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## The Application of Callista Roy Adaptation Model in the Care of Patients with Multiple Sclerosis – Case Report

### Zastosowanie modelu adaptacyjnego Callisty Roy w opiece nad chorym ze stwardnieniem rozsianym – opis przypadku

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#### Abstract

**Introduction.** Multiple sclerosis (*Sclerosis Multiplex* — MS) is a chronic disease of the central nervous system characterized by inflammation and the loss of myelin sheath surrounding the axon. A result of disseminated demyelination process in patients suffering from MS, is a wide variety of symptoms that lead to changes in terms of functioning both in biological and psychosocial aspects. The skilful preparation of a patient to find the optimal way of dealing with the disease, as well as maintaining independence and joy of life is an essential part of the therapeutic process in patients with MS.

**Aim.** The aim of this study was to use the Callista Roy adaptation model in the care of a patient suffering from multiple sclerosis, namely:

- demonstrate the usefulness of the holistic Callista Roy adaptation model in the care of chronically ill patients,
- prepare a patient to cope with the problems induced by the disease, based on the nursing process developed in line with the guidelines of C. Roy model.

**Case Report.** A case study of a 69 year old patient with multiple sclerosis (SM) was prepared on the basis of medical documentation (personal information forms from hospitals), an interview with the patient and direct observations.

**Discussion.** The nursing care model based on the theory by Callista Roy proved to be very useful in the process of taking care of a patient chronically ill with SM, as it guaranteed satisfying the needs of a patient in terms of bio-psycho-social aspect, but it also gave the opportunity to acquire skills to cope with problems resulting from the disease.

**Conclusions.** The nursing process based on the theory by Callista Roy requires from a nurse an individual and holistic approach to a patient and patient's problems. The model structure provides a comprehensive delivery of nursing care and ensures continuous contact with a patient. This is particularly important in the era of technology development in modern medicine. (JNPN 2015;4(3):121–129)

**Key Words:** multiple sclerosis, nursing process, Callista Roy adaptation model

#### Streszczenie

**Wstęp.** Stwardnienie rozsiane (*Sclerosis Multiplex* — SM) jest przewlekłą chorobą centralnego układu nerwowego, która charakteryzuje się stanem zapalnym i utratą osłonki mielinowej wokół aksonu. W wyniku rozsianego procesu demielinizacyjnego u pacjentów chorujących na SM obserwuje się wiele różnorodnych objawów prowadzących do zmian w funkcjonowaniu zarówno w aspekcie biologicznym, jak i psychospołecznym. Umiejętne przygotowanie pacjenta do znalezienia optymalnego sposobu radzenia sobie z chorobą, a także zachowania samodzielności i radości życia jest niezbędnym elementem procesu terapeutycznego chorych na SM.

**Cel.** Próba zastosowania modelu adaptacyjnego Callisty Roy w opiece nad pacjentką chorującą na stwardnienie rozsiane, czyli:

- wykazanie przydatności holistycznego modelu adaptacyjnego Callisty Roy w opiece nad przewlekle chorym,
- przygotowanie pacjenta do radzenia sobie z problemami wynikającymi z choroby w oparciu o proces pielęgnowania opracowany zgodnie z założeniami modelu C. Roy.

**Opis przypadku.** Studium przypadku 69-letniej pacjentki ze stwardnieniem rozsianym zostało opracowane na podstawie analizy dokumentacji medycznej (kart informacyjnych ze szpitali), przeprowadzonego wywiadu z pacjentką oraz bezpośredniej obserwacji.

**Dyskusja.** Model pielęgnowania oparty na teorii Callisty Roy okazał się bardzo przydatny w procesie pielęgnowania przewlekle chorego z SM, ponieważ zagwarantował pacjentce zaspokojenie jej potrzeb bio-psycho-społecznych, ale także dał możliwość nabycia umiejętności radzenia sobie z problemami wynikającymi z choroby.

**Wnioski.** Proces pielęgnowania oparty na teorii Callisty Roy wymaga od pielęgniarki rozpatrywania pacjenta i jego problemów w sposób zindywidualizowany i całościowy. Struktura modelu zapewnia kompleksowe świadczenie usług pielęgniarskich i gwarantuje ciągły kontakt z pacjentem. Jest to szczególnie ważne w dobie technicyzacji we współczesnej medycynie. (PNN 2015;4(3):121–129)

**Słowa kluczowe:** stwardnienie rozsiane, proces pielęgnowania, model adaptacyjny Callisty Roy

## Introduction

Multiple sclerosis (Sclerosis Multiplex — MS) is a chronic disease of the central nervous system characterized by inflammation and the loss of myelin sheath surrounding the axon. The etiology of MS is not known, but it involves both genetic and environmental factors [1]. The geographical distribution of the disease is also characteristic. In Poland, the actual number of people affected with MS cannot be clearly determined. All data available are estimates. The incidence of MS in Poland is estimated to be approx. 150 cases per 100,000 inhabitants, which makes MS a disease of high incidence in Poland [2]. It is estimated that MS affects 2.5 million people globally, with more than half living in European countries [3].

The first symptoms most commonly appear between the ages of 18 and 45. The average life expectancy is 35–40 years, from the onset of the disease, which means that MS is a lifelong disease. In its course, there may appear very severe neurological symptoms, changing the patient's life completely [2].

MS is an incurable disease, unpredictable, leading to changes in terms of both biological and psychosocial aspects. Skilful preparation of a patient to find the optimal way of dealing with the disease, as well as maintaining independence and joy of life is essential in the therapeutic process in patients with MS.

American teacher, now a professor and theorist of nursing Callista Roy, in the 1970s developed an adaptation model of nursing, whose main objective is to teach patients “coping” in conditions changed by the disease. The adaptation model developed by Callista Roy (RAM - Roy Adaptation Model) is built on the theory of holism, which conceptualizes the person as a valuable human being in whom body and spirit are unified. In contrast, nursing care should be targeted in the process of nursing to help the patient, whom Roy describes as a system, in achieving adaptation by eliminating or minimizing the internal and external stimuli that cause bio-psycho-emotional imbalance. RAM is constructed in such a way that it allows to prepare a care plan in which the patient learns how to cope with the difficulties affecting the whole family, and to adapt to a changing environment, the patient's needs will be satisfied in multidimensional terms [4,5].

The aim of this study was to use the Callista Roy adaptation model in the care of a patient suffering from MS, namely:

- demonstrate the usefulness of a holistic adaptation model by Callista Roy in the care of the chronically ill,
- prepare the patient to cope with the problems caused by the disease, following the guidelines of the nursing process in line with the Callista Roy model.

## Case Report

A case study of the patient with MS was developed on the basis of medical documentation (information sheets from hospitals), an interview with the patient and direct observation. A nurse taking care of a chronically ill person should follow the model of care, based on theoretical assumptions, which will allow to recognize and identify comprehensively the needs of the patient and facilitate their adaptation to real-life circumstances affected by disease. The above assumptions perfectly meet the model developed by Callista Roy. The nursing process, developed by her, allows to achieve the goal of helping the patient to adapt to a situation of living with a chronic disease. It is constructed in such a way that nursing care is focused on maintaining welfare and comprehensive personal development.

There are six steps of the nursing process.

1. The first step involves collecting data (objective and subjective) about the behavior of the patient resulting from the activation of defense mechanisms associated with the four modes of adaptation.

2. The second step is to collect data about interacting stimuli (internal and external) that cause certain behaviors, recognize the response to stimuli and determine the factors affecting those responses. With this knowledge, a nurse can identify the cause of the problem.

Factors affecting the human reaction are:

- Cultural factors (socioeconomic status, beliefs, views, ethnic group)
- Family factors (family structure, roles performed in the family)
- Factors related to the stage of development (genetic factors, gender, age).
- Factors related to cognitive processes (perception, knowledge, skills)
- Environmental factors (change in the internal environment, addictions, habits, medical treatment).

3. The third step is the preparation of nursing diagnosis. Callista Roy defines it as an outcome of the collected data concerning the identification of the adaptation level

of the person. One way of describing the diagnosis by Roy is:

- identifying the type of active stimuli (eg. chest pain due to insufficient oxygenation of the heart muscle),
- reaction in one or several areas of adaptation (eg. inability to fulfill the role as an employee due to compromised physical activity). In the process of diagnosing, it is necessary to distinguish between problems that can be solved independently by a nurse from those whose solution requires cooperation with other professionals.

4. The fourth step involves setting goals for nursing. According to Roy, the aim of nursing is to achieve the full possible adaptation and to determine the time needed to bring the desired behavior. Objectives can be short term or long term. In addition to specifying the objectives of care, it is also important to formulate specific desired results. They are necessary to make a final assessment.

5. The fifth step is a nursing intervention. Its goal is a proper activation of stimuli in order to eliminate, reinforce or minimize their activity, depending on the effect they have on the person. Nursing interventions, says Callista Roy, have to be efficient enough to raise an individual's ability to cope with adverse stimuli and to achieve the state of adaptation. Intervention is nothing but a realization of the nursing care plan.

6. Step six - final assessment. This is a comparison of the degree of change as evidenced by change in behaviour with a previously assumed level of adaptation. Callista Roy allows to make modifications to the nursing process if required. The final assessment is not only the summary, but also reassessment, correcting mistakes and developing more effective methods of nursing [4,5,6].

The patient, aged 69, lives alone in the block of flats, in a dry and sunny two-room flat with a kitchen and a bathroom. The established diagnosis is (confirmed by MRI) multiple sclerosis. The first symptoms - vision impairment - appeared after the birth of her second child, 33 years ago. For many years, the patient had remained in a good health condition without relapses. 11 years ago, after her husband's death, there was a relapse, followed by remission. It resulted in a slight right lower extremity paresis. The second relapse occurred three years later, in 2010 after the death of her son.

Currently, the patient complains of difficulty in ambulation, stiffness of the right leg and a balance disorder, which are particularly worrisome. The patient also reported weakening of feeling in the toes and the left upper extremity tremor. These conditions affect performance of precise tasks. She also suffers from incontinence, the most troublesome when the patient is away from home. The patient also reported general weakness, she associated it with inflammation after the vein cannulation in the left forearm. Worse mood also appears after exercises, sweeping floors, cleaning a bathroom.

The patient also feels loneliness and sadness (despite daily visits of neighbors and family), as well as the fear of death connected with MS. She worries, because two years ago a friend of her died, as she claims, the cause was MS. Additional problems, not connected with MS, are the pain in the right leg after shingles, deformation of interphalangeal joints that make it difficult to perform manual activities, the fear of breaking the spine, extremities because of progressing osteoporosis and blood pressure variations in the case when she misses the medication for hypertension.

Information on the hospitalization based on the patient's documentation:

- July 2002, admitted to the hospital at the department of neurology due to deterioration of the general condition: abnormal gait, weakness of the right leg, balance disorders. The general mobility improved after treatment with Solu-Medrol;
- January 2010, admitted to the department of neurology due to deterioration of physical condition, complaining of a pain characteristic for postherpetic neuralgia. The patient was depressed, emotionally labile, the mood affected by her son's death. After treatment, her condition improved, neuralgic pain decreased, antidepressive drug Asentra was administered;
- March 2010, hospitalisation in rehabilitation ward to improve motility. A partial improvement in the overall mobility was achieved as a result of the applied kinesio and physiotherapy.
- June 2012, another hospitalisation at the department of neurology because of increasing disability, difficulty walking, rigidity of the right lower extremity. There is a left flaccid hemiparesis, spastic paresis of the right side extremities with a significant intensification in the right leg, bilateral positive pyramidal symptoms. She was referred to the rehabilitation ward;
- hospitalisation in the rehabilitation ward helped to improve mobility and self-care activities.

*Nursing process*

First step – collecting data- adaptive modes developed by C. Roy

Physiological mode

Physiological activity	ineffective/adaptative responses
1. Oxygenation	16 breaths/minute, regular breath, performed effortlessly, through the nose, even lifting and falling of chest, heart rate 74 beats/min, blood pressure 115/65, no arrhythmias, cyanosis of the skin
2. Nutrition	weight 59 kg with the height of 154 cm; BMI 24.9; normal weight, high protein diet, eats plenty of dairy products and fruit, sweets in small amounts

3. Elimination	stool once a day, in the case of constipation drinks kefir, milk, urinates frequently in small amounts, urinary incontinence, therefore reluctant to take walks
4. Activity and Rest	difficulty walking - does not leave the house in winter, afraid to fall, exercises on a stationary bike, a mattress, but quickly gets tired, often rests, limited grip-manual functions, right lower limb spasticity, goes to sleep at 8pm, sometimes wakes up at night, gets up at approx. 6am
5. Protection	redness and thickening of the subcutaneous tissue on the left forearm, neuralgic pain in the right lower extremity
6. Senses	a decrease of the visual acuity, uses glasses for reading, a slight sensorineural hearing loss, superficial sensory disturbance, balance disorder
7. Fluid and electrolytes	drinks about 2,000 ml/day, proper hydration
8. Neurological functions	conscious, aware of time, place, self, emotional lability
9. Endocrine functions	compromised mechanisms for coping with stress

Self-concept mode

1. Physical self	she cannot come to terms with disability, living alone, tries to compensate it willingly accepting guests, refuses to use special medical aid equipment – afraid to be perceived as a disabled person
2. Personal self	wants to be independent, she realizes that it is impossible, she wants to maintain good physical performance as long as possible, afraid of death due to MS
3. Moral-ethical self	the value system changed, understands disabled people better, has more respect for the disabled, a believer – Catholic

Role function mode

1. Primary role	acts as a sister, mother, grandmother, mother in law, often phones her sister, is in touch with the younger grandson, trying to compensate for the lack of walks with plays at home, interested in older grandson and his progress in education, trying to be the most independent, not to burden her daughter with duties, has a sense of failure to meet expectations of grandchildren, blames herself that he cannot be more of help for her daughter
2. Secondary and tertiary role	acts as a neighbor, patient, is hospitable, does not want to be absorbing, but has the impression that she occupies her neighbour's attention too much

Interdependence mode

1. Relationships and interactions with others	cheerful, in a moment sad, anxious about the future, looking for help and confirmation that she will be fine, she feels lonely and she feels bad about this, can build lasting relationships, relationships with other people, strong bonds with beloved ones but seems to fear stigmatization because of disability
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Step two — information on active stimuli and adaptive levels

Types of stimuli:

- Focal stimuli — difficulty walking, compromised manual capacity, forearm pain, weakness, urinary incontinence, back pain, loneliness, fear of death.
- Contextual stimuli — co-stimulus: an autoimmune process, inflammation, nerve fibers demyelinating process, osteoporosis, widowhood, degenerative process of the joints.
- Residual stimuli — incomplete knowledge about the disease, inability to cope with stress, living alone, death of her son, aversion to use the aid equipment.

The nursing process presented below pools step 3,4 and 5

*Physiological mode*

Problem 1. Pain, swelling, increased temperature around the left forearm due to venous cannulation.

Nursing objectives:

- alleviate pain (within 24 hours),
- reducing inflammation (within 24 hours),
- teaching self-care and self-observation (within 1 hour).

Nursing interventions:

- determine the cause of pain,
- explaining the need for warm compress
- instructing how to apply a warm compress
- informing about potential complications in the case the recommendations are not followed (skin irritation, maceration, burn)
- giving support and motivate to self-care

Problem 2. Ambulation difficulty resulting from paresis, increased risk of fall due a balance disorder.

Nursing objectives:

- ensuring a sense of security (long-term goal),
- teaching how to ambulate (within 2 hours.),
- encouraging to use the aid equipment (within two weeks),

Nursing interventions:

- determining, with the patient, the causes underlying difficulty in ambulation,

- determining, together with the patient, functional deficits,
- encouraging the patient to move slowly, without pressure,
- informing about the need to remove various obstacles on the way (slippery rugs, redundant furniture),
- suggesting using a non-slip mats in the bathtub, taking care of good lighting in rooms what provides a greater sense of security),
- ambulate using household appliances,
- instructing to put up the heel first and then shift the body weight on the forefoot to prevent standing on the whole flat foot,
- explaining the patient how to walk to keep balance (tilt body towards less affected side),
- encouraging the patient to use of aid equipment, a walker,
- encouraging the patient not to resign from going outdoors because of the difficulty in ambulation,
- encouraging the patient to use stationary rehabilitation,
- supporting the efforts made by the patient (exercises on the mattress, stationary bike), in order to maintain physical condition,
- informing that the exercise time should not exceed 20 minutes,
- encouraging to compensate for disability by watching TV shows, reading books, listening to music,
- encouraging to use of physiotherapy treatments.

Problem 3. Incapacity due to upper limb tremor causing the feeling of discomfort

Nursing objectives:

- learning how to deal with the problem (long-term goal)
- reducing the stress resulting from tremor (long-term goal)

Nursing interventions:

- instructing to grip something firmly, e.g. holding the arm of an armchair or changing the position of the limb,
- instructing to press an elbow hard to the body when performing manual tasks as quickly as possible
- encouraging to relax, loosen the arm, perform deep breaths, try not analyse this situation,
- taking frequent breaks during performing tasks,
- suggesting the patient should not use drugs, e.g. caffeine.

Problem 4. Possible risks of burns or other trauma associated with the weakening of sensation in the fingers.

Nursing objectives:

- preventing injuries (long-term goal)
- teaching how to deal with the problem (long-term goal).

Nursing interventions:

- determining, together with the patient, the causes of weakening of the sense of touch,
- instructing the patient to check the water temperature before performing activities (checking elbow, thermometer)
- instructing on the need to use appropriate equipment for hot dishes,
- wearing warm gloves, in the case of cold hands,
- warning of potential frostbite when using frozen foods, ice,
- supporting the patient's efforts made so far (using oven gloves for hot dishes).

Problem 5. Discomfort due to urgent need to use the toilet, leading to a reluctance for longer stays outside. The risk of urinary tract infections.

Nursing objectives:

- gaining greater control over urination (long-term goal)
- learning how to deal with dysfunction (long-term goal)
- learning how to prevent urinary tract infections (long-term goal).

Nursing interventions:

- advising the patient to reduce drinking fluids in the evening, just before bedtime,
- informing to avoid the intake of diuretics (strong tea, coffee) before going out,
- establishing and following the scheduled times of using the toilet, it serves to increase the functional capacity of the bladder,
- avoiding colds, wearing warm, cotton underwear,
- encouraging the patient to consume cranberry or black currant juice or supplementation of vitamin C, to acidify the urine, thus reducing the risk of infection,
- advising to see a doctor in case of alarming symptoms (pain while urinating, burning)
- encouraging the patient not to avoid meeting people outside the house,
- supporting and motivating the actions already taken (using urological pads, special hygiene of intimate places).

Problem 6. Weakness and general fatigue

Nursing objectives:

- eliminating factors that could cause fatigue (within 2-3 days)
- calming and supporting the patient (during this period).

Nursing interventions:

- eliminating the left forearm inflammation,
- advising to perform household tasks when she is in the best condition, organize breaks to relax during the day,
- suggesting the patient should not postpone personal tasks, as it induces stress,

- not resigning from physical activity, but reducing the intensity of exercises,
- informing the patient about the factors that may intensify the symptoms (excessive exercise, infection, body temperature, stress)
- teaching the patient how to run a diary of fatigue,
- encouraging the patient to continue the activities already started (daily exercise, the patient knows that exercise time should be adapted to her capabilities, breaks between exercises).

Problem 7. Worry and fear of falling resulting from osteoporosis

Nursing objectives:

- calming, ensuring a sense of security (during anxiety and fear period).

Nursing interventions:

- clarifying the nature and causes of the disease (long-term glucocorticoid therapy, age),
- encouraging to consume foods rich in calcium (it is recommended that the older people consume 1200–1500 mg of calcium a day),
- informing about the good influence of physical activity on bone formation process,
- welcoming the actions taken by the patient (taking calcium, systematic testing of calcium level, performing densitometry),
- handing leaflets and brochures on osteoporosis.

Problem 8. Compromised grip-manual performance due to deformation of interphalangeal joints

Nursing objectives:

- assisting in eliminating discomfort (long-term goal).

Nursing interventions:

- assessing the disability deficit together with the patient,
- advising the purchase of pots with appropriate handles,
- encouraging the systematic gymnastics, exercise,
- informing the patient about constant monitoring of degenerative changes, if symptoms intensify,
- must visit the doctor.

### *Self concept*

Problem 1. Lack of acceptance for the fact of being a disabled person

Nursing objectives:

- accepting the disease and its constraints (long-term goal),
- improving self-image (long-term goal).

Nursing interventions:

- expressing acceptance, understanding, kindness, no judging,
- listening carefully and silence therapy,

- determining, together with the patient, the most significant problems associated with self-service,
- searching for the patient's strengths,
- supporting and showing that human life is valuable in every situation,
- providing explanations, answers to questions, not leaving the patient with a sense of uncertainty.

Problem 2. Fear of stigmatization of being a disabled person, resulting in refusal to use aid equipment (a walker, a wheelchair).

Nursing objectives:

- strengthening self-esteem (to achieve the target),
- convincing the patient that it makes sense to use the aid equipment (until the patient decides to do so).

Nursing interventions:

- showing that life with the disease and not complete capability does not mean being worse,
- giving examples of people with disabilities, who thanks to the orthopedic equipment can ambulate and be active (Jasiek Mela, Janina Ochojska, Stephen Hawking),
- convincing the patient that the aid equipment can give her more independence, self-reliance,
- talking with the daughter of the patient, searching for solutions.

Problem 3. Fear of dependence on other people, death due to MS.

Nursing objectives:

- elimination of fear (duration of symptoms).

Nursing interventions:

- listening to the patient, showing acceptance, empathy,
- making the patient aware of the unpredictability of this disease, its individual character,
- calming the patients, showing that saying “if the friend died from MS, the same will certainly happen to me” is wrong,
- raising awareness of positive influence of a healthy lifestyle, systematic rehabilitation that can mitigate the course of disease,
- advising a visit to a psychologist.

Problem 4. Feeling of loneliness

Nursing objectives:

- reducing the feeling of loneliness.

Nursing interventions:

- discussing, together with the patient, factors which trigger this feeling,
- showing the patient kindness, acceptance, treating as an individual,
- discussing, together with the patient, positive behavior (care and daily visits of neighbors, family, daily telephone contact with her daughter),
- supporting and encouraging social interaction (patient attends meetings of The Polish Multiple Sclerosis Society),

- involving the closest family members in the therapy, raising awareness of the patient's problems, searching for optimal solutions.

#### *Role functions*

Problem 1. Feeling of neglecting the duties connected with her daughter.

Nursing objectives:

- improving the self-image as a mother (long-term goal).

Nursing interventions:

- encouraging good thoughts about herself as a mother,
- strengthening the image of a mother who raised her children well,
- showing that, along with the aging process, in a natural way the parent-child roles are converted with the time,
- analyzing, together with the patient, the behavior of her daughter, her concern for her mother, showing love, affection - as an expression of the need to have mother as long as possible, regardless of how much she can help at the moment,
- discussing with the daughter her mother fears, shared search for solutions.

Problem 2. Feeling of not meeting the grandchildren's expectations

Nursing objectives:

- stimulate self-esteem as a grandmother (long-term goal).

Nursing interventions:

- identifying, together with the patient, factors affecting self-esteem,
- proving the false self-perception, as evidenced by the daily visits from the younger grandson,
- reinforcing the correct assessment of the situation in the patient (is aware that the older grandson could not visit her so often because of time spent preparing for the exam in high school, but she often talks to him on the phone, with the younger one she plays at home and devotes much time to him).

Problem 3. The feeling of excessive attention she occupies of neighbors.

Nursing objective:

- strengthening the patient's self-esteem (long-term goal).

Nursing interventions:

- raising awareness of the fact that the patient herself is the reason of frequent visits and a desire to give her help,
- emphasizing the patient qualities (warmth, kindness, peaceability, sociability), which are the reasons other people accompany her willingly,
- showing how valuable the lasting friendship is, which cannot be affected by illness or disability.

#### Step 6. Assessment

As a result of nursing interventions, the patient reached an adaptation in the following modes:

- physiological
  - decreased pain in the left forearm,
  - the patient knows the rules of self-observation,
  - can apply a warm pad following the instructions,
  - knows her functional limitations,
  - is willing to use physiotherapy treatments,
  - can ambulate safely around the house,
  - as a result of discussions, she knows what factors may exacerbate the symptoms,
  - the patient learned to cope with frequent upper left limb tremor,
  - is aware that a lack of sense of touch can cause injuries, now she can cope with this disorder
  - is convinced of the need to avoid colds, urinary tract infections and knows how to prevent them,
  - is able to avoid diuretics, knows about the need to restrict fluids in the evening,
  - can avoid behaviors that lead to exacerbations,
  - knows how to cope in the event of fatigue,
  - can keep a diary of fatigue,
  - is aware of a need for a diet rich in calcium, knows that the diet is a part of the osteoporosis treatment,
  - knows a list of products containing calcium,
  - learned to compensate for physical limitations by watching TV, listening to music, songs, reading,
  - knows that in case of any exacerbation of symptoms, it is necessary to visit the doctor,
  - a sense of security increased, it correlates with the growth in self-knowledge and self-care skills.
- self-concept and role function:
  - the patient still cannot accept the disease, she is motivated to fight the disease,
  - the patient's mood improved, her self-esteem is higher, is able to name her qualities, is convinced that human value does not depend on the physical ability,
  - despite the positive attitude, still unwilling to use the aid equipment,
  - as a result of discussions, the patient is aware of the individual course of the disease, is calmer, not afraid of death due to MS,
  - she started to look at herself as a mother and grandmother in a positive way, does not blame herself, is joyful,
  - increased sense of support in family, friends,
  - the patient knows that the disease will not disappear and will always remain a part of life, but it does not have to be a whole life.

## Discussion

Multiple sclerosis is a chronic disease of unknown etiology progressing with a varying clinical picture. The severity of symptoms and their type varies depending on the clinical case [1]. It leads to a life of perpetual uncertainty, because patients do not know when the next bout will appear. MS is mainly diagnosed in young people, and has little effect on life expectancy (mean lifespan with the disease is 35–40 years) [2]. This means that the person will probably live and struggle with the effects of the disease for many years.

The patient from the case study was diagnosed with the disease at the age of 26, so the disease has accompanied her for most of her life. Currently, the patient, in addition to the primary disease which is MS, suffers also from arthritis of the interphalangeal, osteoporosis, hypertension. Preparation of the nursing process had to take into account the chronic nature of the disease and its variable dynamics, which requires the patient's continuous readiness for coping with the illness and the continual adaptation to it on an emotional, cognitive and social level.

The adaptive model of nursing based on the theory by Callista Roy (RAM) attaches great importance to active and conscious role of the patient in the process of nurturing. Drawing knowledge from human studies, it finds in a human being a great potential of the spiritual forces that should be taken into account in the process of nursing care. Nursing process, based on adaptive model, is adapted individually to the patient through the prism of the surrounding environment [4]. According to the assumptions of the model, the problems were dealt with in four adaptation modes: physiological, self-concept, role function and interdependence [6]. The aim of nursing care was to help the patient achieve adaptation in all modes. The ability to cope and achieving all levels of adaptation was also one of the objectives in the process of nurturing and it also means that all the assumptions of the model were fulfilled.

The nursing model based on the Callista Roy theory has proved useful in the process of nurturing the chronically ill with MS, because with the use of this model, not only did the patient have the bio-psycho-social needs satisfied, but also she acquired the skills to cope with problems caused by the disease. Also, other authors [7–10] confirm the relevance and effectiveness of the model based on Roy's assumptions in the care and education of the chronically ill patient chronically. Therefore, Roy adaptation model is used around the world, both in research aimed at the development of nursing, as well as in everyday nursing practice [11].

The adaptation model of nursing allowed to consider the patient's problems in a comprehensive way, which is typical for models based on the theory of holism. It includes not only somatic problems but also psychological problems. To achieve success, the implementation process had to focus not only on care activities, but also provide

a counselor and a teacher. Commitment and care, penetrating the inner world of the patient were targeted for her welfare and achieving well-being. An important factor, in achieving the adaptability to the changing situation, proved to be the engagement of her close environment (family, friends) in the process to achieve adaptation. Active support of the family is one of the most important factors contributing to the comfort of the chronically ill. Thus, nursing care had to be integrated with the help from close environment. In the whole process, the patient was provided with comprehensive care. The problems were addressed with regard to interacting stimuli and inefficient behavior of the patient. It also took into account the effective behavior developed in the course of the disease. The essential thing was to treat the patient like an individual, to base cooperation on the atmosphere of kindness, intimacy and support. To eliminate the negative impact of stress, the actions taken were aimed to arouse positive emotions such as optimism, hope, sense of control, confidence about self-effectiveness. The achievement of satisfactory level of adaptation was possible for the patient not only due to gaining proper knowledge and learning how to cope with her condition, but also creating a friendly atmosphere. Efforts were made to alleviate emotional tension and inspire confidence and shape a positive attitude towards the future, which is especially important in chronic diseases.

## Conclusions

1. In efforts to prepare care-nurturing actions for the chronically ill, the nurse should select the most desirable and efficient model, which will be effective in the long-term care.
2. Callista Roy adaptation model of nursing takes into account the patient's adaptive capacity to adapt to the constantly changing environment, shaping the skills to activate the defense mechanisms acting in response to stimuli. As a result, the patient can take the steps leading to individual adaptation, which evolved under the influence of affected stimuli.
3. The concept of Roy's model assumes, that except for biological needs a human being has a need is to integrate mentally and emotionally. It allowed to approach the problems multidimensionally through the prism of a bio-psycho-social needs.
4. The nursing process based on the Callista Roy theory requires from nurses more comprehensive attitude when solving problems. This allows the selection of appropriate action. The model structure provides a comprehensive provision of nursing services and does not limit the contact with the patient. This is particularly important in the era of mechanization in modern medicine.



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