team, anger to the team, empathy for the workload of the staff, readiness to observe the hygienic dietary regimen at home, readiness for control examinations before the next hospitalization date, determination to continue chemotherapy treatment, expression of dissatisfaction, desire for "connection" with the clinic if necessary, desire for contact with the nurse at emergence of questions related to the oncological disease and the presence of a smile.

- **Distress thermometer to collect information from patient's relatives** to self-assess the level of distress on a visual-analog scale from 0 to 10. which is a line graphed from 0 to 10. Zero (0) corresponds to the lowest level of the research problem, and ten (10) at the highest. Patient's relative chooses and marks the number that best describes the degree of emotional distress they have experienced during the past week, including the day of completing the survey). For the needs of the study, it is supplemented with information - social and demographic data;

- **Questionnaire** for conducting a face-to-face interview - to study the opinion of nurses about the applicability of the distress thermometer in daily work and the possibilities for optimizing nursing care for patients with distress.

- **Informed consent** - was developed for the purposes of the study and certifies the patient's consent to participate in the study. Informed consent was provided to all who agreed to be studied.

It was explained to all participants that the information collected would be used only for the purposes of the study.

III. RESULTS AND CONSIDERATION

3.1. Characteristics of the studied groups

3.1.1. Social and demographic and clinical and pathological characteristics of the studied patients

The study covered 374 patients with proven oncological disease and referred for treatment to the Clinic of Medical Oncology at Sveta Marina University Multi-profie Hospital for Active Treatment.

The data from the conducted study demonstrated that the average age of the patients included in our study is 59.6 years (+/- 11.4 years) with the minimum age being 29 years, and the maximum - 81 years, respectively. The majority of the individuals studied were female (n = 205, 55%) followed by the male respondents (n = 168, 45%).

All patients participating in the study had a histologically confirmed oncological diagnosis in stages II, III and IV. When analyzing the collected data, we found that respondents in stage II/III non-metastatic predominated (n = 224, 60%) against IV metastatic stage (n = 150, 40%). Depending on the PS, predominate patients with an estimated small difference PS-1 (n = 201, 53.8%) against PS-0 (n = 173, 46.2%).

The analysis of marital status of all surveyed patients demonstrated that the family group is the most numerous (n = 259, 69.2%), followed by widowers (n = 53, 14.2%), divorced (n = 38, 10.2%) and single (n = 24, 6.4%). From the distribution by ethnicity, we found that there are much more respondents of Bulgarian origin (n = 349, 93.3%), against those of Turkish one (n = 25, 6.7%).

Based on the processed data, we found that according to the professed religion, Christians are the most (n = 285, 76.2%), followed by atheists (n = 40, 10.7%) and Muslims (n = 23, 6.1%). It was interesting to find that some of the surveyed patients could not define their religion (n = 26, 7 %).

The analysis of the results demonstrated that patients with an average level of education predominate (n = 203, 54.3%), followed by those with higher education (n = 108, 28.9%) and primary one (n = 63, 16.8%). All interviewed and analysed patients in the present study had histologically confirmed oncological disease, of which lung carcinoma was 22.9% (n = 86), with breast cancer - 26.5% (n = 99), with colorectal carcinoma, 25.7% (n = 96) respectively. All other locations (colon, prostate, rectum, bladder, ovary, cervix, uterus, testis, stomach, head and neck, pancreas, extragonadal germ cell, parotid gland, retroperitoneal sarcoma, pleural mesothelioma, esophagus, urethra, tonsil, peritoneum, bile ducts) are 24.9% (n = 93) of the overall respondent number.

3.1.2. Social and demographic characteristics of patients' relatives

200 relatives of hospitalized patients were included in the scientific study at the Clinic of Medical Oncology at Sveta Marina University Multi-profile Hospital for Active Treatment.

The analysis of the data demonstrated that oncological patients are rarely accompanied by a brother/sister (n = 9, 4.5%), mother/father (n = 7, 3.5%) or a distant relative (n = 12, 6%). Most of the patients covered by our study were accompanied by their spouses (n = 87, 43.5%) or children (n = 85, 42.5%). The data from the conducted survey demonstrated that the minimum age of the patients' family members is 22 years, and the maximum is 76 years, respectively. The distribution by gender of the examined persons demonstrated that women predominate (n = 111, 55.5%) against men (n = 89, 44.5%).

The analysis of the marital status of all surveyed relatives demonstrated that family members occupy the largest share of the total number (n = 140, 70%), followed by the single ones (n = 52, 26%), divorced (n = 5, 2.5%) and widowers (n = 3, 1.5%). The data processing demonstrated a predominance of relatives living outside Varna (n = 103, 51.5%), against those living in the city (n = 97, 48,5%).

From the distribution by ethnicity, we found that the group of respondents with Bulgarian ethnicity is leading (n = 184, 92%), against those with Turkish one (n = 16, 8%).

The processing of the data demonstrated that according to the professed religion, Christians are the most (n = 146, 73%). Similar to the patient study (n = 26, 11.6%), with the relatives it was found that not a small part of them could not define their religion (n = 26, 13%). The distribution is almost equal between atheists (n = 15, 7.5%) and Muslims (n = 12, 6%) and one did not respond (n = 1, 0.5%).

The analysis of the results demonstrated that half of the patients' relatives have an average level of education (n = 101, 50.5%), followed by those with higher (n = 79, 39.5%) and primary one (n = 20, 10%).

3.2 Analysis of the results of measured levels of distress among patients

The assessment of patients' distress was conducted in two stages. In the *first stage*, the initial level of distress (at the beginning of chemotherapy – neoadjuvant, adjuvant or consecutive line) of patients was determined. In the *second stage*, by using the same toolkit, the level of distress of patients after completion of the assigned chemotherapy treatment was determined.

3.2.1. Analysis of the results of the measured levels of distress among patients - first stage

In the first stage of patients' distress assessment, a Distress Thermometer was completed by all 374 patients with proven cancer according to the inclusion and exclusion criteria for treatment directed to the Clinic of Medical Oncology at Sveta Marina University Multi-profile Hospital for Active Treatment.

The analysis of results demonstrated that, according to the measured level of distress, patients with a high level of distress predominate (n = 207, 55.3%), against those whose self-reports indicate a low level of distress (n = 167, 44.7%).

Chi square analysis of the social and demographic data demonstrated that there is no relationship between the characteristics of age, gender, religion, ethnicity and place of residence (distance from the oncological clinic) and the level of distress reported with the Distress Thermometer. The distress level is affected by performance status (p = 0.006), carcinoma localization (p = 0.001) and the level of education (p = 0.017) (Table 1).

Table 1. Relationship between social and demographic and clinical and pathological characteristics and the level of distress in patients who completed the standard questionnaire (distress thermometer).

Distress thermometer			
	Low level of distress	**Moderate/high level of distress**	**P value**
Age			0.13
≤ 65	95	128	
> 65	71	80	
Sex			0.3
Men	89	79	
Women	97	108	
Stage			0.7
II and III	114	110	
IV	78	72	
PS			**0.006**
0	106	67	
1	82	119	

Residence (distance)			0.7
Varna	111	112	
Outside Varna	80	71	
Religion			0.1
Atheist	26	14	
Christian	132	153	
Muslim	9	14	
Unspecified	21	5	
Ethnicity			0.2
Bulgarian	181	168	
Turkish	10	15	
Education			**0.017**
Primary/Secondary	151	115	
Higher	39	69	
Localization			**0.001**
Lung	24	62	
Breast cancer	44	55	
Colorectal carcinoma	46	50	
Other (20 different localizations)	63	30	

The major part of the patients were below 65 years of age (n = 223, 60%), followed by those over 65 years (n = 151, 40%). The Box plot graph illustrates the level of distress with patients below and 65 years old. Mann-Whitney analysis demonstrated that there is a tendency for a higher level of distress in patients under 65 years. (4.07 ± 3.07) compared to those surveyed above 65 years. (3.39 ± 3.08) (p = 0.08) (Figure 1).
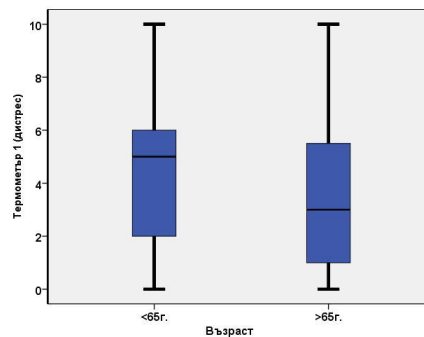
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Възраст	Age

Figure 1. Patient Distress Levels by Age - under 65 and 65 years old.

Illustrated on Figure 2 are the levels of distress in male and female patients. Mann-Whitney analysis demonstrated that there is a significantly higher level of distress in female (4.3 ± 3.2) compared to male respondents (3.2 ± 2.8) (p = 0.014).
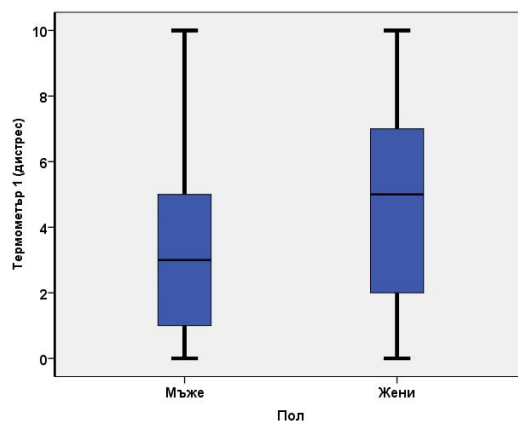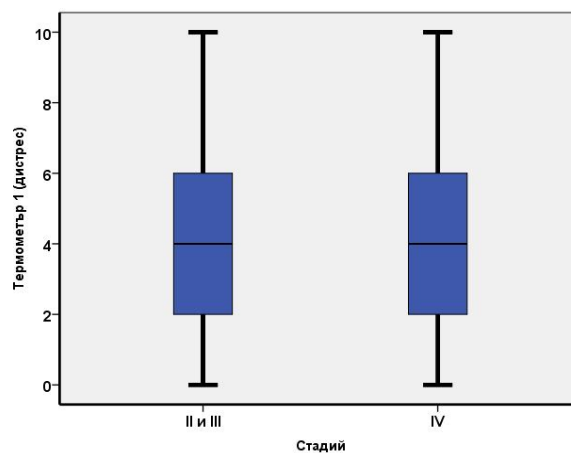
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Мъже	Men
Жени	Women

Figure 2. Distress level in patients with oncological diseases by sex.

The use of chemotherapy drugs causes various side effects. In female patients, some of these reactions, such as alopecia, are accompanied by greater emotional distress.

The results of our study demonstrated that regardless of whether patients have proven metastatic or non-metastatic disease, levels of distress are consistently high. Mann-Whitney analysis demonstrated that there is no difference in the level of distress with patients in II/III stage (non-metastatic) (3.6 ± 3.1) and stage IV (metastatic) (3.9 ± 3.2) (p>0.05) (Figure 3).

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Стадий	Stage

Figure 3. Levels of distress in patients with oncological diseases, depending on the stage of the disease.

The Mann-Whitney analysis demonstrated that, that there is a significantly higher level of distress in patients with PS 1 (4.4 ± 3.1) compared to those with PS 0 (3.4 ± 3.2) (p = 0.029) (Figure 4).
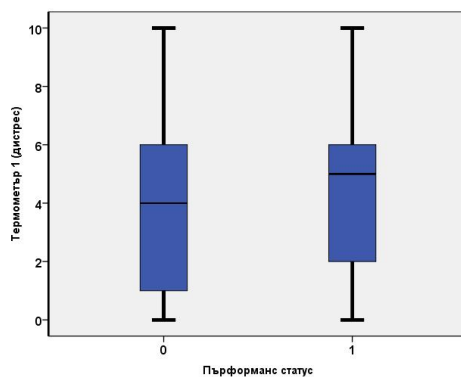
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Пърформанс статус	Performance status

*Figure 4. Distribution of general status acc. to ECOG scale of all patients.*

The level of distress is not affected by the patients' place of residence. A larger share of the total group of respondents lives in the city of Varna (n = 223, 60%). In places of residence (villages, municipal and district towns) outside Varna live 40% of respondent patients (n = 151). The Mann-Whitney analysis demonstrated an insignificant difference in the level of distress among patients living in Varna (3.84 ± 3.0) and those outside Varna (3.76 ± 3.2) ($p > 0.05$) (Figure 5).
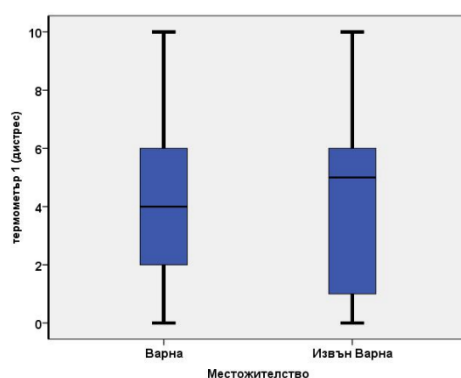
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Варна	Varna
Извън Варна	Outside Varna
Местожителство	Place of residence

*Figure 5. Distribution of patients by place of residence.*

The distress levels were also assessed according to patients' religious affiliation. In the overall group of patients, the percentage of Muslims was the lowest (n = 23, 6.1%), followed by oncological patients, who cannot define their religion (n = 26, 7%) and the atheists (n = 40, 10.7%). The largest group of patients indicated Christianity (n = 285, 76.2%) as their professed religion. Kruskal Wallis analysis demonstrated a trend for relationship between the professed religion and the level of distress ($p = 0.07$). The patients who cannot accurately define their religion have a level of distress (2.7 ± 6), which is lower compared to that of Christians (4.1 ± 3.1), Muslims (4.7 ± 3.6) and atheists (3.05 ± 2.8) (Figure 6). It is likely that some patients use their religious and spiritual resources to try to cope with the disease.

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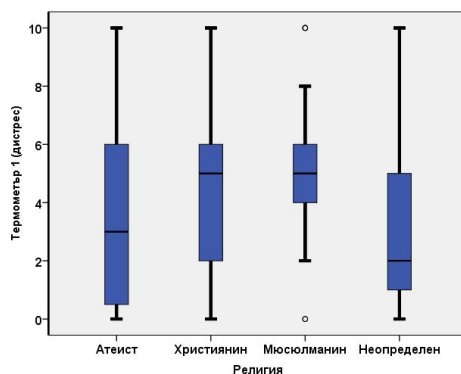
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Атеист	Atheist
Християнин	Christian
Мюсюлманин	Muslim
Неопределен	Unidentified
Религия	Religion

Figure 6. Distribution of patients according to their professed religion.

The analysis the results, we found that patients of Turkish ethnicity **tended to have a higher level of distress** (5.2 ± 3.4), compared to those of Bulgarian ethnicity (3.7 ± 3.0) (p = 0.08) (Figure 7).
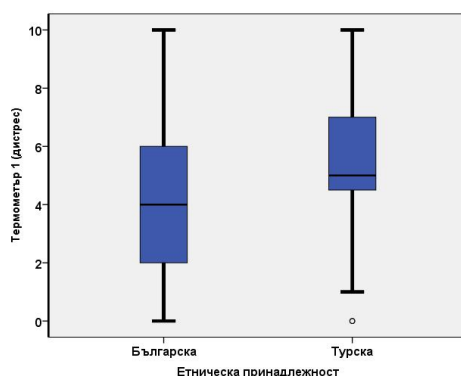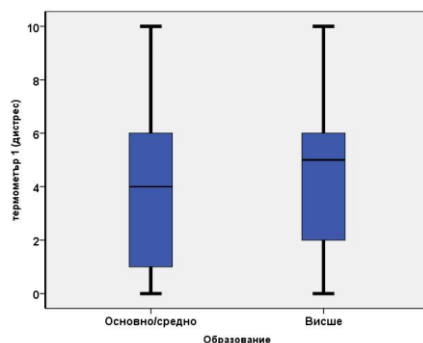

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Българска	Bulgarian
Турска	Turkish
Етническа принадлежност	Ethnicity

Figure 7. Levels of patient distress by ethnicity.

Nurse's awareness of ethnicity will direct her attention to the possibility that the patient is in certain levels of distress and, based on the assessment of indicators such as stage, performance status, religious affiliation, and others, will improve her plan of care.

The modern patient has access to a variety of information. For the purposes of the study, it was important to find out how the level of education affects the level of distress in oncological patients. The data from the study demonstrated that patients with higher education tended to have a higher level of distress (4.4 ± 2.9), compared to those with secondary and primary education (3.6 ± 3.1) (p = 0.08) (Figure 8). A diagnosis of "cancer" leads to high levels of distress, regardless of educational level, so the level of stress should not be underestimated in patients with a lower level of education either. The oncological diseases are one of the most stressful events in a human's life.

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Основно/средно	Primary/secondary
Висше	Higher
Образование	Education

Figure 8. Distribution of patients according to educational and qualification level.

Some stressors in one's life are predictable and sometimes avoidable. Others, such as cancer, cannot always be avoided. Among the most common oncological diseases are lung, breast and colorectal carcinoma. The patients with lung and breast cancer have higher levels of distress than those with colorectal cancer. The comparative analysis of the obtained results demonstrated that high levels of distress are found in patients with lung carcinoma (4.9 ± 3.1), compared to those diagnosed with colorectal carcinoma (3.02 ± 2.7) ($p = 0.002$). At the same time, no significant difference was found in the level of distress between patients with lung carcinoma (4.9 ± 3.1) and those with breast carcinoma (4.3 ± 3.2), as they are approximately equal. Yet patients with breast cancer (4.3 ± 3.2) have higher levels of distress than patients with colorectal cancer (3.02 ± 2.7) ($p = 0.018$). On the abscissa of the Box plot graph, the most common localizations among respondents are observed - lung carcinoma, breast carcinoma, colorectal carcinoma and other localizations (Figure 9).
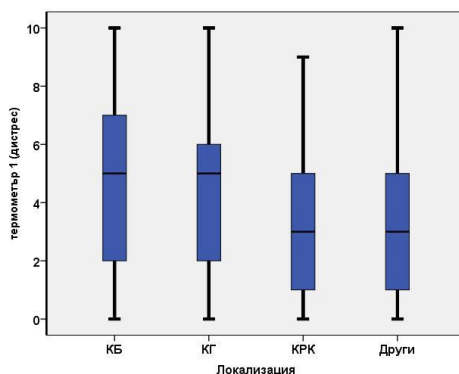
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
КБ	lung carcinoma
КГ	breast carcinoma
КРК	colorectal carcinoma
Други	Other
Локализация	Localization

Figure 9. Distribution of patients according to the location of the primary tumor, divided into four main groups.

The univariate logistic regression analysis demonstrated that unmarried status, poor performance status, lung and breast carcinomas were independent predictors of high levels of distress, suggesting

intensive monitoring by the nurse to identify early symptoms. Certain factors are associated with a higher risk for high levels of distress among oncological patients, such as: marital status - single (OR 5.3, 95% CI, 1.2-21.3; p = 0.02), poor performance status (OR 0.46, 95% CI, 0.26-0.8; p = 0.006), lung carcinoma (OR 4.9, 95% CI, 2.1-11.3; p = 0.001), breast carcinoma (OR 2.7 , 95% CI, 1.2-6.1; p = 0.01) (Table 2).

Table 2. Univariate logistic regression analysis demonstrated relationship between level of distress and marital status, performance status and patients with lung and breast carcinoma.

	OR	CI 95%	p-value
Sex	0.75	0.44-1.24	0.3
Single	5.3	1.2-21.3	**0.02**
Place of residence	1.104	0.67-1.85	0.7
Years	0.66	0.38-1.14	0.1
Stage	0.72	0.6-1.8	0.7
PS	0.46	0.26-0.8	**0.006**
Lung carcinoma	4.9	2.1-11.3	**0.001**
Breast carcinoma	2.7	1.2-6.1	**0.01**

A significant part of the study was to determine how performance status affects the level of distress in patients. The multivariate regression analysis demonstrated that good performance status reduced the risk of moderate or severe distress by 70% (OR 0.30, 95% CI 0.14-0.63, p = 0.001). The lung carcinoma and breast carcinoma remain independent predictors of high levels of patient distress OR 6.7, 95% CI 2.5-18.3, p = 0.001 и OR 3.4, 95% CI 1.16-10.4, p = 0.02 respectively (Table 3).

Table 3. Multivariate regression analysis demonstrated that PS, lung carcinoma, and breast carcinoma were independent predictors of high levels of distress.

Indicator	*OR*	*CI 95%*	*p-value*
Sex	0.64	0.28-1.45	0.28
Marital status	4.46	0.85-23.3	0.2
Place of residence	1.16	0.59-2.25	0.6
Years	1.4	0.72-3.03	0.2
Stage	1.44	0.66-3.1	0.3
PS	0.30	0.14-0.63	**0.001**
Lung carcinoma	6.7	2.5-18.3	**0.001**
Breast carcinoma	3.4	1.16-10.4	**0.02**

3.2.2. Analysis of the results of completed Distress Thermometer after completion of chemotherapy - second stage.

After completing a course of chemotherapy, patients were asked to fill in the Distress Thermometer again to assess distress after completion of the planned treatment, or the so-called "second stage". A Distress Thermometer identical to the one they completed immediately before starting treatment (i.e. baseline distress rating or 'first stage') was used.

After learning the outcome of the treatment (remission, partial remission, stable disease or progression), patients completed the Distress Thermometer. Of the total 374 patients who enrolled in the study and self-assessed in the first stage, a smaller number of oncological patients (n = 221) consented to the second stage, giving a response rate of over 50% in the second stage - or rather 59.1%.

After the statistical analyses, it was found that **there was no statistical difference in the level of distress between the first and second stage, despite the statistical trend, which means that the information about the outcome of the treatment did not change the initial attitude of the**

patients. However, it should be noted that the response rate in the second stage is not 100% and this may be the reason for the deviation in the results.

3.3 Analysis of the results of the measured levels of distress among relatives

The word "cancer" evokes strong emotional feelings not only for the patient, but also for his relatives. The analysis of the results demonstrated that the surveyed relatives with a high level of distress are more (n = 116, 58%) than those with a measured low level of distress (n = 84, 42 %).

The majority of relatives were under the age of 65 (n = 165, 82.5%) followed by people over 65 years (n = 35, 17.5%). The deeper analysis of the results demonstrated that in which age group fall **the relatives, was unrelated to their levels of distress** (p = 0.31)

The gender distribution among patient's relatives who participated in our study demonstrated **that women predominate** (n = 111, 55.5%), compared to men (n = 89, 44.5%). Data demonstrated, that **there was no difference in levels of distress** among female and male relatives (p = 0.17).

The analysis of marital status demonstrated that that the group of relatives who marked marital status "married" is the most numerous (n = 140, 70%), followed by „singles" (n = 52, 26%), „divorced" (n = 5, 2.5%) and „widowers" (n = 3, 1.5%).

According to the obtained results, **there is no relationship between the type of marital status of relatives and their level of distres**s (p = 0.25).

The level of distress of patients' relatives is influenced by their place of residence. A smaller share of the overall group of respondents lives in the city of Varna (n = 97, 48.5%). Most of the surveyed relatives are those living in settlements outside the city of Varna (such as villages, municipal and regional towns) (n = 103, 51.5%). The abscissa of the graph demonstrated the place of residence - in Varna (1) and outside Varna (2), and on the ordinate the level of distress in the relatives. The level of distress among relatives living in other settlements **is significantly higher compared to those living in the city of Varna** (p = 0.03) (Figure 10). The distance from the physician in charge or the oncological clinic, the possibility of quick and adequate help if necessary, the ability of the family to cope with are only possible reasons for the increased levels of distress.
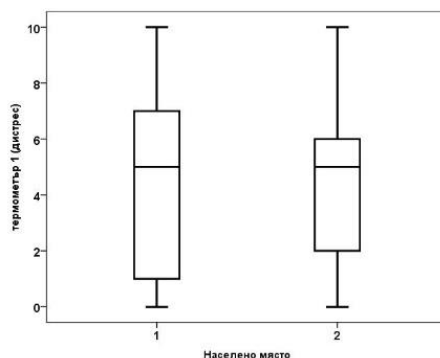
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Населено място	Place

Figure 10. Distribution of relatives by place of residence.

Depending on the ethnicity to which the surveyed relatives belong, relatives of Bulgarian ethnicity predominate (n = 184, 92%), compared to those indicating Turkish ethnicity (n = 16, 8%). Analyzing the results, we found that the level of distress among **patients' relatives remained independent of their ethnicity** (p = 0.16), while a tendency towards a higher level of distress was observed in patients

of Turkish ethnicity compared to those of Bulgarian ones (p = 0.08).

In our study, relatives of patients with Christian religion predominated (n = 146, 73%). Not a small part of relatives cannot determine their religion (n = 26, 13%). Almost equal distribution of atheists (n = 15, 7.5%) and Muslims (n = 12, 6%) and one did not indicate an answer (n = 1, 0.5%). Regardless of ethnicity and religion, relatives experience distress (p = 0.58).

The largest share is occupied by the respondents with secondary education (n = 101, 50.5%), followed by relatives with a higher education degree (n = 79, 39.5%) and the least are those with primary education (n = 20, 10%) . It was interesting to find that, unlike the patients, in whom there is a tendency towards a higher level of distress depending on the level of education (p = 0.08), **in their relatives there is no relationship between the level of distress and the level of education** (p = 0.56).

The diagnostics with an oncological disease leads to a change in the lifestyle of both the patient and the people closest to him. The nurse could support the family by increasing their awareness of the importance of maintaining and continuing daily activities. The support from relatives is an important part of fighting the disease and the effectiveness of treatment. The analysis of the data demonstrated that oncological patients were most often accompanied by their spouses (n = 87, 43.5%) or children (n = 85, 42.5%). They are less often accompanied by a brother/sister (n = 9, 4.5%), mother/father (n = 7, 3.5%) or a different distant relative (n = 12, 6%). **No relationship was found between kinship and the level of distress among patients' relatives** (p = 0.57).

The cares for the patient and his relatives are part of nursing activity based on a wide range of professional knowledge and skills and interaction depending on the assessment of needs. These cares are based on the relationships "nurse-patient" and "nurse-patient-relatives of the patient". Schematically, the approach to the assessment of specific care and the interaction of the nurse with the patient's relatives is presented in Figure 11.
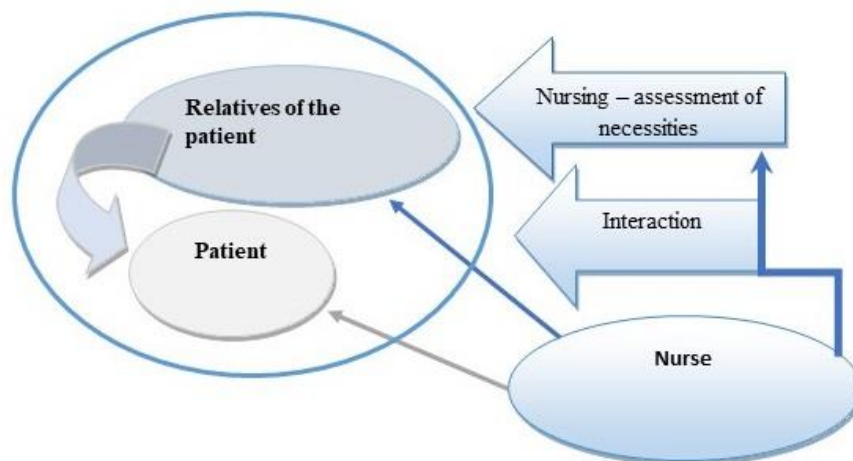

Figure 11. Assessment of the need for specific care and interaction between the nurse and the patient, based on the relationship "nurse-patient-relatives of the patient ".

3.4 Assessment of the relationship between practical, family, emotional, physical issues, spiritual/religious concerns of patients and the level of distress.

The assessment of distress was also analyzed based on issues related to the patient's daily life, including 36 statements divided into five categories: practical issues; family issues; emotional issues; spiritual/religious concerns; physical issues. The questionnaire was offered to patients who completed the Distress Thermometer (at the first stage) and who met additional inclusion and exclusion criteria

related to physical and mental status based on hospital records. Part of the patients dropped out due to proven distress and a visit to a psychologist; withdrawal of consent to participate in the study; evidence of co-morbidity leading to distress - cardiac, neurological, rheumatologic and/or proven psychiatric disease and due to incomplete information in the documentation compromising the analysis. Thus, the self-assessment of issues arising in everyday life was performed only by a part of the patients (n = 225).

3.4.1. Assessment of practical issues

The analysis of various aspects of the life of cancer patients, we asked the patients to indicate whether during the past week, including the day of filling in the questionnaire, they had issues related to the care of their children. The obtained results demonstrated that the majority of oncological patients have no difficulties with childcare (n = 204, 90.7 %). Only 9.3% (n = 21) of patients encountered difficulties. The analysis of the results demonstrated that **there was no relationship between the level of distress and child care** (p = 0.93).

The data demonstrateded that coping with housework has no significant relationship with the measured level of distress (p > 0.05). There were fewer patients (n = 46, 20.4%) (4.2 ± 3.2) who experienced difficulty doing their usual household work than those who answered the question negatively (n = 179, 79.6%) (3.7 ± 3.0). We found that **there was no difference in the level of distress** between the two groups. The Chi square test **demonstrateded no relationship between demographic, clinicopathological characteristics and patients reporting issues with "housework".** The regression analysis **did not demonstrate an association between high levels of distress and difficulty performing housework** (OR 2.2, 95% CI 0.85-5.6, p = 0.1).

It often happens that cancer patients experience serious financial issues related to the costs of their care, even if they have continuous health insurance rights. Analyzing the questions related to insurance and financial issues, almost all patients from the general group noted that they did not have such difficulties (n = 206, 91.6%). Some patients indicated that they encountered **difficulties in dealing with insurance and fin**ances **(n = 19, 8.4%), but this did not affect** the levels of distress in the subjects (p = 0.55).

When analyzing the data, we found that the majority of the surveyed persons did not indicate transportation to the medical facility as a issue (n = 199, 88.4%). Although significantly fewer oncological patients noted transportation as a issue (n = 26, 11.6%), they should not be overlooked. In a deeper analysis of the results, a significantly **higher level of distress was found in the patients who encountered difficulties with transportation**, at the expense of those who answered the question negatively (p = 0.01) (Figure 12). On the abscissa of the Box plot graph, the patients who answered "yes" (1) and "no" (2) are demonstrated, and on the ordinate their level of distress.
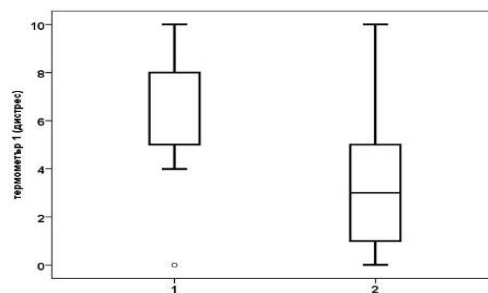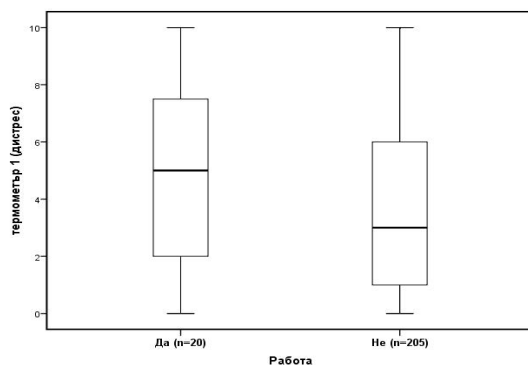

Figure 12. Distribution of patients into two groups according to their response to the question related to "transportation".

The professional commitment could be a source of satisfaction for many people, but a cancer diagnosis can turn it into a hardship. In the distress thermometer, an issue related to work and study activity is affected. The collected data demonstrated that the patients who noted the presence of difficulties in carrying out their professional activities or studies were significantly fewer (n = 20, 9%), compared to those who indicated that they did not encounter issues related to work or school (n = 205, 91%). Mann-Whitney analysis of the results demonstrated **significantly higher distress in patients who reported coping with work as a issue** (4.8 ± 3.4) compared to those who reported no issues with work (3.7 ± 3.0) (p < 0.05) (Figure 13).
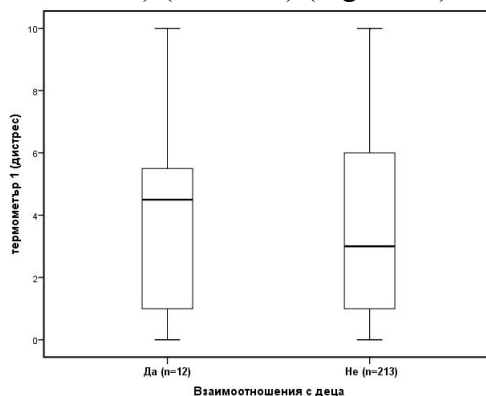

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Работа	Work

Figure 13. Distribution of patients according to the answer to the question related to "work".

3.4.2. Assessment of family issues

The family can be the main source of love and support if open relationships are maintained.

It was interesting to find that there was a correlation between problematic relationships with children and the level of distress (p > 0.05). The analysis of the results demonstrated that the number of patients **who confirmed issues in relationships with children is smaller** (n = 12, 5.3%) (4.0 ± 3.3). They report **a higher level of distress** than those who answered that they have no issues with relationships with children (n = 213, 94.7%) (3.7 ± 3.0) (Figure 14).
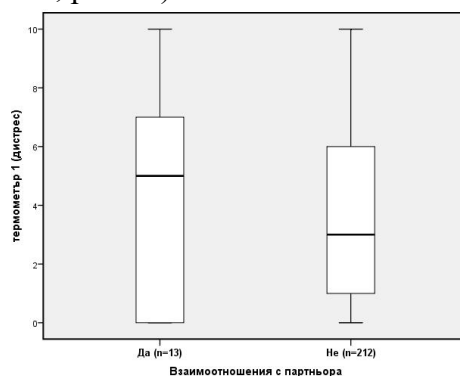

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Взаимоотношения с деца	Relations with children

Figure 14. Distribution of patients according to the answer to the question related to relationships with children".

Further analysis of the data demonstrated no association between demographic, clinic pathological characteristics and patient reported relationship issues with children. **The regression analysis demonstrated no association between high levels of distress and difficulty relating to children** (OR 1.5, 95% CI 0.45-4.7, p = 0.5).

The unpleasant side effects are often caused by chemotherapy treatment. Some oncological patients still manage to cope, thanks not only to themselves, but also to their partner. Thus, the quality of life improves and it is easier to cope with the treatment. The results of the Mann-Whitney analysis demonstrated that **there was a significantly higher level of distress in patients who reported the relationship with their partner as problematic** (n = 13, 5.8%) (4.7 ± 3.9), compared to patients who did not report the presence of such an issue – 94.2% (n = 212) (3.8 ± 3.0) (p > 0.05) (Figure 15).

Analyzing the data, we established a relationship between demographic, clinical and pathological characteristics and the patients' reported relationship issues with the partner. **Regression analysis did not demonstrate an association between high levels of distress and partner relationship difficulty** (OR 1.69, 95% CI 0.53-5.3, p = 0.3).
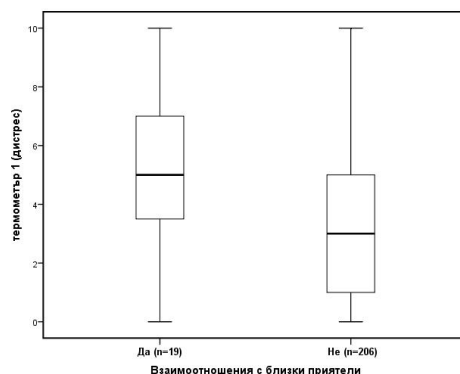

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Взаимоотношения с партньора	Relations with partner

Figure 15. Distribution of patients according to the answer to the question related to "relationship with the partner".

During their treatment, some patients may find that they have difficulty carrying out certain activities that were part of everyday life and interacting with other people without difficulty. Analyzing the questions related to family issues, almost all patients in the overall group had no issues in their relationships with close friends (n = 206, 91.6%). Some of the patients indicated that they encountered difficulties in their relationships with relatives (n = 19, 8.4%).

The results demonstrated that there is a **significantly lower level of distress in patients who stated that they have no issues communicating with their friends (3.6 ± 3.0) in contrast to those who answered that relationships with close friends are problematic** (5.2 ± 3.2) (p = 0.036) (Figure 16). The Fisher exact test demonstrated **a trend for an association between gender and patients reporting relationship issues with close friends** (p = 0.051). The regression analysis demonstrated **an association between high levels of distress and difficulty in relationships with close friends (OR 3.1, 95% CI 1.09-9.05, p = 0.03).**
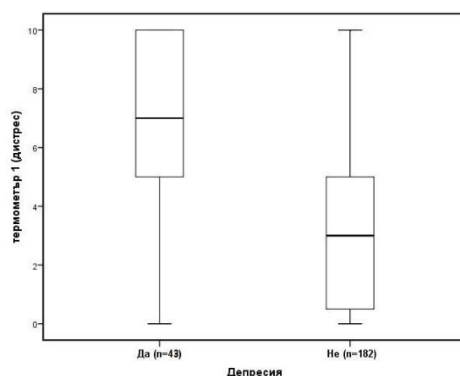
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Взаимоотношения с близки приятели	Relations with close friends

Figure 16. Levels of distress in patients who answered the question related to "relationships with close friends".

3.4.3. Assessment of emotional issues

The patients had to indicate whether they had felt depressed during the past week, including the day of completing the questionnaire. When analyzing the data, we found that the larger group of patients (n = 182, 80.9%) did not feel depressed, followed by the group of cancer patients who answered the question positively (n = 43, 19.1%). The results demonstrated that patients **who felt depressed (6.6±3.2) had a significantly higher level of distress than those who responded with a negative answer (3.2 ± 32.7) (p = 0.003)** (Figure 17). Because depression is a type of emotional disorder, it can prevent a person from going through cancer treatment. It can also make the patients unable to make adequate decisions for themselves. Recognizing and treating depression is an important part of cancer treatment. The data analysis (by Chi square test) demonstrated **an association between performance status (p = 0.03), carcinoma location (p = 0.008), place of residence (p = 0.014) and patients reporting depression**. Regression analysis demonstrated **an association between high levels of distress and patients' reported depression (OR 8.6, 95% CI 3.4-21.5, p < 0.001).**
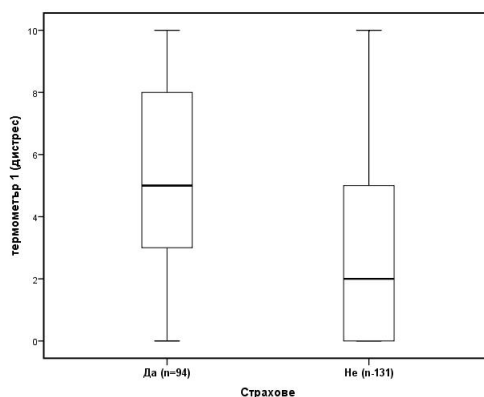

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Депресия	Depression

Figure 17. Levels of distress in patients who answered the question related to "depression".

In the emotional issues group, a question related to patients' fears was also discussed. The reasons for experiencing fear are various. With patients diagnosed with cancer, the subsequent need for chemotherapy and its effects are some of the reasons that affect their lives and can cause anxiety, fear or depression. Often these feelings can be enhanced by something like having to change their daily routine to meet the demands of treatment and the side effects of therapy.

The results of the conducted survey demonstrated that a significant part of the studied group answered that they did not experience any fears during the past week (n = 131, 58.2%), while those who answered positively to the same question were fewer (n = 94, 41.8%). The Mann-Whitney **analysis demonstrated that patients who experience fears (5.4±3.1) have significantly higher distress than those who answer that they have no fears** (2.6 ± 2.4) (p < 0.001) (Figure 18). Chi square test demonstrated an association **between gender (p = 0.001), religion (0.003) and patient reported fears**. The regression analysis **demonstrated an association between high levels of distress and fears** (OR 5.8, 95% CI 3.2-10.5, p < 0.001).

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Страхове	Fears

Figure 18. Distribution of patients into two groups according to their marked answer to the question related to "staches".

The results obtained from the questionnaire demonstrated that fewer patients indicated that they were nervous (n = 105, 46.7%), led by those who answered negatively (n = 120, 53.3%). The Mann-Whitney **analysis indicated a significantly higher distress in the patients who noted in the questionnaire that they were nervous** (4.6 ± 3.3) than those who answered the question negatively (3.0 ± 2.6) (p < 0.001) (Figure 19). The Chi square test demonstrated no association between demographic, clinic and pathological characteristics, and patient reported nervousness. The regression analysis demonstrated **an association between high levels of distress and patient nervousness** (OR 2.61, 95% CI 1.52-4.4, p < 0.001).
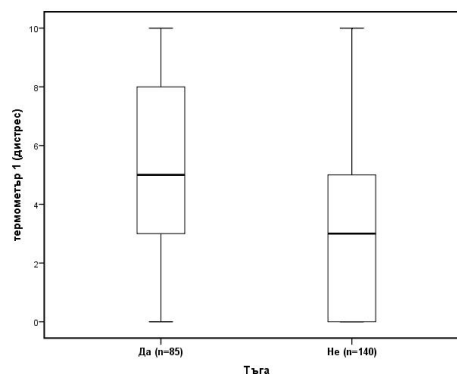
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Нервност	Nervousness

Figure 19. Distribution of patients into two groups according to their response to the question related to "nervousness".

Just as cancer affects physical health, it can cause a wide range of feelings that patients are not used to dealing with. It can also make existing feelings seem more intense. They can change daily, hourly or even minute to minute.

When processing the data from the completed questionnaires, we found that the group of persons who noted the absence of sadness (n = 85, 38%) was smaller, led by those who experienced sadness during the past week (n = 140, 62%). The periods of sadness after a cancer diagnosis are natural, as cancer often involves a series of losses. Adapting to change usually takes time, but when the need for good mental health is met, patients are in a position to actively participate in their treatment.

The results of the Mann-Whitney analysis demonstrated that there was a **significantly higher level of distress in patients who answered that they felt sad** (5.2 ± 3.2) compared to those who answered that they did not feel sad (2.9 ± 2.7) ($p < 0.001$) (Figure 20). The Chi square test **demonstrated an association between carcinoma location (0.013) and patients' reported sadness. Regression analysis demonstrated an association between high levels of distress and patient-reported sadness** (OR3.8, 95% CI 2.1-6.8, $p < 0.001$).

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Тъга	Sadness

Figure 20. Levels of distress in patients who answered a question related to "sadness".

The collected data demonstrated that there was an almost equal distribution of patients who were anxious (n = 118, 52.4%) and those who answered that they did not experience anxious feelings (n = 107, 47.6%). The Mann-Whitney analysis demonstrated that there was a significantly **higher level of distress in patients who felt anxious (5.03 ± 3.1) compared to those who reported no anxiety** (2.5 ± 2.4) (p < 0.001) (Figure 21). The Chi square test demonstrated no association between demographic, clinic pathological characteristics and patient reported relationship issues with the partner. The regression analysis demonstrated **an association between high levels of distress and patient anxiety** (OR 5.1, 95% CI 2.9-9.1, p < 0.001).
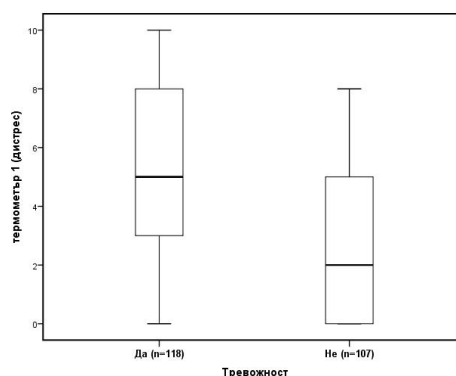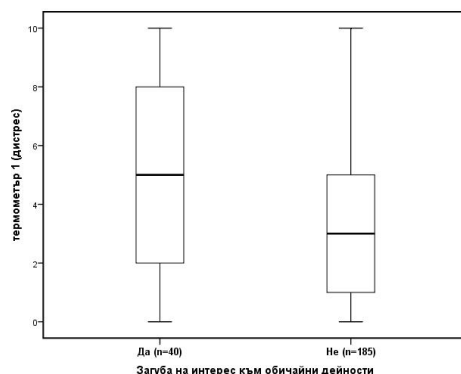

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Тревожност	Anxiety

Figure 21. Distribution of patients into two groups according to their response to the question related to "anxiety".

The anxiety related to cancer can increase the feeling of pain, disrupt sleep, cause nausea and vomiting, which affects the quality of life not only for the patient, but also for his family. If normal anxiety gives way to abnormally high distress, if patients become incapacitated, experience excessive fear or anxiety, this may require additional treatment.

When starting chemotherapy treatment, patients must adjust to changing social roles (workplace, family) and events. In addition to feelings of sadness, nervousness, anxiety, depression and fears, some patients may also experience a loss of interest in some of their routine activities and habits.

In the group of emotional issues, the issue of "loss of interest in usual activities" was also discussed. It was for us to establish to what extent the loss of interest in usual activities affects the surveyed oncological patients. The majority of the studied group responded negatively to the question (n = 185, 82.2%), followed by the patients who answered that they had a loss of interest in their usual activities (n = 40, 17.8%). The Mann-Whitney analysis of the data demonstrated that **the level of distress in patients who reported a loss of interest in their usual activities was significantly higher** (4.9 ± 3.4), compared to those who reported not having this issue (3.5 ± 2.9) (p = 0.008) (Figure 22). The Chi square test **demonstrated an association between carcinoma location (p = 0.01) and patients reporting loss of interest in usual activities**. Regression analysis demonstrated **an association between high levels of distress and loss of interest in usual activities** (OR 2.1, 95% CI 1.07-4.44, p = 0.03).

Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Загуба на интерес към обичайни дейности	Loss of interest in usual activities

Figure 22. Distribution of patients into two groups according to their response to the question "loss of interest in usual activities".

3.4.4. Assessment of spiritual/religious concerns

Increasingly, nursing care is being expanded and directed not only to support the physical condition, but also to the emotional, social and spiritual needs of patients. When analyzing the data, we found that almost all patients (n = 214, 95.1%) did not feel any spiritual or religious concerns, followed by the group of oncological patients who answered the question positively (n = 11, 4.9%). The faith and religious life are important conditions for some people to overcome illness, to reduce anxiety, fear and despair. For patients included in the study, **distress levels were not affected by spiritual/religious concerns** (p = 0.61) (Figure 23). On the abscissa of the Box plot graph, the patients who answered "yes" (1) and "no" (2) are demonstrated, and on the ordinate their level of distress.
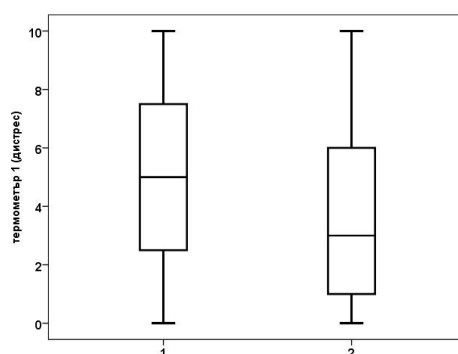

Figure 23. Levels of distress in patients who answered the question related to "spiritual/religious concerns".

3.4.5. Assessment of physical issues

According to data analysis, the majority of patients indicated that they had no issues with their appearance (n = 207, 92%), followed by the group of those who answered the question positively (n = 18, 8%). Further analysis **demonstrated that there was no significant difference in the level of distress among the subjects regardless of their response** (p = 0.75).

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The collected data demonstrated that the majority of the examined persons did not experience any difficulty with bathing and changing (n = 202, 89.8%), on the other hand, the group answered the question positively (n = 23, 10.2%). **The analysis of obtained results indicates that the potential issue with bathing and changing among the patients is not related to their level of distress** (p = 0.85).

In the questionnaire for patients, there is a question related to a frequently observed symptom in oncological patients (especially with breast or lung cancer) - shortness of breath. The abscissa of the Box plot graph demonstrated the patients who answered "yes" (1) or "no" (2), and the ordinate demonstrated their level of distress. The data obtained from our study demonstrated a preponderance of patients who answered that they had no breathing issues (n = 176, 78.2%) over those who indicated difficulty breathing (n = 49, 21.8%). The shortness of breath can be physically and emotionally distressing, especially during the fight against cancer. A deeper analysis of the results proved a **significantly higher level of distress in patients with breathing difficulties**, in contrast to those who answered negatively to this question (p = 0.00) (Figure 24). A well-prepared oncological nurse must recognize the emotional distress that often accompanies a cancer diagnosis and that this can contribute to breathlessness. The addressing of dyspnoea would improve patients' breathing and quality of life.
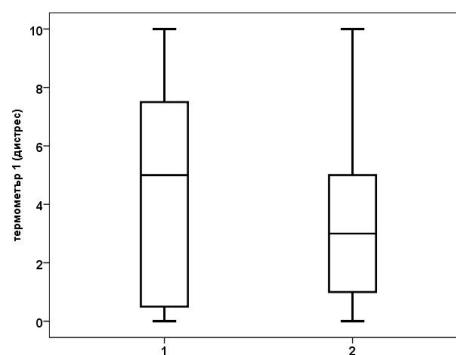

Figure 24. Distribution of patients into two groups according to their response to the question related to " breathing".

The cancer treatment methods can cause issues with the bladder and urination. Therefore, it was important for us to find out whether there were patients among the study group who experienced issues with urination. The collected data demonstrated that a small part of the cancer patients in our study noted a change in urination (n =37, 16.4%), at the expense of those who did not report such an issue (n = 188, 83.6%). **In a more detailed analysis, it was found that there was no significant relationship between the indicated symptom and the level of distress among the patients (p = 0.19)**.

The cancer treatment can cause constipation. The obtained results demonstrated that the group of patients who noted constipation as part of their physical issues is smaller (n = 43, 19.1%) than those who did not have such a issue (n = 182, 80.9%). The **Mann-Whitney analysis demonstrateded that there was no significant difference in distress level between the two groups** (p = 0.92).

Another common side effect of cancer treatment is diarrhoea. According to the data analysis, the majority of patients indicated that they did not have diarrhoea (n=210, 93.3%), followed by the group of those who answered the question positively (n = 15, 6.7%). The deeper analysis demonstrated **that there was no difference in the level of distress in the cancer patients studied, regardless of their**

response (p = 0.38).

Although cancer and its treatment can sometimes cause issues that can make eating difficult, eating healthy foods before, during and after treatment can help the patient feel better, with more energy. When analyzing the data, a preponderance of patients who answered that they had no issues with nutrition (n = 187, 83.1%) was found over those who answered positively to the same question (n = 38, 16.9%). Processing of the results also demonstrateded **that there was no difference in the level of distress among the analyzed individuals, regardless of the answer they indicated to this question (p = 0.81).**

The patients had to determine the presence of a "feeling of fatigue" during the past week. According to data analysis, the patients were almost evenly divided into two groups - those who experienced "feeling of fatigue" (n = 102, 45.3%) and patients who did not experience "feeling of fatigue" (n = 123, 45.7%). The deeper analysis demonstrated that **patients who have experienced fatigue (4.6 ± 3.1) had a significantly higher level of distress compared to those who reported no fatigue** (3.1 ± 2.8) ($p < 0.001$) (Figure 25). **The regression analysis demonstrated that patients with high levels of distress experienced fatigue** (OR 3.17, 95% CI 1.87-5.4, $p < 0.001$).
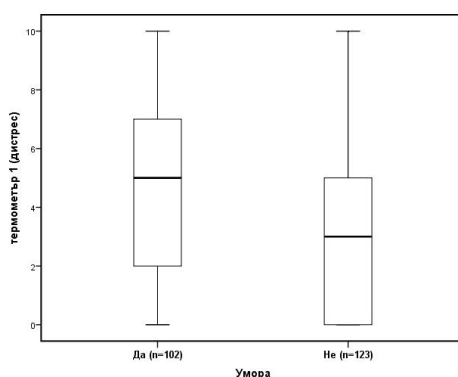
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Умора	Fatigue

Figure 25. Distribution of patients into two groups according to their response to the question related to " fatigue".

Some types of cancer create a bloated feeling in patients, which could turn out to be not just a sensation, but a real issue. It is important that patients share their symptoms with the oncologist or nurse, even if they seem minor. When processing the data, it was found that the majority of the studied group answered that they did not feel bloated (n = 197, 87.6%), at the expense of those who answered positively to the same question (n = 28, 12.4%). After a deeper analysis, it turned out that **the level of distress in the studied cancer patients was not affected by the feeling of swelling or the lack of this feeling** (p = 0.16).

The high temperature and fever in oncological patients is a critical symptom that should also be addressed. According to data analysis, almost all subjects indicated that they did not have high temperature or fever (n = 222, 98.7%), followed by individuals who reported the presence of high temperature/fever (n = 3, 1.3%). The nurse should pay attention to patients who report high fever because when a person's immune system is compromised by cancer and its treatment, it is more difficult to recover from even common illnesses that can be life-threatening. **The analysis**

demonstrated that there was no significant difference in the level of distress among the subjects, regardless of the answer to the question asked (p = 0.35).

To the group of questions related to the presence or absence of physical issues, a possible problem with mobility and walking in cancer patients was also touched upon discussed. The patients who reported physical issues related to the ability to "walk" were fewer (n = 61, 27.1%) than those who noted that they did not experience such difficulties (n = 164, 72.9%). The Mann-Whitney analysis of the results demonstrated that there was **significantly higher distress in patients who answered the question positively (4.8 ± 3.4) compared to those who noted that they had no problem with walking (3.7 ± 3.0) (p < 0.05)** (Figure 26).

The assessment of those who have reduced walking as a result of emotional experience or motor function impairment as a result of the oncological disease is significant and measures and accompanying care should be taken to deal with the problem. The Chi square test demonstrated **a relationship between performance status (p = 0.01), disease stage (p = 0.039), marital status (p = 0.038) and patients reporting issues related to the physical ability to walk. The regression analysis demonstrated an association between high levels of distress and patients' reported physical issues related to the physical ability to walk (OR 2.5, 95% CI 1.27-5.04, p = 0.007).**
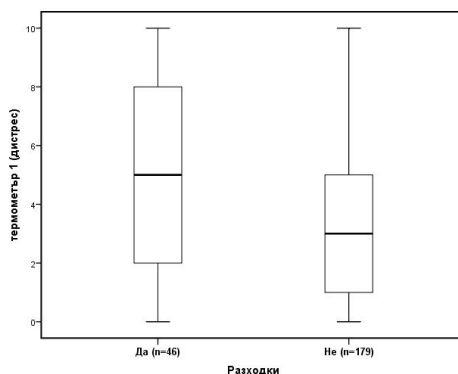
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Разходки	Walk

Figure 26. Distribution of patients into two groups according to their response to the question related to " walks".

There are issues with **nutrition** during or after cancer treatment. During the discussion of nutritional issues, the oncological nurse can refer the patient to a nutritionist who will assess his nutritional needs and advise him on which foods are best for him. The collected data demonstrated that the patients who noted the presence of digestive difficulties were significantly less (n = 27, 12%), compared to those who indicated that they did not encounter issues related to **digestion (n = 198, 88%). The analysis of the results demonstrated significantly higher distress in patients who answered positively to the question** in the questionnaire, compared to those who noted the absence of this issue **(p = 0.01)** (Figure 27). The abscissa of the graph demonstrated the patients who answered "yes" (1) or "no" (2), and the ordinate demonstrated their level of distress.
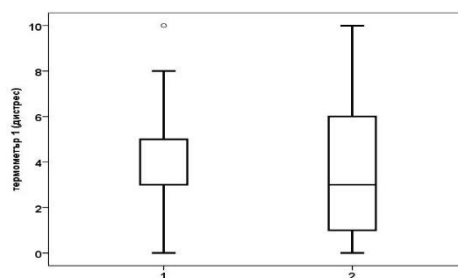
Figure 27. Distribution of patients into two groups according to their response to the question related to "digestion".

The cognitive function components are increasingly used to assess quality of life, and cancer patients often report complaints related to memory difficulties. The patients who reported difficulty with concentration and memory had significantly higher scores on anxiety, depression, and fatigue. The group of patients with impaired memory and concentration with issues is smaller (n = 41, 18.2%), in contrast to those without similar problems (n = 184, 81.8%). The analysis of the results also demonstrateded a **non-significant difference in distress levels** between the two groups (p = 0.29).

The oncological patients should be made aware of some basic hygiene practices during chemotherapy. According to the data analysis, the majority of patients indicated that they did not have mouth pain (n = 217, 96.4%), followed by a much smaller group of those who answered the question positively (n = 8, 3.6%). Further analysis demonstrated that **there was no difference in the subjects' level of distress regardless of their response** (p = 0.12).

Other common symptoms and sometimes serious side effects of chemotherapy are nausea and vomiting (a higher dose of chemotherapy can make the side effects worse). According to the data analysis, the majority of patients indicated that they did not have **nausea** (n = 205, 91.1%), followed by the group of those who answered the question positively (n = 20, 8.9%). The deeper analysis demonstrated that **there was no significant difference in the level of distress among the oncological patients studied**, regardless of the answer they indicated (p = 0.73).

According to data analysis, the group of patients who indicated that they do not have a dry or stuffy nose (n = 208, 92.4%) was more numerous, followed by the group of those who answered the question positively (n = 17, 7.6%). These symptoms are seen in patients with carcinoma of the nose and sinuses. Oncological patients should notify the cancer center as these symptoms may gradually worsen. The deeper analysis of the results demonstrated **that there was no difference in the level of distress in the subjects, regardless of their response (**p = 0.16).

The pain is one of the most common symptoms in cancer patients. The pain may be caused by the carcinoma itself, its treatment, or a combination of factors. The analysis of the collected data demonstrated that the majority of the studied group did not indicate the presence of pain (n = 164, 72.9%), followed by those who indicated pain as part of their accompanying physical issues (n = 61, 27.1%). The presence of pain is a prerequisite for drawing up a pain relief plan and making pain management a part of care. **The assessment of pain demonstrated that there is no difference in the level of distress in the studied cancer patients, regardless of whether they experience pain or not** (p = 0.68)**.**

The sexuality and intimacy in cancer patients can be affected or limited. The reasons are physical, disease-related, or emotional-behavioural. In some cases, sexuality and intimacy are limited due to fatigue, nausea, bowel or bladder issues, pain, skin issues or other changes in appearance, etc. Some sexual issues improve or disappear with time, but some are long-lasting and can accompany the

patient throughout his life. According to data analysis, the majority of patients indicated that they had no **sexual issues** (n = 209, 92.9%), followed by the group of those who answered positively to the same question (n = 16, 7.1%). Further analysis demonstrated that **there was no difference in distress levels between the two groups**, regardless of their response (p = 0.24).

To the group of questions related to the presence or absence of physical issues, a possible issue with dry, itchy skin in cancer patients was also touched upon. The analysis of the collected data demonstrated that the patients who noted the presence of this problem are fewer (n =33, 14.7%) than those who noted that they do not have **dry and itchy skin** (n = 192, 85.3%). The Mann-Whitney analysis demonstrated that there was **no difference in the level of distress among the subjects regardless of their response** (p = 0.34).

The fatigue is one of the most worrisome patient-reported side effects and cancer-related symptoms. The nurses have a central role in dealing with fatigue. The measuring and managing of fatigue is part of health care. It is related to the load on the body from the treatment, insufficient time for sleep and rest. A lower percentage of patients from the studied general group experienced issues with sleep (n = 91, 40.4%), led by those who answered the question negatively (n = 134, 59.6%). The Mann-Whitney analysis demonstrated that there was a tendency for **a higher level of distress in patients who reported having a sleeping problem** (5.4 ± 3.1) against those who did not experience such difficulties (2.6 ± 2.4) **(p < 0.001)** (Figure 28).

The Chi square test demonstrated a relationship between place of residence (p = 0.005), professed religion (p = 0.02) and patients reporting sleeping issues. The regression analysis demonstrated an association between high levels of distress and sleep issues (OR 2.1, 95% CI 1.23-3.6, p = 0.006).
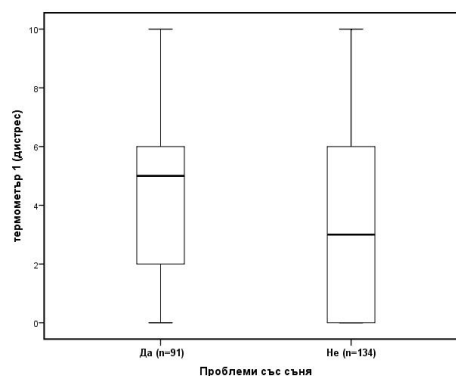
Термометър 1 (Дистрес)	Thermometer 1 (Distress)
Да	Yes
Не	No
Проблеми със съня	Problems with sleeping

Figure 28. Levels of distress in patients who answered a question related to the "sleeping issues".

The last question for the group related to the presence or absence of physical issues is a problem related to **numbness in the hands and/or feet**. According to data analysis, the group that answered the question positively prevailed (n = 61, 27.1%) over the group of patients who noted that they did not have similar physical sensations (n = 164, 72.9%). Several supportive therapies targeting limb numbness and related complications could improve quality of life and help patients avoid treatment delays or interruptions. **The analysis of the survey data demonstrated that there was no difference in the level of distress among the analyzed individuals regardless of their answer to this question** (p = 0.15).

The nurses play an important role in the assessment and management of many of the issues faced by patients undergoing chemotherapy. The patient is carefully monitored during the administration of cytostatics because of the risk and consequences of the administered chemotherapy. The nurse must be familiar with each chemotherapy agent and its potential effects, as well as be aware of the impact of these side effects on the patient's quality of life. It is essential for the nurse to assess the need for support and guidance for both the patient and the family and to assist in the planning and assessment of patient care. The nurse should promote home care, provide instructions about side effects, and help the patient and family identify and manage many of the common side effects.

3.5 Verbal and non-verbal behavioural responses of the patient during hospitalization

Nurses' ability to observe patients' verbal and nonverbal behavioural responses is essential to providing effective health care. For the purposes of the study, some *verbal and non-verbal behavioural responses of the patient during the hospitalization period were observed*. The observed reactions reveal and complement the psycho-emotional status of the patient.

225 oncological patients who completed the Distress Thermometer and met the criteria for participation in the survey evaluating the patient's issues participated in the observation. The observation of patients was carried out in stages - during the admission of patients, during the hospital stay and at the time of discharge.

The observation checklist allows to quickly and easily identify the main emotional reactions of the patient and thus to support the period of adaptation, not only to the hospital environment, but also to the treatment administered.

3.5.1. Assessment of behavioural responses of a patient with oncological disease on admission, during the stay and at discharge from the ward

❖ *Observation on admission to the clinic*

The analysis of the results of the Checklist demonstrated that before admission almost all patients had visible reactions of nervousness (n = 193, 85.8%). The oncological disease is one of the most stressful events in a person's life, which also affects his emotional reactions. The coping with cancer can be a big challenge given the added stress of work, family and financial worries. The nurse should focus on these patients and teach them techniques to reduce their stress level. The chronic stress can weaken the immune system, leading to other health issues that could complicate treatment and require longer hospital stay.

The most frequently observed behavioral reactions of the patient when taking it are nervousness, anger, anxiety. Rarely, the patient's behavior is defined as calm and silent. Data from demonstrated that some patients demonstrated aggression (Figure 29).
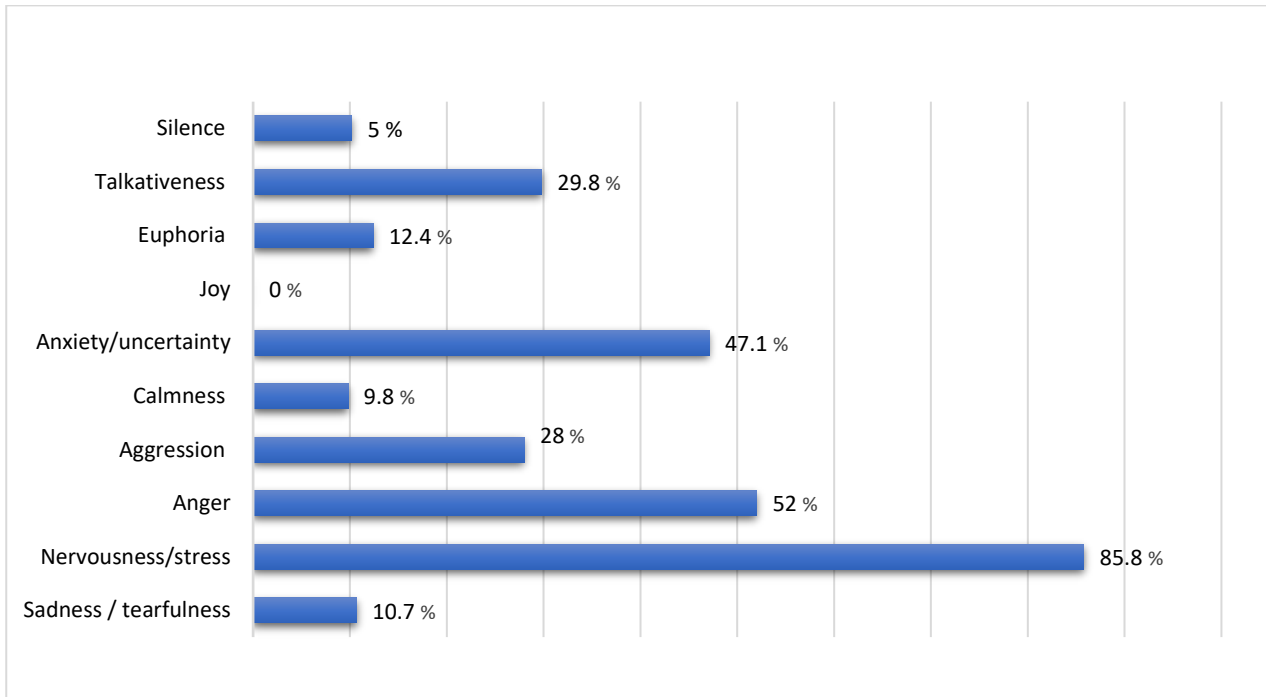
Figure 29. Behavioural reactions of the patient upon admission to the clinic.

The anger is another emotion that is often seen in patients diagnosed with cancer. We found that slightly more than half of those waiting for hospitalization are angry (n = 117, 52%), and the distribution according to gender is even - 50.4% (n = 59) are men and 49.6% (n = 58) are women. Further analysis of data demonstrated no significant relationship between the observed anger expression of the patients and their level of education (p = 0.71). The anger can develop at any time during the patient's illness journey. Prolonged anger and the inability to express it in a moderate way can lead to depression. Although it is common among cancer patients, it is not a normal condition in the lives of people with this diagnosis.

The unknowns surrounding cancer cause feelings of anxiety, anger, sadness and fear. The oncological patients often lose confidence and their behavior demonstrated uncertainty. The analysis of the data obtained from the observation demonstrated that almost half of the cancer patients seemed anxious and uncertain (n = 106, 47.1%). The analysis of the results demonstrated a relationship between gender, place of residence, level of education and observed anxiety/uncertainty (p = 0.00). The reasons for these emotions are the most diverse - delaying already made plans, fear of anti-tumor treatment and side effects, treatment not achieving the desired effect, fear of death. If these feelings deepen, patients should be directed to a conversation with a psychologist or other specialist. The conversations often have a therapeutic effect. The majority of observed patients were talkative (n = 67; 29.8%) at the expense of those who silently waited their turn in front of the reception office in the clinic (n = 23, 10.2%).

The analytical data demonstrated that almost one third of the observed patients exhibited verbal and non-verbal aggression (n = 63, 28%) as towards the other patients. The fear of the symptoms and side effects of tumor treatment, such as sleep disturbances, fatigue, pain and nausea can lead to irritability, anger and unprovoked aggression.

The emotional reaction "joy" was also included in the observation checklist. In some cases, the manifestation of joy is a consequence of not only positive feelings and experiences. It may be due to stress. Our observation found no patients exhibiting this emotional response "joy" (n = 0). A minimal number of patients appeared calm (n = 22, 9.8%).

It was interesting for us to find that the distribution of patients demonstrating "sadness/crying" reactions (n = 24, 10.7%) and those demonstrated euphoria (n = 28, 12.4%) was almost equal. Patients' euphoria may have masked their fear. Experiencing fear is natural when faced with a real threat such as cancer. All of these emotions increase patients' stress levels. A certain degree of stress is a normal part of life, but its prolonged and excessive impact leads to distress, aggravation of a number of diseases and the emergence of serious health issues. It is known that prolonged and excessive exposure to stress leads to disturbances in brain function, digestive tract, increased pulse, increased blood pressure, changes in metabolic processes, hormonal balance and immune function.

Uncertainty assessment was based on patients' responses to the instructions they were given. Some of the patients "asked the same questions to the medical staff" even though they had been explained beforehand.

❖ *Follow-up during hospitalization*

The follow-up of the patients continued during the stay of the patient in the clinic during the chemotherapy treatment. The chosen day is in the middle of the stay to allow the patient to adapt to the hospital environment, the medical team and the therapy being carried out.

The analysis of the observation data during patients' stay in the clinic demonstrated that almost all of them wanted to know more details about the chemotherapy treatment (n = 221, 98.2%), with a preponderance of the female gender (n = 121, 54.7%). The place of residence and the education of the patients did not influence the opinion expressed. A large proportion of patients were "interested in talking about their illness with nurses" (n = 166, 73.8%) and willing to discuss details of their illness with other patients (n = 153, 68%) depending on education (p < 0.05). The analysis of the results demonstrated **an insignificant difference in the indicated characteristics depending on gender** (p = 0.29).

The majority of the observed patients demonstrated a willingness to strictly implement the chemotherapy arrangements and the time of transfusion of cytostatics (n = 158, 70.2), but there were also those who adjusted the system with cytostatics to end faster (n = 57, 25.3%). Further analysis of data demonstrated no relationship between patient education level and willingness to adhere or non-adherence to the chemotherapy arrangements (p = 0.61).

The oncological patients also demonstrated a willingness to communicate and discuss various topics (not related to cancer) with nurses (n = 216, 96%) and with other patients (n = 194, 86.2%). Part of the patients did not want to leave the clinic, they preferred to stay in the hospital room (n = 63, 28%). A minimal part of the monitored persons expressed a desire to leave the hospital and refuse treatment (n = 5, 2.2%). During the stay some of the patients were observed smiling (n = 108, 48%) (Figure 30).
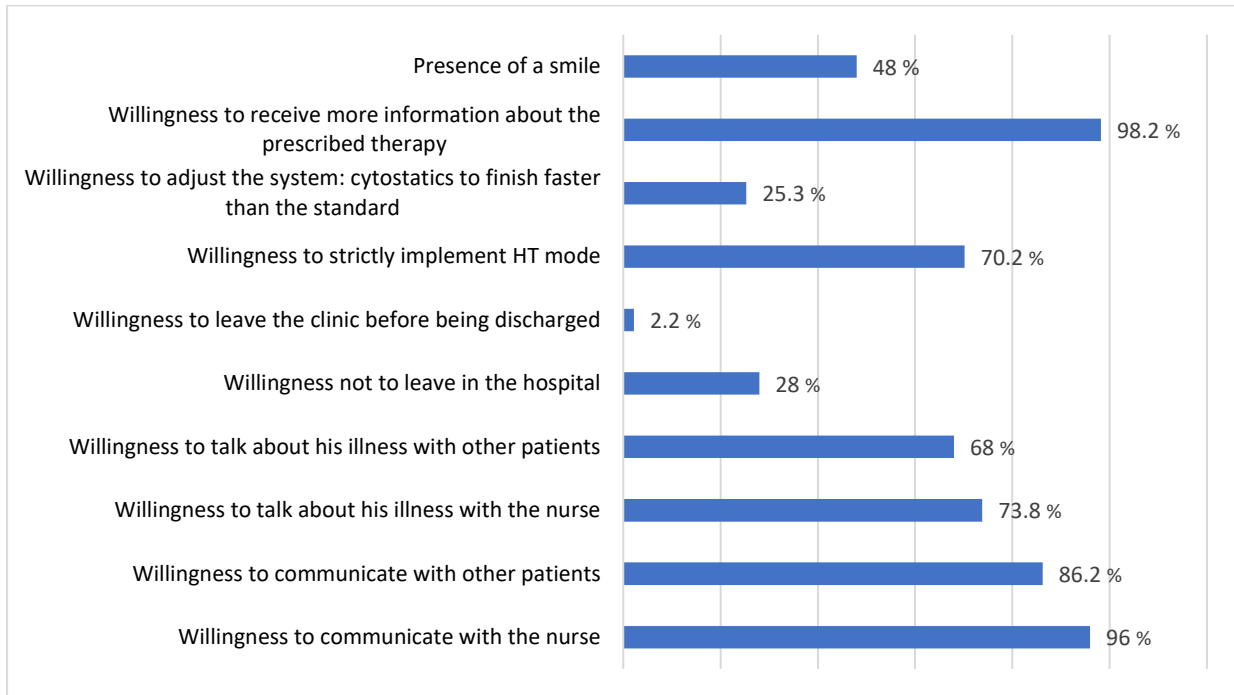
Figure 30. Behavioural reactions of the patient during his stay in the clinic.

❖ *Follow-up during discharge*

On the day of discharge, with the patients was reported a "smile" (n = 209, 92.8%) and expressed gratitude to the team (n = 223, 99.1%) and demonstrated determination to continue their treatment (n = 222, 98.7%). Half of the observed persons expressed sympathy for the nurses' workload (n = 133, 59.1%) and asked about the possibility of contacting them in case of questions related to the oncological disease, treatment and possible side effects (n = 173, 76.8%) and a phone number to contact the clinic if needed (n = 113, 50.2%). In a more detailed analysis, it was found that there is no significant relationship between gender, place of residence, level of education and the specified characteristics (p = 0.21). During de-hospitalization in the hospital system, part of the patients expressed a desire for control examinations, if necessary before the next hospitalization (n = 36, 16%), as well as a willingness to comply with the hygiene and dietary arrangements (n = 165, 73.3%).

A small number of oncological patients expressed their dissatisfaction (n = 11, 4.8%) because the nurses did not respond immediately to the sound alarm from the rooms, but delayed for 2.3 minutes. After it was explained to them that the clinic receives emergency patients and there are seriously ill patients for palliative care and those who have complications after chemotherapy, the patients calmed down, realizing the workload of the sector and thanked for the care provided (Figure 31).
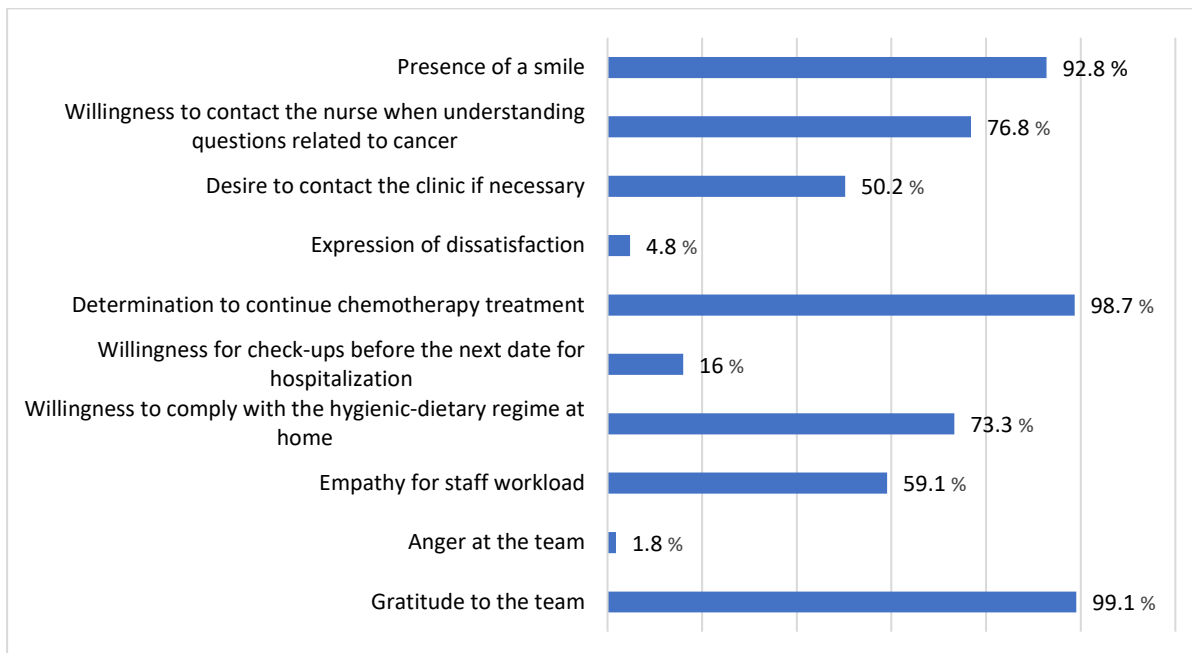
Figure 31. Behavioural reactions of patients on discharge from clinic.

On the day of discharge, some of the observed patients verbally expressed their anger to the team (n = 4, 1.8%): Why was the medication so late", "Why are they waiting for discharge, they had work and duties, could they not have left without are "written out". The duty team reassured these patients by explaining to them the regulations, rules and criminal liability they bear if their wishes are fulfilled. It was interesting to observe the understanding on the part of these patients and the transformation of anger into apology.

When tracking the emotional reactions of patients, it was important for us to establish the extent of the means of expression - "smile". A smile is accepted as a means of communication between people, although it does not have a universal meaning. A smile can characterize various positive and negative emotions, but it is nevertheless a rich means of expression. Our observation demonstrated an increase in the number of patients with a "smile" after they passed through the hospital, as opposed to the day of admission (Figure 32). The multivariate analysis demonstrated that the presence of a smile was independent of sex, marital status, residence, age, stage, PS and location of carcinoma (p = 0.71).
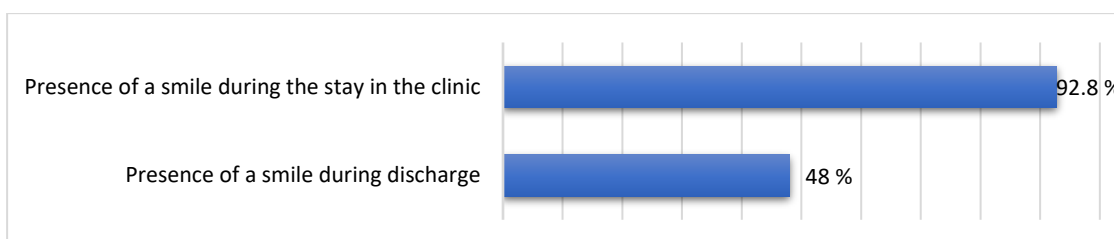

Figure 32. Comparative analysis between the presence of a smile in the patient during the hospital stay and at discharge.

3.5.2. Profile of patient's behavior during hospitalization

After the analysis of the results of the conducted observation, a positive change in the emotions, reactions and behavior of the patients was revealed. The predominance over anger, nervousness, anxiety and aggression was the desire to communicate, for more information and readiness to carry out the chemotherapy arrangements.

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The results of the obtained data demonstrated that, in contrast to the reception at discharge, the patients had different emotional reactions, such as with a "smile", determined to continue their treatment and grateful to the team caring for them (Figure 33).
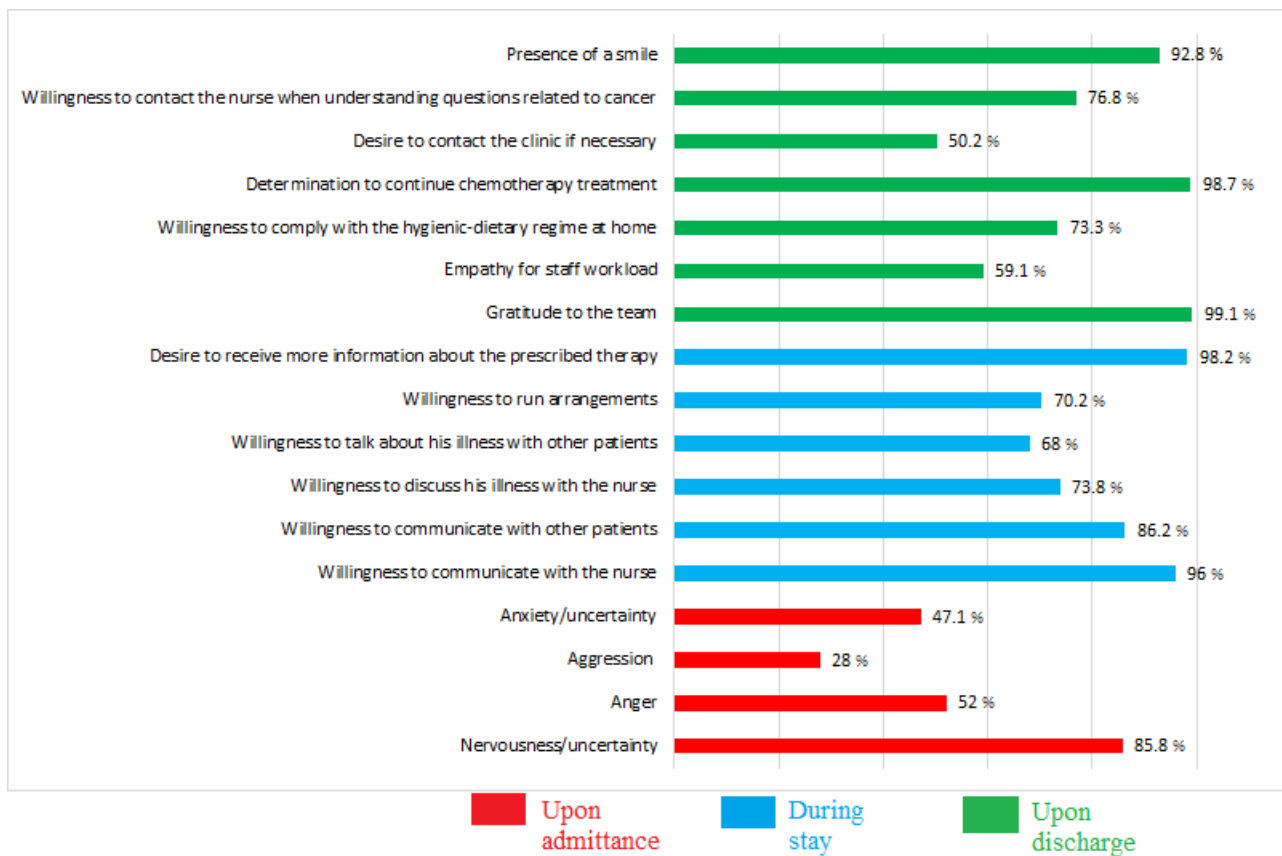

Figure 33. Most common patient behavioural characteristics during admission, clinic stay, and discharge.

Based on the data obtained from the observation of the patient's behavioural reactions during the hospitalization period, we can describe **a patient's profile**:

Observation upon admission to the clinic: The patients have visible reactions of nervousness, anger, anxiety. Rarely, the patient's behavior is described as calm and silent. Some patients demonstrated aggression.

Observation during hospitalization: The patients demonstrated a desire to know more details about chemotherapy treatment, an interest in talking about their illness with nurses, a desire to discuss details about their illness with other patients. The oncological patients also demonstrated a desire to communicate and discuss various topics (not related to cancer) with nurses and other patients. During the stay, a smile is observed in some of the patients.

Observation on discharge: On the day of discharge from the hospital, a smile and a desire to continue the treatment are observed in the patients. The patients expressed sympathy for the workload of the nurses and a desire to contact them in case of questions related to the oncological disease, treatment and possible adverse side effects. The patients are willing to have follow-up examinations if necessary before the next hospitalization, as well as willingness to comply with the hygienic dietary arrangements.

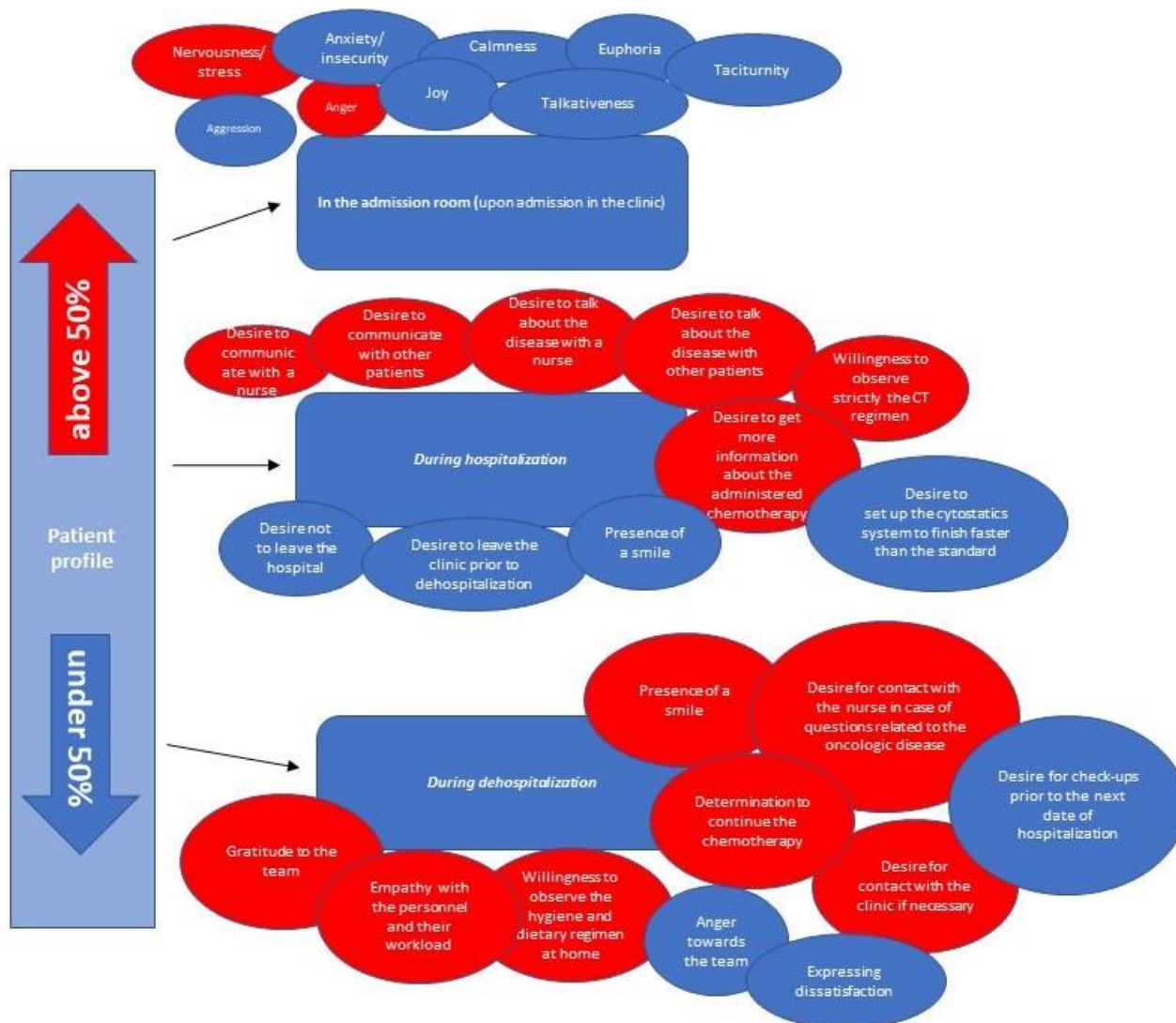Schematically, the patient profile is presented on Figure 34.

Figure 34. Profile of patient's behavior during hospitalization.

The information that the nurse collects during communication and observation is necessary both for her activity and for the activity of all participants in the process of adaptation of patients to the oncological diagnosis and everything related to the disease. The nurse must responsibly and critically consider the collected information in order to be able to direct it to increase patient satisfaction and the quality of health care.

3.6 Analysis of the results of interviews with nurses about the need to apply the distress thermometer and the possibilities for optimizing nursing care for patients with distress.

A face-to-face interview was conducted with the nurses to obtain information on the extent to which the results of the patient behavioural survey and completed Distress thermometer help them understand and analyze patient distress, assess the need for supportive care, and the need for more further referral to a specialist.

23 individual interviews were conducted to study the opinion of the nurses working in the clinic. The interview included topic areas related to the clinical work of health care professionals, their influence on patients' behavioural responses, and the applicability of the self-reported patient distress instruments and the Self-Rating Issues Questionnaire.

The nurses' opinion was unanimous that the patients had increased levels of stress and distress (N-22), and only one expressed her uncertainty in the assessment of distress in oncological patients. The nurses are adamant that distress affects the behavior of oncological patients (N-22) and listed some of the emotions they observed such as *sadness, nervousness, anger, anxiety, uncertainty, talkativeness, silence.*

The nurse-patient relationship is of utmost importance. The medical care must include professional competence based on personal care for the person, expressed in terms of attention, sympathy, emotional warmth, respect and support. The majority of health care professionals felt that the distress thermometer and the questionnaire reporting patient issues were good tools and would be useful in practice (N-21). Only two of the nurses who have more than 25 years of experience (at pre-retirement age) expressed the opinion that they *do not need additional tools to screen at-risk patients and that they rely on the experience gained over the years* (N-2).

The answers are understandable and anticipated, since nurses are the ones who most often come into contact with the patient, and regardless of whether they will rely on experience or a distress assessment toolkit, they provide the necessary care and support to cancer patients. The oncological nurses are at the heart of addressing the growing global burden of cancer. Their contribution is unique because of the scale and variety of roles and responsibilities in cancer care.

The nurses demonstrated unanimity on the issue of the practical application of the distress thermometer and the proposed questionnaire including various issues affecting patients with oncological disease. Their opinion is *that they improve their clinical work with patients as a result of understanding their individual needs* (N-22). The nurses' answers proved that no technological means can take over their role, and that through their daily communication, observation and interaction they strive to understand the behaviour, experiences and needs of oncological patients.

The oncological nurses' responses demonstrated that understanding the specific needs of cancer patients facilitates communication with them. The larger group of nurses answered that the proposed toolkit helps them to communicate *more effectively with patients* (N-17), followed by those *who cannot judge* (N-6). The good communication between the medical staff and the patient is based not only on psychological rules for interaction between people, but also on behavioural patterns specific to healthcare practice. The communication is related to the process of establishing relationships of one person with another. The patient's trust in the nurse occurs when she communicates effectively. It is an important component of care supporting the patient to lead an independent life and exist as safely as possible.

One of the questions during the interview was related to whether the information obtained from the Distress Thermometer and the issue categories would help to improve treatment outcomes. The majority of nurses could not judge (N-12), followed by the group who answered yes, it would help (N-7) and those who answered that they would not help (N-4). The difficulty associated with the evaluation of treatment results is understandable, since the focus of nurses' work falls on the care of the patient himself (before, during and immediately after the infusion of cytostatics) and not on the evaluation of the course of chemotherapy. Suspicion and proof of progression/relapse or stable disease is within the competence of treating oncologists with in-depth knowledge of the specialty.

The opinion from the conducted interview with the nurses clearly demonstrated that they would use and *recommend the introduction of the distress thermometer and the survey card describing the patients' issues in the routine practice.* Almost all oncological nurses answered positively (N-20), followed by those who answered that they could not judge (N-2) and only one was of the opinion that *she would not recommend the use of the proposed assessment toolkit* (N-1). The creation of a strong nurse-patient relationship requires sensitivity to the patient's needs and a well-developed and thought-

out plan to meet those needs. This has a positive impact on the results and creates good opportunities for support, education, awareness and acceptance of the diagnosis, treatment and consequences not only of cancer patients, but also of their relatives, as the nurse is the best prepared person for assessment and response the needs of patients.

The nurses are expected to be involved in assessing the physical and emotional state of the patient. The assessing and understanding of patient's needs is of major importance for alleviating anxiety and formulating a nursing care plan that will positively impact treatment outcomes. As the health care delivery system changes and new scientific discoveries are integrated into cancer care, the role of the oncological nurse continues to evolve. The participation of nurses in projects that analyze distress increases their knowledge, helps to better communicate and understand the needs of patients, which leads to the improvement of their clinical work.

IV. PRACTICAL APPROACHES TO OPTIMIZE THE PROFESSIONAL ACTIVITY OF ONCOLOGICAL NURSES WITH PATIENTS WITH DISTRESS

The analysis of the literary sources and the results of the study enable us to develop and propose practical approaches to optimize the health care provided by oncology nurses to patients.

4.1.   Distress assessment cycle in oncological patients

Theoretical justification

Distress assessment cycle for patients with oncological diseases facilitates the professional activity of the nurse, detects, registers and supports patients with distress.

The identification of distressed patients is facilitated by pre-determining high-risk groups to be prioritized for screening, for which nurses must be familiar with the "patient's pathway" and the application of the Distress Thermometer in routine practice.

The Distress assessment cycle in oncological patients based on professional nursing behavior is also based on the "patient's pathway", demonstrating the need for repeatability of professional activity, depending on the presence or absence of distress, with the following elements:

➢ **The Filling in the Distress Thermometer is carried out already when the patient is admitted for the first cycle of chemotherapy treatment.** The oncological nurse introduces the oncological patient to the concept of "distress".

➢ **The determining the level of distress** will assist oncology nurses in developing a nursing care plan. The main purpose of Distress Thermometer is to detect clinically significant distress in order to take timely action to combat it and prompt further assessment.

➢ **The nursing care** should be planned to promote patient's comfort, provide patients and their families with information and assistance with behavioural and physical interventions, prevent and alleviate side effects of pharmacologic therapies, promote adherence to therapy, and the need for follow-up of treatment effects.

The nurse should explain the importance of interventions and provide time for questions to the patient and the family. If desired by patients, their education may include the names of chemotherapy drugs, dosing arrangements, side effects, interventions to relieve nausea and vomiting such as antiemetics, interventions to relieve constipation, and others.

The nurse should monitor the effectiveness of the administered treatment and the side effects of the pharmacological interventions, respiratory status, bowel function, and mental and cognitive functioning.

The Nurses provide direct patient care. They turn out to be consultants, patient trainers, researchers and leaders of oncological patients during the difficult path in the fight against the disease. They work closely with physicians and other members of the healthcare team to ensure the highest quality of patient care.

The distress assessment and referral for psychosocial care is a recommended approach to distress management. **The clinical team needs to provide support to distressed patients and referral to additional psychosocial care.**

Schematically, the Distress Assessment Cycle for patients with oncological diseases is presented in Figure 35.
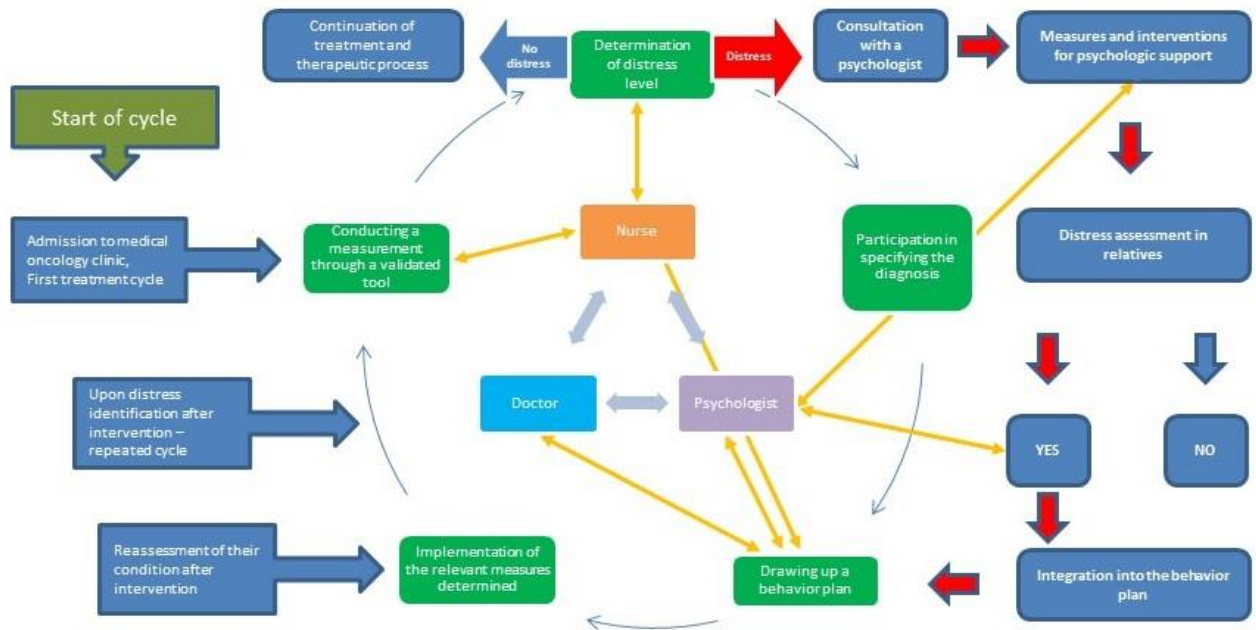
Figure 35. Distress assessment cycle in oncological patients.

We propose this model because screening for distress and referral for psychosocial care is currently the recommended approach to managing distress. The clinical team should provide support to patients with mild distress and referral to psychosocial care for patients with moderate or severe distress. This approach would lead to improved measures in the treatment process. The implementation of distress screening in cancer centers in the country is suboptimal and needs to be improved to obtain better results.

Further research is needed to explore how distress assessment screening can be part of the nursing record and integrated into the daily work of nurses. In order to provide individualized and highly professional care, nurses in oncology centers must carefully and correctly interpret the needs of cancer patients, and care planning must be carried out in collaboration with patients.

4.2. Stages for evaluation of distressed patients

The successful implementation of distress screening programs depends on the training of staff, who must possess both knowledge of psychosocial distress and skills in using the Distress Thermometer. The necessary training for clinical staff should include sessions to introduce screening to patients and their families, learning distress assessment procedures, notifying other clinicians due to a clinically significant distress score at the appropriate time, and monitoring follow-up of screening recommendations and criteria for distress. To maintain a standardized, comprehensive approach to screening for psychosocial distress, clinical staff should receive initial and ongoing training. The training of the personnel who will be involved in the distress screening is of utmost importance.

In order to integrate the Distress Thermometer and use it in routine practice, it needs support and understanding from the teams working in oncological hospitals. We developed the **Stages for Assessment of Distressed Patient**s (Figure 36) to facilitate oncology nurses in implementing the screening program as follows:
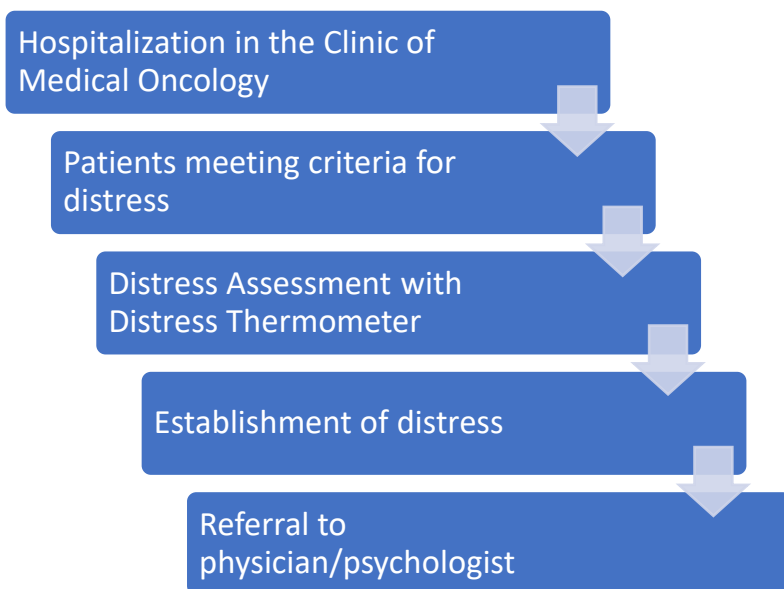
Figure 36. Stages for evaluation of distressed patients.

The nurse together with the attending oncologist could support patients and respond to their needs by providing support and information about other sources of emotional support and coping with distress (e.g. patient discussions and support groups). However, providing emotional support is not enough for all patients. Some of them need professional mental health care. The early detection of distress supports the psychosocial adaptation of patients and their relatives. Because the distress has a negative impact on treatment, quality of life, and survival, early screening and timely management are prerequisites for improved outcomes.

4.3. Professional nursing behavior towards a patient with an oncological disease.

Based on the stages of distress assessment, we propose a schematic model of **professional nursing behavior towards oncological patient.**

Theoretical justification

Based on the results obtained from the Distress Thermometer, the questionnaire for assessing patient's issues and observation, we developed a schematic model for **"Professional nursing behavior in a patient with oncological disease",** illustrated on Figure 37.

All patients with a histologically proven diagnosis **are reported to the General Hospital Committee** for discussion and decision-making on a therapeutic plan and referral to an oncology clinic. After the committee issues a decision, the patient is referred to an oncologist to present his case to the **Oncological Chemotherapy Committee** and to schedule a date for admission to the clinic.

On the day of hospitalization, the nurse assesses patient's distress levels using the Distress Thermometer and the list of possible issues and, based on her observation, assesses the patient's needs.

Depending on the emotions and physical sensations experienced, the nurse takes action by discussing the condition of the oncological patient with his attending physician.

The oncological team must decide whether **the patient needs further treatment, a consultation with a psychologist, a consultation with a psychiatrist, or referral to support groups.** After discussion by the multidisciplinary team, **the nurse develops her plan of care.**

After carrying out the planned interventions, **the oncological nurse evaluates the achieved results.**

The desired final result of the care provided and the interventions performed is that the patient's needs are met.
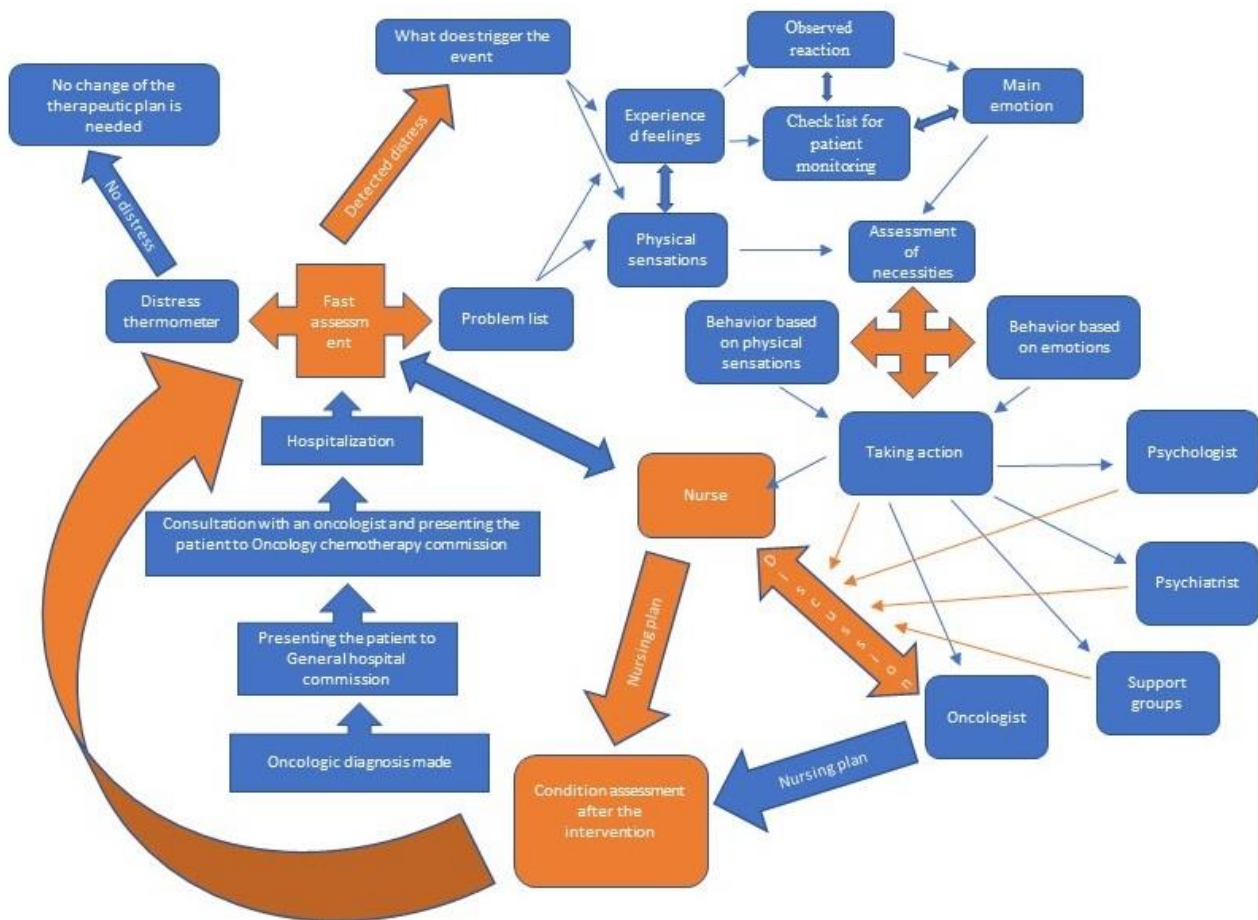

Figure 37. Professional nursing behaviour towards a patient with oncological disease.

The schematic model for „**Professional nursing behaviour towards patients with oncological disease**" is exemplary, and may be updated depending on the specifics of the medical establishment.

Thus the oncological nurses will participate in the prevention and advanced detection of the risk groups of patients for the development of distress, but will also carry out an assessment of the physical and emotional issues of their patients, which will assist them in providing care according to the needs of the specific patient.

The proposed practical approaches to the assessment of distress in oncological patients and the professional behavior of oncological nurses describe a specific part of nursing care applicable in practice and with the possibility of rapid implementation.

V. CONCLUSIONS, RECOMMENDATIONS AND CONTRIBUTIONS

- ### *Conclusions*
Based on the conducted scientific research, we can draw the following conclusions:

1. **Almost half of patients (49.3%) have a high level of distress.** The level of distress was influenced by performance status (p-0.006), localization of carcinoma (p=0.001) and level of education (p=0.017) of the patients. Distress level persists in most patients even after completion of chemotherapy (59.1%).

2. **Factors such as age, gender, education, place of residence, marital status, PS are determinants of distress levels in cancer patients**. A higher level of distress was noted in patients aged under 65 years (p=0.08); in female patients (p=0.014); in patients with higher education (p=0.08,- and in patients with PS (p=0.029); An insignificant difference was found in the level of distress in patients living in Varna (3.84±3.0) and living in other settlements (3.76±3.2) (p> 0.05).Higher levels of distress were found in non-family patients than in family patients. (OR 5.3, 95% CI, 1.2-21.3; p=0.02).

3. **Patients participating in the study showed different levels of distress according to their religious (p=0.07) and ethnic (p=0.07) affiliation**. Patients who cannot accurately define their religion have a much lower level of distress (2.7±.6), compared to the level of distress among Christians (4.1±3.1), Muslims (4.7±3.b) and atheists (3.05±2.8). Higher levels of distress were found in patients with oncological diseases from the Turkish ethnic group (5.2±3.4) compared to the respondents from the Bulgarian ethnic group (3.7±3.0) (p=0.08).

4. **High levels of distress are determined by the type of disease, depending on the carcinoma localization** - lung carcinoma, colorectal carcinoma, breast carcinoma and performance status.

   - In patients with lung carcinoma, distress levels were higher (4.9±3.1), compared to those diagnosed with colorectal carcinoma (3.02±2.7) (p=0.002).

   Distress levels were approximately equal between patients with lung carcinoma (4.9±3.1) and those with breast carcinoma (4.3±3.2). In patients with breast carcinoma, levels of distress were higher (4.3±3.2) compared to patients with colorectal carcinoma (3.02±2.7) (p=0.018).

   - The good performance status reduced the risk of moderate or severe distress by 70% (OR 0.30, 95% CI 0.14-0.63, p=0.001). Lung carcinoma and breast carcinoma remain independent predictors of high levels of patient distress OR 6.7, 95% CI 2.5-18.3, p—0.001 и OR 3.4, 95% CI 1.16-10.4, p=0.02.

5. **Most of the patient's relatives (58%) have a high level of distress. Especially significant for those living outside of Varna (p=0.03).**

6. **Higher distress was found in patients with practical, family, emotional and physical problems** as follows regarding: "transportation" (4.8±3.4) (p=0.01) and "work/school" (3.7±3.0) (p< 0.05); "relationships with children" (4.0±3.3) (p<0.05), "relationships with partner" (4.7±3.9) (p>0.05) and "relationships with close friends" (5.2±3.2) (p=0.036); "depression" (6.6±3.2) (p=0.003), "fears" (5.4±3.1), (p<0.001), "nervousness" (4.6±3.3) (p<0.001), "sadness" (5.2± 3.2) (p<0.001), "anxiety" (5.03±3.1) (p<0.001) and "loss of interest in usual activities" (4.9±3.4)(p=0.008); "breathing" (p=0.00)p "fatigue" (4.6±3.1) (p<0.001), "walking" (4.8±3.4) (p<0.05), "digestion" (p=0.01) and

"sleeping problems " (5.4±3.1)(p<0.001).

7. **The behavioural - verbal and non-verbal reactions of the patients are different in the different stages of the stay in the hospital**. On admission, patients mostly show nervousness (85.8%), anger (52%). During the stay in the hospital, they show a desire to communicate with the nurse (96%) and other patients (86.2%), willingness to have a disease-related conversation with nurses (73.8%) and other patients (68%), willingness to strictly follow chemotherapy regimen (70.2%), willingness to receive of more information about the prescribed therapy (98.2%), and during discharge - gratitude to the team (99.1%), empathy for the workload of the staff (59.1%), readiness to comply with the hygienic dietary regimen at home (73.3%), determination to continue chemotherapy treatment (98.7%), desire to "contact" the clinic if necessary (50.2%) and the nurse when questions arise related to the oncological disease (76.8%). A smile is observed (98.2%).

8. **Almost all nurses assess the impact of distress on patient behavior,** consider the need to apply the distress thermometer and assess patient problems in their daily work, as an opportunity to optimize nursing care and improve communication.

• *Recommendations*

To medical universities

In the process of training nurses to expand the knowledge and skills shaping their professional behavior by using the Distress Thermometer in oncological patients.

To the medical facilities

To integrate the Distress Thermometer into clinical practice as part of the oncology nurse's professional activity to support patients in distress.

To stimulate the multidisciplinary approach in the assessment and prevention of distress in patients with oncological disease, with a view to reducing its levels.

• **Contributions**

Contributions of theoretical-cognitive importance

1. The international experience in the assessment of distress in oncological patients was studied.

2. A targeted and in-depth study of the levels of distress in patients with oncological diseases was carried out using the Distress Thermometer.

3. For the first time in Bulgaria, the relationship between the levels of distress in oncological patients and the evaluation of their daily life and communication with their loved ones is analysed by using the Distress Thermometer.

4. The role of the nurse in the assessment of distress in cancer patients and the possibilities of applying the Distress Thermometer and assessing their problems are outlined.

5. For the first time in Bulgaria, the levels of distress in relatives of cancer patients are assessed.

Contributions of a practical and applied nature

1. Practical guidelines for optimizing nursing care for patients with distress and the possibilities for their integration into clinical practice are proposed.

2. Stages have been developed for the assessment of patients with distress combined with a schematic model for "Professional Nursing Behavior in the Oncology Patient" and the "Distress Assessment Cycle in Oncology Patients" based on professional nursing behavior and the "patient's pathway"".

3. A Patient's Behavior Profile during Hospitalization was developed.

4. The regularities established are the basis for future studies tracking the investigated processes in relation to distress in cancer patients.

VI. CONCLUSION

The distress is a significant health problem and still remains unknown and unrecognized in many oncological centers. Our hypothesis that the level of distress varies depending on a number of factors, such as age, gender, education, place of residence, marital status, PS, religion and ethnicity of the patients, was confirmed.

The distress also affects the family members of the oncological patient. Assessment and early prevention of distress is important not only for patients but also for their relatives.

The clarifying of the role of the oncological nurse in the assessment of distress in patients with oncological diseases, revealing the difficulties and issues in nursing practice, demonstrated the possibilities to improve the condition of the patient with an oncological disease and increase his quality of life.

The behavioural and verbal and non-verbal reactions of patients are different at different stages of the hospital stay. The useful information about the psycho-emotional status of the patient was revealed and the role of the modern oncological nurse in terms of effective health care was outlined.

The caring for the patient and his relatives is part of nursing activity based on a wide range of professional knowledge, skills and interaction depending on the assessment of needs.

The communications with nurses about the illness and the hospital stay could have a therapeutic effect or reduce tension, negative emotions and fear caused by ignorance or uncertainty about the upcoming treatment.

The need and possibility of applying the distress thermometer by nurses, as well as the assessment of patient issues are a prerequisite for optimizing nursing care and improving communication.

The nurse could help patients to cope with their emotions and adapt to the hospital environment through their ability to communicate and interact with them, as a significant part of nursing care is based on communication with the patient.

The participation of nurses in identifying and analyzing patient distress increases their knowledge, helps to better communicate and understand the needs of patients, which leads to the improvement of their clinical work.

The successful implementation of distress screening programs depends not only on training the medical team with knowledge of psychosocial distress, but also skills in using the Distress Thermometer.

The identification of patients with distress is facilitated by pre-determining the high-risk groups to be prioritized in screening, for this it is necessary for nurses to know the "patient's pathway" and to apply the Distress Thermometer in their routine practice. The proposed practical approaches to the assessment of distress in cancer patients and professional behavior of oncology nurses describe a specific part of nursing care applicable in practice and with the possibility of rapid implementation.

The assessment of distress in oncological patients is a prerequisite for optimizing nursing care, which would improve their quality of life.

VII. SCIENTIFIC PUBLICATIONS AND PARTICIPATIONS IN CONNECTION WITH THE DISSERTATION

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3. Иванова М., Ст. Пенева, Н. Цонев, Идентифициране на дистрес при онкологично болни. Сборник резюмета, Пета научна конференция "Предизвикателства пред общественото здравеопазване в условията на здравна криза", Българско Научно Дружество по Обществено Здраве, 2022, стр. 223-229

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