

Nursing Care of The Chronic Obstructive Pulmonary Disease Patient According to Orem's Theory of Self-Care Deficiency: A Case Report

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Abstract

Chronic Obstructive Pulmonary Disease is a progressive chronic disease that progresses with exacerbations that cause significant mortality and morbidity. This disease causes physical, psychosocial and emotional deficiencies along with respiratory distress. It also restricts the patient's life activities. In this case, the nurse should strengthen the self-management of the individual. Self-care must be carried out on the basis of self-management. Orem self-care is defined as actions performed by the individual to maintain the life, health and well-being of the individual. According to Orem's self-care theory, the individual should take care of himself and take the responsibility of care. An individual may need a nursing process for self-care needs that are universal, developmental and devoid of health. According to the problems determined in the nursing process, professional nursing care is carried out with evidence-based nursing interventions. In this article, it is aimed to diagnose the patient with Chronic Obstructive Pulmonary Disease within the framework of Orem Self Care Deficiency Theory and to create an evidence-based nursing care plan by classification of nursing interventions and care outcomes together with nursing diagnoses.

Keywords: COPD, Orem, Self care theory, Nursing, Nursing process

Introduction

Chronic obstructive pulmonary disease (COPD) is a common, preventable, and treatable disease with increased mortality and morbidity worldwide. It is associated with an increased chronic inflammatory response of the airways and lungs to harmful gases and particles. It is usually characterized by permanent airflow limitation and progresses with exacerbations.¹ It is the third leading cause of death worldwide. Its prevalence is 19.2% in Turkey.^{2,3}

Chronic obstructive pulmonary disease imposes a financial and spiritual burden on patients and their family members. Its natural course is marked by exacerbations that cause increased healthcare costs and hospitalizations. It causes respiratory distress, which leads to physical and psychosocial deficiencies. It is crucial to know its etiology to manage it effectively, improve patients' quality of life, and reduce mortality and morbidity. Its etiology is affected by age, gender (male), air pollution, occupational dust, genetic structure, low socioeconomic status, infections, and malnutrition. However, patients who make lifestyle changes can manage the disease.⁴

Chronic obstructive pulmonary disease limits activities and causes deficiencies. Symptoms, especially dyspnea, negatively affect the quality of life and increase the need for pulmonary rehabilitation. Complications (e.g., right ventricular failure) also limit activities of daily living, which are critical for survival. Patients with COPD experience difficulty with self-care, such as breathing, feeding, dressing, bathing, and so on. Patients who cannot perform those activities cannot lead their lives in a healthy way. Nurses contribute to the healing process by either meeting patients' needs or helping them meet their own needs.⁴ They also plan care according to Orem's Self-Care Deficit Theory to strengthen self-care.⁵

Dorothea Elizabeth Orem is a prominent nurse theorist. She was born in 1914 and died in 2007. She received many awards, published studies and books, and worked for various universities. She was inspired by numerous theorists (Abdellah, Henderson, Johnson, King, Levine, Nightingale, Orlando, Peplau, Riehl, Rogers, Roy, Travelbee, and Weidenbach) and developed her own theory in 1956. Her theory emphasizes that one

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should take responsibility for one's own care. It is composed of 3 inter-related models: (1) the self-care model, (2) the self-care deficit model, and (3) the nursing system model.^{5,7}

Self-care consists of actions initiated and sustained to maintain health and well-being. One is always involved in one's own health. According to Orem, self-care and health are interrelated. She approaches the individual from a holistic perspective and takes into account the physical, chemical, biological, socioeconomic status, and environmental factors that affect self-care. She also has a theory that suggests that one should be actively involved in one's health to meet one's care needs. According to her, nurses are responsible for helping their patients until they can perform activities of daily living themselves and ensuring that they take care of themselves as soon as possible.^{5,7,8}

Orem's theory of self-care deficiency focuses on promoting self-care actions. Her theory is essential in diagnosis. Once care needs are identified, it is recommended to plan nursing interventions classification (NIC) and nursing outcomes classification (NOC) through nursing diagnoses approved by the North American Nursing Diagnosis Association (NANDA). The NIC system enables healthcare professionals to access interventions. The NOC system is the standardization of health outcomes to determine the effect of nursing interventions on patients.⁹ Nursing care plans consist of evidence-based practice interventions based on JBI Levels of Evidence.¹⁰

Written and verbal informed consent was obtained from Mr. R.G. for the case report. This paper aimed to diagnose a patient with COPD within the framework of Orem's Self-Care Deficit Theory and develop an evidence-based nursing care plan through NIC and NOC along with NANDA nursing diagnoses.

A Patient with COPD According to Orem's Self-Care Deficit Theory

Key Situational Factors

Age

65 years

Sex

Male

Health status

Chronic obstructive pulmonary disease, type 2 respiratory failure (for 3 years), and hypertension (for 10 years)

Developmental status

160 cm in height, 75 kg in weight, and a waist circumference of 103 cm

Sociocultural characteristics

The patient is married with 5 children. He is a retired farmer. He lives in a detached house with a stove and a garden in a district of Konya. He has a secondary school degree.

Social security system

Social security organization for artisans and the self-employed (Bağkur)

Family type

Extended

Lifestyle

Sedentary

Environmental conditions

He cannot visit his relatives and friends because he has to receive continuous oxygen support. He uses an oxygen cylinder and a wheelchair when he needs to go out. He uses a 10-m-long oxygen mask and gets help to mobilize at home.

Availability-adequacy of resources

He is a middle-class person who receives financial and spiritual support from his family.

Self-Care

Self-care is defined as the actions that one takes to maintain one's life, health, and well-being.^{5,7}

Self-care agent

Mr. R.G.

Self-care skill

The patient is unable to perform some of the activities of daily living, such as bathing, personal hygiene, dressing, using the toilet, moving, and climbing stairs. He has a Barthel Index of Activities of Daily Living score of 55%.

Dependent care agent

His wife and children

Self-care Power

Orem defines self-care power as a multidimensional concept that involves one having the knowledge and skills required to perform self-care activities to protect, maintain, and improve one's health and well-being.^{5,7}

Self-confidence and self-esteem

He has low self-confidence and self-esteem. He does not make eye contact when speaking. He is unwilling to talk.

Ability to control and initiate energy

Unwilling

Comprehension ability

Moderate

Motivation

His wife and children motivate him.

Ability to make decisions about self-care

He decides to use the toilet independently. His relatives decide on other issues.

Ability to obtain and apply technical knowledge

Low

Perceptual and cognitive status and communication skills

Low

Ability to organize and integrate self-care into individual and social life to achieve goals

Low

Therapeutic Self-Care Needs

Orem defines all self-care actions that one must perform to prevent disease and improve health as therapeutic self-care needs. She classifies self-care needs into 3 groups: universal, developmental, and health deviation.^{5,7}

Universal Self-Care Needs

Universal self-care needs are related to the activities of daily living, such as the maintenance of a sufficient intake of air, water, and nutrition, the provision of care associated with elimination processes and excrements, the maintenance of a balance between activity and rest, and solitude and social interaction. Maintaining a balance between these requisites involves the basic requests and requirements, such as maintaining well-being and improving functionality.^{5,7}

Air

He has an oxygen level of 38/min and saturation of 91% [continuous positive airway pressure (CPAP)]. He has difficulty breathing without oxygen support. He has dyspnea and purulent sputum.

Water

He takes in a total of 2-2.5 L of liquid, including water, tea, fruit juice, etc.

Nutrition

He sticks to a protein-rich and salt-free diet. He states that he is not too picky about food. He has 3 main meals and 3 snacks.

Mouth hygiene

He has dentures on the lower and upper jaws. He has dryness in the mouth. He states that he does not brush his teeth and does not perform mouth hygiene regularly.

Elimination processes and excrements

Urine and stool control is normal. He urinates 6-8 times and defecates once a day. Bowel sounds are 8/min.

Activity and rest

He does not exercise regularly. He has irregular sleep patterns. He sleeps about 3 hours in the morning and about 3 hours at night. He states that he cannot and does not want to use a CPAP device while sleeping, although he is recommended to. He states that he cannot breathe easily, does not sleep enough, and does not feel rested. He uses 4 pillows while sleeping and sleeps in the orthopnea position. He looks tired.

Protection from hazards

He has a risk of pressure ulcers as he has a Braden Scale score of 18. He has a risk of falling as he has an Itaki Fall Risk Scale score of 10.

Social activity

He likes going to a coffeehouse, but he cannot because of shortness of breath.

Improved state

He states that he has accepted his illness.

Developmental Self-Care Needs

Developmental self-care needs are related to one's needs during the growth and developmental periods.⁷

The patient is 65 years old. He has a monthly pension. He states that he is unable to fulfill his roles and responsibilities as a parent and a spouse due to his illness. His wife and children keep track of his medications, consultation dates, and CPAP device. He has a chronic disease and states that he cannot manage COPD and, therefore, does not want to participate in his care. He has little social interaction because he needs constant oxygen and gets tired too quickly. He

expresses that he is stressed in the hospital and wants to get better and return home as soon as possible. He adds that his illness has a negative impact on his sexual health. His diet should be regulated because he has a body mass index of 29.29 kg/m² and an abdominal circumference of 103 cm.

Health Deviation Self-Care Needs

Orem defines health deviation self-care needs as needs in the event of ailments, disability, or illness. Health deviation self-care needs arise when one cannot meet one's universal care needs.^{5,7}

The patient deviates from health because he has COPD attacks and a history of hypertension (5 years) and has been smoking 2 packs of cigarettes a day for 40 years and cannot use the CPAP device correctly and effectively. He also suffers from delayed capillary refill time (10 seconds), pale and dry skin, purulent sputum, cough, tibial edema (+3), fatigue, pale conjunctiva, pale look, shortness of breath, and central cyanosis (mucous membranes and pale and purple lip contour, tongue tip, and nails). He does not know about his medications and uses his respiratory muscles (diaphragm, sternocleidomastoid muscle, and scalene muscle). The expiration is prolonged, and widespread rhonchi are audible on auscultation.

His lab results are Hgb: 9.8 g/dL, Hct: 31.1%, WBC: 9.85/mm³, PLT: 285 000/mm³, RBC: 4080/mm³, hemolysis: 55 (1+), Na: 134 mmol/L, K: 2.72 mmol/L, Ca: 7.8 mg/dL, Mg: 1.43 mg/dL, Cl: 89 mmol/L, total protein: 4.6 g/dL, albumin: 2.2 g/dL, and CRP: 171.11 mg/dL. His spirometry values after bronchodilator are FEV1: 1.46 L, FVC: 2.60 L, and FEV1/FVC: 56.2%.

His blood gas values are pH: 7.447, pCO₂: 50.4 mmHg, pO₂: 57.6 mmHg, and HCO₃: 34.2 mEq/L.

The treatment protocol: Combivent inhaler (2x1), Cardura 4 mg PO (1x1), Diltiazem SR 90 mg PO (2x1), Tamiflu 75 mg PO (2x1), Delix 10 mg PO (1x1), Tavanic 500 mg PO (1x1), Nexium 40 mg IV (1x1), Teobag 200 mg IV (2x1), Meronem 1 g IV (3x1), Assist 300 mg IV (2x1), Desal 20 mg IV (1x1), Tygacil 50 mg IV (2x1), Albumin IV (2x1), and Oxygen: 4-5 L/min. He needs to use his CPAP device for approximately 5 hours during the day and 5 hours at night. His health deviations were identified, and appropriate treatment was planned. However, the patient has difficulty accepting the changes in his lifestyle. He has a reduced ability and desire to perform self-care.

Self-Care Deficit

Self-care deficit arises when one has too little self-care power to meet one's self-care needs.^{5,7}

Suffering from dyspnea, fatigue, and weakness due to COPD, the patient needs help to perform basic activities of daily living. He knows little about his illness and medications. He does not visit his doctor regularly and is unable to self-manage his disease.

Nursing System

Orem classifies the nursing system into 3 groups concerning self-care needs.^{5,7}

- 1) The wholly compensatory system represented by situations where one is unable to perform needed self-care actions
- 2) The partly compensatory system represented by situations where one is able to meet some self-care needs

- 3) The supportive-educative system represented by situations where one needs assistance with decision-making and behavior control when meeting one's needs.

Nursing Diagnoses

Ineffective airway clearance, disturbed sleep pattern, inadequate self-care in bathing, dressing, nutrition, and meeting toilet needs, excess fluid volume, activity intolerance, overweight, impaired gas exchange, impaired physical mobility, ineffective health management, weakness, fatigue, ineffective role performance, impaired social interaction, fragile elderly syndrome, sexual dysfunction, sedentary lifestyle, lack of knowledge, risk of disruption of the oral mucous membrane, aspiration risk, infection risk, risk of falling, and risk of skin integrity.

Nursing Care Plan

Care was planned for 3 nursing diagnoses.⁹⁻¹¹

Diagnosis 1: Ineffective Airway Clearance

(NANDA Domain 11: Security/Protection, Class 2: Physical Injury)

Etiological factors

The patient has had COPD for 3 years and hypertension for 10 years. He is 65 years old. He has been smoking for 40 years. He has a sedentary lifestyle.

Descriptive criteria

Tachypnea (respiration=38/min), O₂ saturation with a CPAP=91%, pale and dry skin, pale conjunctiva, dyspnea, rhonchi, and central cyanosis (mucous membranes and pale and purple lip contour, tongue tip, and nails), delayed capillary refill time (10 seconds), purulent sputum, cough, using a CPAP. When the patient does not use his CPAP, he takes in oxygen with a mask for 4-5 L/min. He becomes mobile with his oxygen tube. He uses an oxygen tube and a wheelchair to go outside the room. He uses auxiliary respiratory muscles (diaphragm, sternocleidomastoid muscle, and scalene muscle). His blood gas values are pH: 7.447, pCO₂: 50.4 mmHg, pO₂: 57.6 mmHg, and HCO₃: 34.2 mEq/L. His spirometry values after the bronchodilator are FEV1: 1.46 L, FVC: 2.60 L, and FEV1/FVC: 56.2%. He has difficulty breathing.

Goal

The patient will reduce secretion and the amount of oxygen.

Expected outcomes (NOC)

The patient will cough effectively. He will have clear breathing sounds. He will learn and apply useful methods that will increase secretion excretion. He will learn and explain the changes in sputum color, amount, and smell. He will have stable vital signs. He will breathe comfortably without his oxygen tube. He will not develop cyanosis. He will state that he is breathing easily. He will not have respiratory acidosis/alcoholysis.

Nursing interventions (NIC)

Measuring vital signs (6x1) (respiration, TA, saturation, fever, and pulse), evaluating whether the patient is using accessory respiratory muscles, listening to lung sounds every 1-4 hours, raising the head of the bed 30-45° to give a semi fowler position, changing his position every 2 hours and giving him the orthopnea position (standing upright to reduce the pressure of the organs on the lungs), teaching breathing and coughing exercises, supporting the practice of controlled cough

(enabling the patient to use the diaphragmatic muscles and cough strongly and effectively). Controlled cough: The patient breathes deeply through his nose and holds his breath for a few seconds. Afterward, he tightens his upper abdominal muscles and exhales by coughing 2 or 3 times with his mouth open. Teaching the patient how to huff cough, allowing forced expiratory techniques to be used. Huff cough: The patient breathes deeply through his nose and holds it for a few seconds, then coughs several times while saying the word "huff" (preventing closure of the glottis and facilitating secretion excretion). Making sure that the patient uses the CPAP correctly. Evaluating the pressure points for redness while putting the CPAP mask on. Making sure that the patient uses the oxygen mask. Making sure that he takes in 4-5 L/min oxygen according to demand. Evaluating whether there is redness at some points while using the mask. Evaluating for oxygen toxicity (in case of excess oxygen, the PaO₂ value in the blood rises, resulting in depressed breathing and decreased ventilation. In addition, providing oxygen at a concentration of 80% or more for a long time can lead to surfactant destruction, reduced surfactant production in lung tissue, and congestion, inflammation, and edema in the lungs). Paying attention to the hygiene of the CPAP mask, oxygen mask, and nebula mask. Suggesting to the patient that he change the mask every 3 days. Explaining the importance of washing the mask every 4-6 hours during the day. Putting the appropriate amount of distilled water daily. Evaluating for the presence of cyanosis. Making sure that the patient uses bronchodilator, steroid, and Mucolytic drugs when requested. Monitoring side effects (tachycardia, anxiety, diabetes, ulcer, osteoporosis, central obesity, moon face, fatigue, weakness, susceptibility to infection, edema, psychiatric problems, hypertension, corneal infection, and adrenal crisis). Providing oral care. Assessing pain, fatigue, and weakness. Asking the patient how he is feeling. Assessing dyspnea-related anxiety. Monitoring pulmonary function test results that measure lung capacity. Evaluating peripheral cyanosis and loss of sensation and protecting the patient from peripheral trauma. Ensuring fluid intake of up to 2500 mL/day (unless cardiac and renal limitations are present) to minimize mucosal desiccation and increase ciliary activity for secretory excretion. Applying percussion, vibration, and auscultation techniques when appropriate. Monitoring sputum for color, quantity, and odor. Ensuring activity and mobilization as tolerated to facilitate secretion excretion. Providing secretion excretion through aspiration in times of need. Making sure that the patient benefits from pulmonary rehabilitation. Monitoring lab results. Monitoring blood gas. Evaluating for respiratory acidosis/alcoholysis. Ventilating the room. Accepting no visitors outside visiting hours.

Evaluation

The patient still has tachypnea and dyspnea. There is a decrease in purulent secretion. He continues to receive oxygen. He makes sure that he uses the CPAP device correctly and effectively. He still has central cyanosis. He released secretions after the coughing exercise. He states that he breathes more easily in the orthopnea position. Despite removing secretions, he continues to clear the airway as new secretions are present.

Diagnosis 2: Disrupted Sleep Pattern

(NANDA Domain 4: Activity/Rest, Class 1: Sleep/Rest)

Etiological factors

The patient has had COPD for 3 years and hypertension for 10 years. He is 65 years old. He is hospitalized and immobile.

Descriptive criteria

He sleeps about 3 hours in the morning and about 3 hours at night. He states that he cannot and does not want to use the CPAP device while sleeping, although he is recommended to. He states that he cannot breathe easily, does not sleep enough, and does not feel rested. He uses four pillows while sleeping and sleeps in the orthopnea position. He looks tired.

Goal

The patient will sleep longer and have a higher sleep quality.

Expected outcomes (NOC)

He will verbally express and implement practices to increase sleep quality. He will have a sound sleep with the CPAP. He will not look tired. He will feel rested.

Nursing interventions (NIC)

Explaining the importance of sleeping with the CPAP and helping him sleep when he has difficulty sleeping due to dyspnea. Suggesting that he sleep in the semi-fowler position if he can tolerate it, instead of the orthopnea position. Telling him to turn off the lights and take measures to reduce noise at night. Explaining to him that it is important to ensure environmental silence during sleep. Suggesting that he use earplugs if he is bothered by too much noise. Suggesting that he use an eye patch when the room lighting cannot be reduced at night. Explaining to him that the first 3-4 hours of sleep should be uninterrupted. Evaluating drugs and stimulants (tea, coffee, etc.) that cause insomnia. Setting medication hours according to his sleep hours. Asking him how he feels when he wakes up. Teaching him progressive muscle relaxation exercises and making sure that he puts them into practice. Suggesting that he take a warm shower, put on clean clothes, and make his bed before going to sleep. Suggesting that he reduce his daytime naps as much as possible.

Evaluation

The patient states that he has been sleeping for 5 hours at night, that the CPAP device does not bother him, and that he feels rested. He still has disturbed sleep patterns, although it has been less severe.

Diagnosis 3: Self-Care Deficit in Bathing

(NANDA Domain 4: Activity/Rest, Class 5: Self-Care)

Etiological factors

The patient has activity intolerance, weakness, and fatigue due to dyspnea. He receives oxygen continuously.

Descriptive criteria

The patient cannot do the following on his own: going to the bathroom, drying his body, using toiletries, adjusting hot water, and washing his body.

Goal

The patient will bathe himself.

Expected outcomes (NOC)

The patient will go to the bathroom, wash and dry his body, use toiletries, adjust hot water, maintain skin integrity, and express satisfaction during the bathing experience.

Nursing interventions (NIC)

Helping the patient set a day and time for a bath. Protecting his privacy. Encouraging him to take a bath. Making sure that toiletries are within

reach. Telling him to wear non-slip slippers. Making sure that he uses the 10-m-long oxygen mask in the shower. Suggesting that he wash his hair and face last to avoid aspiration. Telling him to use assistive devices (wheelchair, walking stick, etc.) in the shower. Ensuring that his relatives help him while taking a bath if needed. Making sure that the water is above 25.1°C, especially on cold days. Encouraging him to turn on the tap, adjust hot water, and wash and dry his body by himself. Making sure the room is warm when he gets back. Suggesting that he take a bath at least 2-3 times a week.

Evaluation

The patient took a bath with an oxygen mask with the help of his relative. He stated that he was satisfied with the experience.

Conclusion

The patient data were systematized within the framework of Orem's Self-Care Deficit Theory. The patient was diagnosed, and his needs were identified according to Orem's theory. Afterward, nursing care plans were developed in line with the nursing process. The care plans included evidence-based nursing interventions based on the NANDA, and NIC and NOC classification. Due to dyspnea, our patient has difficulty performing some of the activities of daily living, such as bathing, maintaining personal hygiene, dressing, using the toilet, moving, and climbing stairs. Self-care is critical for disease management. The patient has a chronic disease. We should make sure that he adapts to lifestyle changes. The results show that he cannot participate in the treatment management and cannot accept his condition because he cannot perform his self-care. This indicates the significance of self-management. Nurses should fulfill their roles as educators, researchers, curators, advocates, and caregivers to provide care and counseling and strengthen self-management.

Informed Consent: Written and verbal consent was obtained from the patient who participated in the study.

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