Medical University Prof. Dr. Paraskev Stoyanov“ – Varna

Faculty of Public health, Department of Physiotherapy, rehabilitation and thalassotherapy

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QUALITY OF LIFE AND REHABILITATION IN PATIENTS WIT TOTAL HIP REPLACEMENT

SUMMARY

Of dissertation for conferment of scientific and educational degree of „Doctor“ of scientific subject „Physiotherapy, rehabilitation and kurortology“

Scientific Supervisor: Assoc. prof. Dr. Evgenia Petrova Dimova, MD, PhD

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The dissertation contains 126 pages, includes 24 tables. The bibliography includes 134 titles, of which 53 are in Bulgarian and 81 in English.

CONTENTS

INTRODUCTION

Hip arthroplasty (THR) is one of the greatest achievements in modern orthopedics and is developing at a rapid pace, in response to increasing life expectancy and the need for complex health care with a view not only to restoring joint congruence, the function of the hip joint, but also the overall functioning of the individual in society. The possibilities of surgery are revealed both in conventional (cemented and cementless endoprosthetics) and in custom prosthetics, with the respective advantages and disadvantages, which determines the individual approach in the choice of method and subsequent rehabilitation program, in fulfillment of the main goal - return to the usual way of life and functioning in everyday life and the social environment. The possibilities of rehabilitation are placed in the framework of financing from the state budget, with insufficient awareness of the patient community about the benefits of early rehabilitation after THR, conducted in inpatient conditions. These circumstances, prolonging the patient's recovery path, are serious barriers to the effectiveness of rehabilitation.

The complex approach to chronic disease determines the modern bio-psycho-social view of man in his entirety. Psycho-social competence is necessary not only for the general practitioner to take into account the mental, interpersonal and social factors that can determine the formation of the disease, but also for the doctor - a specialist in Physical medicine and rehabilitation (PRM), to unite all these conditions that determine the course of treatment and recovery. Today, PRM is called quality of life medicine, not only because it is patient-

oriented, but also because of the focus of its activities - restoration of both a specific function and the functioning of the individual as a whole. The change in the quality of life is the main criterion for evaluating the effectiveness of medical care, through the patient's subjective self-assessment of all areas of his health and social well-being. In this regard, THR is not just an operative intervention, with the aim of controlling symptoms and improving the mechanics and function of the joint. Complex and systematic rehabilitative measures to return hip arthroplasty patients (THRPs) to social independence require much more rehabilitation resources related to the individual, with his physical, mental health, environment and relationships. The individualization of the rehabilitation program contributes not only to the complete recovery of the patient after THR, but also helps to make it happen in the shortest possible time, the most important sign of which is the change in the general quality of life. Self-report tools for Quality of life (QOL) assessment are little known to clinicians and do not appear in generally accepted models for monitoring the results of the implemented specific rehabilitation program. The effectiveness of rehabilitation is usually measured and reported using functional tests, directly reflecting the impact of certain methods and means on the function of the endoprosthetic joint. PRM is faced with the challenge of catching up with kinesiotherapy practices, especially in the presence of a trend towards accelerated rehabilitation - on the one hand by clarifying the controversies about the appropriate physical factors in the early postoperative period, and on the other hand - the need to synchronize perspectives on phase issues of rehabilitation adopted by the kinesiotherapy community. In the performance of this difficult task, the professional qualities and

psychosocial competences of the PRM doctor are intertwined - the ability to have a conversation with the patient, to determine the therapeutic goal based on the bio-psycho-social dimension of the disease, to conclude a therapeutic alliance with the patient and to coordinate multidisciplinary teams.

The development of the current dissertation reflects the holistic approach to the problem of rehabilitation after THR through the eyes of the PRM specialist, whose role is to lead the rehabilitation team, applying the methods of physical therapy together with methods and means of rehabilitation and tracking the results both in the individual stages of recovery, as well as in its entirety. In search of answers to current questions and controversies, the necessity of synchronizing the world and Bulgarian experience in rehabilitation after THR and confirming the self-evaluation element in the overall aspect of its effectiveness is revealed.

I. RESEARCH METHODOLOGY.

1. Purpose and tasks of the study.

The aim of the present study is to investigate the change in the quality of life in hip arthroplasty patients who underwent an individual rehabilitation program in the conditions of a National Health Insurance - funded 7 day stay on clinical pathway 265 and to study their social adaptation.

The fulfillment of the set goal provokes the solution of the following tasks:

1. To study and analyze the socio-demographic characteristics of the respondents.

2. To investigate the reliability of the WHOQOL-BREF in total hip replacement patients. (THRP)
3. To examine the general quality of life with THRP, before and after the implementation of the individual rehabilitation program in hospital conditions.
4. To evaluate the dynamics in the quality of life, before and after the rehabilitation, examined by different domains.
5. To analyze the rehabilitation approach to patients who underwent hospital rehabilitation after THR.
6. To propose a model of the rehabilitation approach and behavior after THR depending on the type of endoprosthesis.

2. Hypotheses.

Hypothesis 1: It is assumed that the WHOQol-BREF generic questionnaire has a high degree of reliability applied as an instrument for the assessment of quality of life after THR.
Hypothesis 2: It is assumed that the generic WHOQol-BREF questionnaire is sufficiently informative as a stand-alone tool to assess the effectiveness of rehabilitation after THR
Hypothesis 3: It is assumed that the individual rehabilitation program applied in the inpatient period of rehabilitation after THR increases the overall assessment of QOL due to the physical domain

3. Methods.

The study was approved by the Research Ethics Committee at the MU "Prof. Dr. Paraskev Stoyanov" - Varna with Protocol/Decision No. 103/27.07.2021. All participants

are familiar with the procedures and have signed an informed consent form. The data required for the purposes of the study were collected following the described sequence of the intended components of the study.

3.1. Methods of data collection

3.1.1. Administrative survey.

The administrative survey covers the collection of information on demographic indicators: age, gender, marital status, education, employment, ability to work, location, income.

3.1.2.WHOQOL BREF-26 Quality of Life Questionnaire: presents the data in the form of a profile, assessing each of the areas (Physical, Psychological, Social relationships, Environment) separately and giving an overall assessment of QOL

The questions are self-assessed and can be tentatively divided into those that assess "objective" and "subjective" experiences, events, and behaviors. The questionnaire has good reliability, the coefficients of Cronbach's alpha and the "split-half" method are high in all studied groups, and the results correspond to the studies of A. Banomi and D. Patrick (Banomi et Patrick, 1997) and 15 WHOQOL centers. The test-retest results show a high correlation between the first and the second completion of the questionnaire. In studies in other countries, the test-retest reliability of the questionnaire ranges from 0.66 to 0.87. The instrument's discriminative validity is indicated by its ability to clearly differentiate the sick population from the healthy population. To assess the QOL of multimorbid patients with

permanently reduced work capacity, the use of the WHOQOL-BREF is more suitable than other established questionnaires, because:

- the tool meets the requirements of the holistic approach in medicine (equal importance of somatic, mental and social components);

- it takes a little time to complete (26 questions in 10 minutes);

- does not make it difficult for the patient to answer the questions (clearly and accurately posed questions);

- assessment is carried out using a short formula;

- allows comparison of patients with different diseases (multiplicity of pathology in patients with TBS prosthetics);

- is adapted to the cultural characteristics of the Bulgarian population (adapted in 1999).

3.1.3. Medical documentation:

• medical history

• functional research methods

• treatment methods - an individual rehabilitation program, drawn up for each patient personally, tailored both to the stage of rehabilitation and to individual characteristics. The latter includes sex, age, reactivity of the body, presence of accompanying diseases from the cardiovascular, endocrine, digestive central and peripheral nervous systems, musculoskeletal system, oncological diseases; indications and

contraindications for application of established physical methods after THR.

3.1.4. Statistical methods:
3.1.4.1. Statistical grouping of data.
3.1.4.2. Descriptive (descriptive methods).
3.1.4.3. Cronbach's alpha. After collecting the data on a survey basis, it is appropriate to check whether the individual questions (items) are sufficiently reliable (Reliability), that is, whether they have good selective and descriptive capabilities, whether the individual questions are explained with each other, whether the respondents understand the individual questions correctly and are recognized in a correct way in the answers, whether the questions are correctly asked to the respondents. This check is done with Cronbach alpha. Theoretically, the coefficient ranges from 0 to 1. As the value of the coefficient increases, it is considered that the survey has good selective and descriptive capabilities.
3.1.4.4. Planning and organization of representative sample research. Sample studies represent a system of scientific knowledge highly applicable in situations where there is insufficient time to conduct monitoring on a comprehensive basis, there is a lack of financial and personnel resources, and there is a lack of opportunity to conduct a comprehensive study. Emphasis in the dissertation work is given to the method of interpenetrating samples. This method is applied in cases where a given study must be conducted in several stages (patients before and after treatment). For this purpose, it is expedient to divide the broadcast sample of volume (n) from a general statistical population of volume (N) into two or more independent samples, as also applied in this dissertation work.

As a rule, each of the samples must be formed by the same selection of units placed in the same conditions in order to comply with the rule of comparability of data. The resulting two independent subsamples are called interpenetrating and make it possible to obtain separate, independent estimates of characteristics of the studied population.

4. Description of the sample.
For a period of one year (from June 2021 to May 2022), a total of 72 persons who underwent hip arthroplasty, hospitalized in the Department of Rehabilitation at "St. Marina" University Hospital - Varna (Estreya hotel, KK St. St. Constantine and Elena) on clinical pathway 265. The selection of participants was carried out according to set criteria for inclusion and exclusion in the study.

4.1 Criteria for inclusion in the study:

1. Patients over 18 years of age.

2. Patients hospitalized in the rehabilitation department of “St. Marina” University hospital - Varna under clinical pathway 265, diagnosis Z 96.6 Presence of orthopedic joint implants. Hip replacement, to carry out rehabilitation within seven procedural days.

3. Patients discharged on day 8.

4. Patients with and without accompanying diseases.

5. Patients who signed an informed consent to participate in the study**.**

4.2. Exclusion criteria:

1. Patients under 18 years of age.
2. Patients hospitalized in the rehabilitation department of UMBAL "St. Marina", with a diagnosis other than Z 96.6 Presence of orthopedic joint implants. Hip replacement.
3. Patients discharged before the 8th day.
4. Patients who refused to sign an informed consent to participate in the study.
The patients participating in the study were hospitalized at different stages of recovery and formed a heterogeneous group, representing two samples - before and after hospital rehabilitation.
5. Organization and conduct of the research:
5.1. Patients fill out an administrative survey and a quality of life questionnaire on the day of admission to the Rehabilitation Department.
5.2. An individualized rehabilitation program is developed by the PRM specialist on duty.
5.3. Patients complete the quality of life questionnaire again on the day of discharge from the Department of Rehabilitation.
5.4. Collection of data from the medical documentation - history of the disease, containing information about the leading diagnosis, accompanying diseases, type and duration of endoprosthetics, functional research methods, performed procedures.
5.5. Statistical processing of data from research instruments and medical documentation.

II. RESULTS.

1. Socio-demographic characteristics of the examined persons. Descriptive methods.

1.1. For the period June 2021 - May 2022, the study covered 72 persons hospitalized in the rehabilitation department at the Estreya Hotel, on clinical path 265, diagnosis Z96.6 and treated within 7 procedural days. The frequency of THR depending on age is as follows: 57% in the range of 18-65 years and 43% fall in the age group over 65 years.

1.2. The gender distribution shows an equal share of men and women among THRPs.

1.3 Distribution of patients by working capacity.

The presence of reduced working capacity, proven by an expert decision of the Teritorial Expert Medical Comission TEMC was found in 33% of the respondents. At the time of the study, 8% of the examined persons have permanently reduced working capacity - over 90%, without external assistance, 8% - from 71 to 90%, 17% - from 51 to 70%, 67% do not have permanently reduced working capacity.

1.4. Distribution of the surveyed persons by education.

To the question "what education do you have", 43, 1 % of the respondents indicated university, 11,1 – College, 43, 1% - secondary, followed by the participants with primary school basic education – 2,8 %.

1.5. Distribution of the surveyed persons by employment.

Employment is indicated by 51% of the surveyed persons, with 39% of them being of active age, and 12% - working pensioners. 46% of the respondents are non-working pensioners, the share of persons without employment is 2%.

All the examined persons exercise professions and daily activities related to static or dynamic loading of the musculoskeletal system, occupying an uncomfortable working position and reduced physical activity.

1.6. Distribution of respondents according to marital status.

The data on the distribution by marital status reveal the largest share of legally married persons - 60%, with the same percentage of unmarried and divorced - 14%, 12% of the surveyed persons fall into the widow/widow category. 87.7% of respondents have children, 12.5% reported no children.

1.7. Distribution of patients according to settlement.

The distribution of the surveyed persons according to the place of residence indicates that 96% of THRPs are from a regional city, 3% - from a non-regional city and 1% - from a village.

1.8. Distribution of participants according to income.

According to the income of the respondents, the largest share is of persons with an average monthly income of one person from a household over BGN 700 - 62%, followed by persons with an average monthly income of BGN 500-700 - 31% and below BGN 500 - 7%.

1.9 Distribution according to the type of endoprosthetics.

All subjects underwent conventional hip arthroplasty, using a modified posterior approach.

1.10. Distribution of patients according to the diagnosis leading to arthroplasty.

67% of TEPPs included in the study have proven coxarthrosis; 14% underwent alloplasty for a femoral neck fracture, 17% were diagnosed with aseptic necrosis of the femoral head, 1% with congenital luxation of the hip, and 1% were diagnosed with metastatic cancer involving the iliac bone.

All patients were multimorbid, five of them were diagnosed with oncological disease of varying duration.

1.11. Distribution by leading complaints.

In 28% of patients, leading complaints of pain with different localization were found - lumbar spine, endoprosthetic joint, knee, ankle joint and swelling of hip, knee or ankle joints.

1.12 Distribution of patients according to the stage of rehabilitation.

The distribution of patients according to the terms of rehabilitation is as follows: 83.3% of THRPs were admitted to the rehabilitation department by the second month after endoprosthesis; 6.9% - up to the 14th day, 9.7% - after the second month (which also includes patients admitted for the first time for hospital rehabilitation after the 6th month of endoprosthesis).

2. Results of the assessment of the quality of life using the WHOQOL – BREF questionnaire.

2.1. Cronbach alpha.

The WHOQoL-BREF questionnaire is distinguished by the fact that the questions do not have significance when considered

individually, which makes it meaningless to look for correlations between individual questions and specific objective or demographic indicators. The answers to the individual questions on the 5-point Likert scale with the help of a key are grouped into four domains (physical, psychological, relationships and environment) - each with a separate assessment, the sum of which forms the total QOL. This allows both the tracking of dynamics in the general assessment of QOL and the comparison by areas, with a view to assessing the impact of the holistic (individual) approach to health, especially in heterogeneous groups of patients. In order to determine the reliability of the questionnaire at THR, after collecting the data, a check was carried out on the individual questions - whether they have good selective and descriptive capabilities, whether the individual questions are explained to each other, whether the respondents understand the individual questions correctly and recognize themselves in a correct way in the answers, whether the questions are correctly asked to the respondents. This verification is done through Cronbach alpha. Theoretically, the coefficient ranges from 0 to 1. As the value of the coefficient increases, it is considered that the survey has good selective and descriptive capabilities. The value of the coefficient 0.891 indicates a high level of consistency between the questions, correct asking and correct understanding by the survey respondents.

2.2. Dynamics in the general quality for the period of inpatient rehabilitation.

The overall mean quality of life of patients at admission was calculated to be 47.166666666667. The average value of the overall quality of life of the patients at discharge was 62.555555555556.

The image shows the absolute and relative differences in the total QOL of each of the studied patients.

2.3. Dynamics in the quality of life during the period of inpatient rehabilitation, examined by area. Results of the statistical hypothesis testing (t-test).
2.3.1. Physical domain.
The average value of "physical domain" at admission is 8.21, and that of patients at discharge 15.33 (Table 16).
A moderate positive correlation (0.495) was reported between physical domain at admission and physical domain at discharge. The correlation is statistically significant ($p=0.000<0.05$).

1. The null hypothesis H0 is defined, which states that there is no statistically significant difference.
The alternative hypothesis H1 states that a statistically significant difference exists.
2. A significance level of $\alpha=0.05$ (5% risk of error) is assumed at a guarantee probability of p=95%.
3. A t test is used.
4. The accepted level of significance $\alpha=0.05$ (5% risk of error) at a guarantee probability p=95% and the estimated cutoff level of significance Sig (p) are compared.
5. $p=0.000< \alpha=0.05$, therefore from the theory of statistics it can be concluded that the null hypothesis H0 is rejected and the alternative is accepted and therefore there is a statistically significant difference in the Physical domain regarding patients on admission and upon discharge.

An increase in the average values for patients who were discharged by 7.125 compared to those at admission was reported.

2.3.2. Psychological domain.

The average value of "Psychological area" at admission is 10.00, and that of the patients at discharge 13.54.

A strong positive correlation (0.733) was reported between the Psychological Domains at Admission and the Psychological Domains at Discharge indicators. The correlation is statistically significant ($p=0.000<0.05$) (Table 20).
1. The null hypothesis H0 is defined, which states that there is no statistically significant difference.
The alternative hypothesis H1 states that a statistically significant difference exists.

2. A significance level of $\alpha=0.05$ (5% risk of error) is assumed at a guarantee probability of p=95%.
3. A t test is used.
4. The accepted level of significance $\alpha=0.05$ (5% risk of error) at a guarantee probability p=95% and the estimated cutoff level of significance Sig (p) are compared.
5. $p=0.000< \alpha=0.05$, therefore from the theory of statistics it can be concluded that the null hypothesis H0 is rejected and the alternative is accepted and therefore there is a statistically significant difference in the Psychological Area block regarding patients on admission and upon discharge.
An increase in mean values was reported for patients who were discharged by 3.542 compared to those at admission.

2.3.3. Social relationships

The average value of "Social relationships" at admission was 8.54, and that of patients at discharge 8.96.

A strong positive correlation (0.858) was reported between Social relationships on Admission and Social relationships on Discharge. The correlations is statistically significant ($p=0.000<0.05$).
1. The null hypothesis H0 is defined, which states that there is no statistically significant difference.
The alternative hypothesis H1 states that a statistically. significant difference exists.
2. A significance level of $\alpha=0.05$ (5% risk of error) is assumed at a guarantee probability of p=95%
3. A t test is used.
4. The accepted level of significance $\alpha=0.05$ (5% risk of error) at a guarantee probability p=95% and the estimated cutoff level of significance Sig (p) are compared
5. $p=0.002< \alpha=0.05$, therefore from the theory of statistics it can be concluded that the null hypothesis H0 is rejected and therefore there is a statistically significant difference in Social relationships regarding patients on admission and discharge. An increase in average values was reported for patients who were discharged by 0.417 compared to those at admission.

2.3.4. Environment.
The average value of "Environment" at admission is 20.42, and that of patients at discharge 24.72.

A strong positive correlation (0.772) was reported between the 'Environment at Admission' and 'Environment at Discharge' indicators. The correlation is statistically significant ($p=0.000<0.05$).

1. The null hypothesis H0 is defined, which states that there is no statistically significant difference.

The alternative hypothesis H1 states that a statistically significant difference exists.

2. A significance level of $\alpha=0.05$ (5% risk of error) is assumed at a guarantee probability of $p=95\%$.

3. A t test is used

4. The accepted level of significance $\alpha=0.05$ (5% risk of error) at a guarantee probability $p=95\%$ and the estimated cutoff level of significance Sig (p) are compared.

5. $p=0.000< \alpha=0.05$, therefore from the theory of statistics it can be concluded that the null hypothesis H0 is rejected and the alternative is accepted and therefore there is a statistically significant difference in the "Environment" block regarding patients at admission and at discharge.

An increase in average values was reported for patients who were discharged by 4.306 compared to those at admission.

III. DISCUSSION

1. Analysis of the dynamics in lifestyle - overall average value, and distributed by area.

The established high degree of reliability of the WHOQOL questionnaire in TEPP confirms the shared worldwide experience regarding the possibilities of the application of the tool for the evaluation of QOL after hip

arthroplasty, especially in semi-morbid patients, regardless of the fact that it is generic. The positive dynamics in the general QOL reflects the change in the average value related to the period of rehabilitation in a hospital environment. According to literature data from long-term studies monitoring patients' QOL after THR, it changes in a positive direction, regardless of whether the patients underwent rehabilitation, mostly due to the physical domain.

All our patients reported an improvement in the range of motion of the hip joint and the functional assessment, and this was reflected in accordance with the requirements for completing the relevant clinical pathway. However, to what extent functional recovery corresponds to social fitness is a question whose answer we find in the Physical domain of WHOQOL. On the one hand, because the degree of pain using the scales developed for the purpose does not bring information about how the individual lives and functions, how it affects daily life, sleep, work capacity and satisfaction with recovery. On the other hand, with conventional arthroplasty, recovery of range of motion is achieved at a slower rate than with patients who underwent custom hip arthroplasty. On the third hand, the established differences in the time for functional recovery of patients with hip joint osteoarthritis and femoral neck fracture significantly narrow the perspective of multimorbid patients for social adaptation and achieving independence in everyday life.

In patients with aseptic necrosis of the femur, the clinical manifestation is rapid, severe to unbearable pain and severely limited functional capacity - a situation that actually threatens to take patients out of the zone of psychological resistance when forming their own attitude and responsibility.

Insufficient attention is paid to qualitative studies of pain – its accompanying experiences. Given the frequency of the reason that led to arthroplasty - coxarthrosis, the majority of participants in our study had lived with chronic pain for years. According to literature, the experiences related to pain can be distinguished depending on whether it is acute or chronic, whether or not there are symptoms of depression, etc. patients perceive pain most often as "suffering", "despair", "humiliation", "burden", "punishment", "irritant", "worries", "fixes the mind". Therefore, the digital dimension of pain is only a reflection of its "visible face", while the totality of perceptions and experiences appears with a greater degree of importance for the patient's daily life. Although we did not examine the specific experiences accompanying the pain/individual health and the operative intervention, we report a statistically significant difference in the results of the Physical domain of the QOL before and after the rehabilitation at the Department of Rehabilitation - indicative of a positive impact in more than one aspect, namely sleep, ability to work, daily activities, independent activities. The questions are formulated in such a way as to unseal the view of the patient in the sense of his individuality and overall functioning. The short period they refer to covers the time before and after the hospital stay, i.e. they invariably reflect the effect of the rehabilitation procedures carried out.

Taken together, the questions reveal the psychological aspects of the THR patient`s problem. The recording of the psychological situation reflects the interaction of the patient with his environment and should be considered simply as a mechanical collection of answers to questions and symptoms. Physical complaints may be related to social or emotional problems, which

the doctor must also take into account when determining the rehabilitation potential, preparing the rehabilitation program, and considering its effectiveness. For this, it is not enough just to determine the patient's objective condition and perform the necessary functional assessment. In all cases, it is necessary to take into account the personal and social situation. Some authors depict this trinity of opposite dependencies as an equilateral triangle, at the corners of which are the individuality, the objective state, and the social situation. Referring to these literary data, we find the presence of the question of the meaning of life in the field of Psychology to be completely justified and justified, since it reasonably appears in the above-described trinity of interactions. The patient's motivation for self-involvement in the recovery process could not be considered unilaterally – in the sense of a health care consumer. The main role in achieving the set goals and tasks, according to the individual condition, could not be fulfilled by the patient without the mobilization and participation of psychological factors. It is no coincidence that one of the constant tasks in any rehabilitation program is related to the impact and improvement of the psycho-emotional tone.

The doctor/therapist, knowingly or not, is perceived by the patients as a medicine or means enhancing the effect of the applied therapeutic methods. Effective doctor-patient, doctor-medical team-patient communication favors not only reporting the direct results of the work performed, in this case – rehabilitation procedures, but also the creation and maintenance of an optimal therapeutic environment and microclimate. Subjective sensations and perceptions concern not only pain symptoms, but also the emotional color of rehabilitation. Walking with aids in itself creates a feeling of helplessness and

can become a motive for inappropriately and riskyly forcing the course of recovery entirely on the part of the patient. In this regard, it is not unimportant in what conditions it is performed - outpatient, inpatient, home. Individual approach, monitoring, control and feedback are key factors in the early phase of recovery in order to ensure psychological comfort and a feeling of a positive recovery progress with the help of appropriate and individually selected methods and means, in the appropriate place - combining the useful with the pleasant. Of essential importance is also the moment of psychological attitude to the upcoming events, already formed in hospital stage. In the fulfillment of the aim of the dissertation work, we assumed that CP rehabilitation in a hospital would affect in the short term mostly the body area of the general QOL, given the highly limited time of the hospital stay within 7 procedural days. Analyzing the interactions described above, we believe that the statistically significant difference in QOL - Psychological domain before and after implementation of the individual rehabilitation program is due to the adequately accounted value of all the listed factors in the approach to THRP. The family environment or other group of people can, through a positive influence on the patient's feelings and experiences, enhance the impact of therapy/rehabilitation, or vice versa - through resistance, reduce the result to zero. The concept of "social disease" was introduced as early as 1930. The idea of this concept is the understanding of the patient by family, relatives and friends, which contributes to better adaptation to life and different situations. Acceptance or non-acceptance of a life problem, disease, approach and even a therapist can be reinforced by relatives, acquaintances and other surroundings on the one hand. On the other side of this process are the physiological, psychological needs and satisfaction of the individual from the

relationships with his environment and family. The family members or other group of people can, through a positive influence on the patient's feelings and experiences, enhance the impact of therapy/rehabilitation, or vice versa - through resistance, reduce the result to zero. The concept of "social disease" was introduced as early as 1930. The idea of this concept is the understanding of the patient by family, relatives and friends, which contributes to better adaptation to life and different situations. Acceptance or non-acceptance of a life problem, disease, approach and even a therapist can be reinforced by relatives, acquaintances and other surroundings on the one hand. On the other side of this process are the physiological, psychological needs and satisfaction of the individual from the relationships with his environment and family.

The role of family dynamics in the change in the course of occurrence and development of the disease has been studied as an issue in the approach to the chronic disease, but little advocated in the overall assessment of the situation of THRP during his recovery. The results of our study show a statistically significant difference in QOL related to the Social relationships domain at admission and discharge. This could be related to the larger percentage of family arthroplasty patients - 59.7% and to the results of targeted studies proving the direct role of emotional support and family relationships in the accelerated course of recovery after hip arthroplasty and better QOL in the conditions of a family environment. (Kanev). The positive dynamics in Environment domain district before and after the rehabilitation course shows that the effectiveness of the performed procedures is taken into account both in functional recovery and in the functioning of THRPs and their attitude towards society. The

content of the questions exceeds the limits of the physical capacity of the individual who has undergone hip arthroplasty and in its comprehensiveness reflects the change in all subfields of the social sphere. A key point in the dynamics of THRP`s attitude to its surroundings, besides the recovery of motor deficits and gait, is awareness, which can also be seen as a reflection of the patient-multidisciplinary team interaction.

In the conversations with the patients who went through the Rehabilitation Department and gave their consent to participate in the QOL study, we found that all of them were informed on the spot about the opportunities to benefit from their right to rehabilitation under clinical pathway 265 - twice within one year after the endoprosthesis, as well as the benefits of systematic and phased rehabilitation. The question of satisfaction with access to health services is of most importance in the evaluation of the situation by THRP. The choice to recover in a hospital should also be considered from the socio-economic side of the problem. According to the results of the administrative survey for the purposes of our study, in the income distribution, the largest share of respondents with an average monthly income of one person from a household over BGN 700. This indicator, together with the age group in which the respondents fall, are probably the main criteria determining the choice of the NHIF-funded model. Although a large part of patients are from a regional city - 96%, hospital rehabilitation creates conditions for overcoming some barriers that create outpatient conditions - daily travel/movement to and from the place of rehabilitation, 24-hour access of patients to specialists . Comparing two groups of patients, divided according to the financing of rehabilitation services, Nenova and Mancheva found differences in the degree

of satisfaction with the work of the kinesitherapist in the conditions of pre-hospital care with and without reimbursement from the NHIF, in favor of the group of patients who self-financed their rehabilitation when choosing specific specialist. The results of our study revealed that all hospitalized patients during the study period underwent conventional arthroplasty, which corresponds with data from the literature indicating the preference of patients undergone custom THR for self-financed rehabilitation in an outpatient setting under the control and guidance of a physiotherapist. Based on the reported positive dynamics in life in the Environment domain, the hospital rehabilitation under clinical pathway 265, conducted in the Department of Rehabilitation at University Hospital St. Marina could be evaluated as effective, related to the social sphere of life of patients after hip arthroplasty.

The results of our research indicate average values of total QoL - before hospitalization, in polymorbid patients, including cancer patients. Therefore, research and analysis of the multiple factors that determine patient satisfaction with THR should not be neglected. In order to demonstrate the reliability of the WHOQOL-BREF in THRPs, Kumar, Sen, Aggarwal, et al. (2020) first applied the WHOQOL-BREF to 96 patients undergoing arthroplasty by the same surgeon, comparing the results with Harris Hip Score functional recovery values. Based on the high degree of correlation between the two instruments, the authors concluded that the WHO-BREF can be applied as a stand-alone tool to assess QOL after THR. Although both specific and generic questionnaires do not require the physical presence of the patient, and although the modified HHS also does not require a patient examination, the WHO is accepted as a more

complete and informative tool regarding the overall recovery and prognosis of THRP. In our study, conducted in the presence of the patient, the preparation of the rehabilitation program was carried out by the PRM specialists on duty at the time of admission, and the assessment of QOL - by a PRM doctor external to the department. Referring to the world experience and the positive dynamics in functional recovery, reported according to the requirements of clinical pathway265, we did not consider it justified the joint application of a specific and generic questionnaire for the purpose of the study. Based on the results, we consider that the WHOQOL-BREF is sufficient to evaluate the effectiveness of the performed hospital rehabilitation.

3. Analysis of the rehabilitation approach.

The set criteria for the recruitment of study participants imply the inclusion of all patients hospitalized under clinical pathway 265 with a diagnosis of Z 96.6 Presence of orthopedic joint implants. Hip replacement, for a period of 7 days. This implies the participation of unilaterally and bilaterally endoprosthetic, revised and polymorbid patients, who are at different stages of rehabilitation and with a variety of subjective complaints and experiences, related both to THR and preceding events and circumstances, as well as to the individual characteristics of each individual and the general his general health. This background determines the heterogeneity of the representative sample and limits the allocation of participants to control and experimental groups. We established that during the period of the conducted research, in the Department of Rehabilitation at the University Hospital St. Marina underwent 72 THRPs hospitalizations at various times after THR - between the 7th day and the 12th month after the operative intervention. It

is important to note that the patients referred for early rehabilitation under clinical pathway 265 underwent an individual rehabilitation program in the Department of Orthopedics and Traumatology, administrated and performed by a physioterapist in accordance with current trends for shortening the rehabilitation period after THR.

The PRM program, developed by the PRM specialist at the Rehabilitation Department is aligned with the patient's rehabilitation phase and functional capacity, combining both kinesiotherapy and physical modalities, even in the earliest stages before suture removal, referring to clinical experience and literature data. for relying on their synergistic effect in the direction of overcoming pain, swelling, accelerating the healing of the surgical wound and reducing the risk of complications according to data from our researchers. These effects were accounted for at discharge within the history and functional assessment. The review of the medical documentation of the examined patients indicated that the leading complaint in 28% of them was the pain in the endoprosthetic joint and other departments of musculoskeletal system. This is consistent with data cited in the literature and focuses clinical thought on methods of pain relief along with means of restoring function to the affected joint.

We also found that, despite the recommendations of some specialists to avoid physical factors until the 45th day after the intervention, deep oscillations are involved in the minimally protective phase. The justification for this choice rests on the previous research and clinical experience of the specialists of the Department of Rehabilitation with the impact of deep oscillations in the early postoperative period after surgical interventions and

knee arthroplasty, while observing the basic principle in physical therapy - maximum early application of physical modalities.

The variety of physical factors applied during the rehabilitation of THRP involved in the study included electrical stimulations, TENS, therapeutic ultrasound, electrophoresis and lye compresses, apparatus lymphatic drainage of the lower limbs, cryotherapy, exogenous heat, applied in different departments of the musculoskeletal system alone or in combination with kinesiotherapy, in accordance with the principles of individual selection of the means for rehabilitation. This expanded approach corresponds to the concept of individual, patient-centered prioritization of the choice of methods and means embedded in the principles of rehabilitation. On the other hand, this model saves rehabilitation time, which is otherwise limited by the health system and necessarily invested in a gradual impact on other departments of the musculoskeletal system during subsequent hospitalization or in outpatient settings. Despite the established effectiveness of the complex rehabilitation program, combining synergistically acting kinesiotherapy methods and physical modalities, with proven contributions of physical modalities to the course of recovery after THR (Krastanova), we did not exclude from the study patients with contraindications and limitations to their application (patients with accompanying oncological diseases). Outside our country, physical modalities have been applied for decades for the purpose of pain relief in palliative care or in the course of oncological rehabilitation, but we still lack a unified opinion in the physiotherapy community regarding the contraindications for the use of physical modalities in oncology. Although this began with the creation of the "Victoria program" for the rehabilitation of women with breast

cancer, the issue of the time limit of diagnosis, as a basis for the inclusion of physical modalities and the risks of recurrence and metastasis, remains debatable. That is why the preparation of the rehabilitation program for these patients of ours is strictly in accordance with the principle of oncological caution and the selection of kinesiotherapy methods that would fulfill the set specific goals and tasks, regardless of the course of recovery.

As we mentioned, in all patients without contraindications and restrictions, regardless of the recovery phase, the principle of maximum early application of physical modalities in synergy with kinesiotherapy methods and means was observed. The role of kinesiotherapy is mainly emphasized in the first postoperative days with a view to maximum early verticalization and gait training with aids. The complex application of physical modalities and kinesiotherapy has been proven to be more effective for recovery after THR (Krastanova 2018), but the patients from the control group of the study conducted for this purpose did not carry out rehabilitation outside the Department of Orthopedic surgery. In all participants in our study, kinesiotherapeutic procedures were included, in combination or not with physical modalities, according to the individual approach and needs of the patient. The selection of methods and means includes isometric and isotonic exercises in an open and closed kinetic circuit confirmed by science and practice, devices of devices, suspension therapy, subaquatic excersises in our patients is included in the period of the moderately protective phase of rehabilitation.

The presence of patients in the three phases, with a predominance of 1 and 2, is an indicator of the dynamics in terms

of rehabilitation behavior - a tendency to shift the stage of home rehabilitation from hospital to the second month.

Analyzing the clinical experience of three medical fields - orthopedic, physical medicine and kinesiotherapy, we take into account the fact that the orthopedic surgeon occupies a major role in the rehabilitation team, outlining the direction of the recovery process, based on the type of endoprosthesis and the risk of complications. Adhering to the surgeon's opinion that the rehabilitation approach should be individual, we believe that the preparation of the rehabilitation program should be tailored to the individual patient. A quasi-experimental study by Swedish authors compared two groups of patients at discharge after total hip arthroplasty in terms of daily activity. A standard approach was applied to the control group with prior information about the routine methods accompanying the THR and the expected length of hospital stay, with the appropriate instruments for collecting information about the health status of the patients. The quasi-experimental group uses a patient-centered approach to care, which includes active participation and personal contact with all team members, searching, finding and discussing opportunities to meet the personal needs of each patient. Following the two groups, the authors found that patient-centered approach shortened the length of hospital stay and achieved independence was reported later, but at a higher rate compared to the standard approach to medical care.

Referring to the results of the studies carried out so far, including our own, we believe that it is impossible and unnecessary to create and implement a unified rehabilitation protocol after THR. In this regard, as well as with regard to meeting the need for comprehensive from rehabilitation care, we

offer a model of organization of the rehabilitation process. This one model allows to effectively care for patients who have undergone conventional hip arthroplasty, where the terms of rehabilitation are subject to the restrictions imposed by the health system, the type of arthroplasty, the age of the patients and their multimorbidy, the unified rehabilitation protocols. At the heart of this approach is the pursuit of optimal use of rehabilitation resources, and the main goal is to satisfy the personal needs of patients and change the quality of life. The expected results of its application are associated not only with the confirmation of early hospital rehabilitation and the positive dynamics in QOL at each stage of recovery, but also with the imposition of the patient-centered approach in the preparation of the rehabilitation program, with a view to functional recovery and improvement of overall health and well-being only. In this way, inequality among the young and the aging working-age population will be entailed and reduced.

The factors that determine the implementation of the model are related to the effective cooperation of the specialists building the rehabilitation teams, awareness and motivation of patients and their families regarding self-participation and shared responsibility in the process; training, monitoring, control and support of patients in the implementation of individual steps and stages of rehabilitation; creating an environment for optimal interaction between therapists and patients.

The commitment of the PRM specialist should not be limited to planning and preparing a rehabilitation program and objective functional assessment of the results of the treatment. The management of the rehabilitation process requires an extended and comprehensive approach to the patient,

supplementing his user role with active participation and evaluation functions. In this way, the problem of quality of life becomes a common goal, for the achievement of which own and institutional resources are mobilized. The application of the model mainly depends on the availability of rehabilitation specialists and their level of professional training, medical equipment and equipment, that is, it appears - a consequence of the distribution of human and material resources, the realization of the informational aspects of health care, the accessibility of rehabilitation services, determined by financial resources, territorial infrastructure, transport links, etc.

SUMMARY

The representative sample covers a heterogeneous group of conventionally endoprosthetic polymorbid patients, including patients with oncological diseases.

The leading reason for endoprosthetics of the hip joint is coxarthrosis.

There is a lack of prevention and preoperative rehabilitation among patients indicated for arthroplasty.

The largest share of patients admitted for inpatient rehabilitation up to the 2nd month after endoprosthesis (moderately protective phase) – 83.3%.

The proportion of patients admitted for rehabilitation up to the 14th postoperative day and after the 2nd month is approximately the same.

The results of the assessment of the general QOL and physical domain correspond with the improved indicators for functional assessment.

The individual rehabilitation program is in accordance with the principles of the patient-oriented approach and includes the selection and combination of means adapted to the needs of the individual.

The combination of physical factors and means of kinesitherapy in an extended rehabilitation program is aimed not only at improving the function of the endoprosthetic joint, but also at general impact and shortening the rehabilitation period.

Referring to the results of the studies carried out so far, including our own, we believe that it is impossible and unnecessary to create and implement a unified rehabilitation protocol after TEP. In this regard, as well as with regard to meeting the need for comprehensive from rehabilitation care, we offer a model of organization of the rehabilitation process. This one model allows to effectively care for patients who have undergone conventional hip arthroplasty, where the terms of rehabilitation are subject to the restrictions imposed by the health system, the type of arthroplasty, the age of the patients and their polymorbidity, the unified rehabilitation protocols.

At the heart of this approach is the pursuit of optimal use of rehabilitation resources, and the main goal is to satisfy the personal needs of patients and change the quality of life. The expected results of its application are associated not only with the confirmation of early hospital rehabilitation and the positive dynamics in QOL at each stage of recovery, but also with the imposition of the patient-centered approach in the preparation of the rehabilitation program, with a view to functional recovery and improvement of overall health and well-being only. In this way, inequality among the young and

the aging working-age population will be entailed and reduced.

The factors that determine the implementation of the model are related to the effective cooperation of the specialists building the rehabilitation teams, awareness and motivation of patients and their families regarding self-participation and shared responsibility in the process; training, monitoring, control and support of patients in the implementation of individual steps and stages of rehabilitation; creating an environment for optimal interaction between therapists and patients. The commitment of the PRM specialist should not be limited to planning and preparing a rehabilitation program and objective functional assessment of the results of the treatment. The management of the rehabilitation process requires an extended and comprehensive approach to the patient, supplementing his user role with active participation and evaluation functions. In this way, the problem of quality of life becomes a common goal, for the achievement of which own and institutional resources are mobilized. The application of the model mainly depends on the availability of rehabilitation specialists and their level of professional training, medical equipment and equipment, that is, it appears - a consequence of the distribution of human and material resources, the realization of the informational aspects of health care, the accessibility of rehabilitation services, determined by financial resources, territorial infrastructure, transport links, etc

A model for the organization and conduct of rehabilitation after conventional hip arthroplasty.

1. Synchronization of physiotherapy and kinesitherapy practices, adoption and approval of a uniform terminology for indicating the terms and phases of rehabilitation.

2. Implementation of a preoperative phase of rehabilitation as a mandatory element of the rehabilitation approach in THR.

3. Accelerated course of the rehabilitation program in the conditions of a hospital, which could be achieved through:

3.2.1 Development of an individual, extended complex rehabilitation program within the maximum protective phase, as early as possible after the operative intervention - 7-14 postoperative days.

3.2.2. Re-hospitalization under within the moderately protective phase of rehabilitation.

4. Expansion of physical modalities applied in the maximally and moderately protective phase.

5. Confirmation of the place and role of telerehabilitation in the minimally protective phase and confirmation of home rehabilitation care in the conditions of cooperative cooperation between the individual units in the rehabilitation team.

6. Combining the resources of the FRM and, in particular, kinesitherapy in outpatient and balneosanatoria conditions during the training phase.

7. Increasing patients' awareness of the stages and resources of rehabilitation already during the pre-operative phase.

IV. CONCLUSIONS:

1. Patients who preferred state-funded rehabilitation services are multimorbid individuals who underwent conventional endoprosthetics.

2. The WHOQOL – BREF has been shown to have very good reliability for assessing general quality of life in hip arthroplasty patients.

3. The WHOQOL – BREF has been shown to be applicable as a stand-alone tool for assessing the effectiveness of rehabilitation.

4. Statistically significant differences in the quality of life related to the four domains: physical, psychological, social relationships and environmental at admission and discharge prove that the complex, individual rehabilitation program contributes to the rapid and effective recovery of patients after conventional hip arthroplasty.

5. The individual rehabilitation program applied in the conditions of the clinical path as early as possible (minimum protective phase) shortens the recovery time and prepares the patient for rehabilitation at home and saves funds for the outpatient phase.

6. It was established that the selection of physical means in the maximum and moderately protective phase corresponds to the principle of maximum early application, is consistent with world experience, based on scientific evidence, has no negative impact

on the examined patients and contributes to the positive dynamics in the quality of life, applied to all domains.

7. It was established that the implementation of inpatient CP rehabilitation in the minimally protective phase (the early postoperative period - up to 14 days) has no negative impact on the examined patients and has a positive impact on the dynamics of the quality of life in all areas.

8. It was established that the individual rehabilitation program implemented during the first hospitalization in the minimally protective phase contributes to increasing the quality of life in all areas, despite the extended rehabilitation time.

9. Statistically significant differences in quality of life examined by domain before and after hospitalization were found to be consistent with functional assessment results.

V. CONTRIBUTIONS

1. Theoretical and methodological contributions:

1.1. The first targeted study of the problems of rehabilitation after THR is being conducted in our country.

1.2. For the first time in Bulgarian clinical and scientific knowledge, a self-assessed, validated generic tool is being applied to assess QOL in all spheres and the degree of influence from rehabilitation after THR.

1.3. Through QOL assessment by an independent FRM specialist, the role of the extended, individual rehabilitation program for change in the 4 areas of study: physical, psychological, relational and environmental has been proven.

2. Practical-applied contributions:

2.1 The contribution of early rehabilitation in hospital conditions to the overall impact on QOL has been proven.

2.2 The importance of the patient-centered approach in the rehabilitation of multimorbid patients has been proven.

2.3. The principles for the effectiveness of rehabilitation after THR are systematized and a model of organization of the rehabilitation process with the aim of resource optimization is proposed**.**

Proposals to institutions:

1. To provide funding for pre-operative rehabilitation.

2. To increase the volume of activities financed by the NHIF within a course of outpatient physiotherapy.

3. To develop an up-to-date, unified strategy for increasing the awareness of patients and health professionals about the need for endoprosthetics, the principles and stages of rehabilitation.