

Application of Nursing Theory into Practice: Dorothea Orem's Self-Care Deficit Nursing Theory in a Critically Ill Patient

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ARTICLE INFO	ABSTRACT
*Correspondence to Rizwana Ibrahim University College of Nursing, The Islamia University of Bahawalpur, Bahawalpur, Pakistan. Email: rizwanaibrahim267@gmail.com Article History Received: 07-08-2026 Revised: 16-09-2026 Accepted: 21-09-2026 Published: 30-09-2026 How to Cite Ibrahim R, Amin R, Shakoor H, Batool T, Ishrat N, Rana A. Application of nursing theory into practice: Dorothea Orem's self-care deficit nursing theory in a critically ill patient. Pak J Clin Res. 2026;3(9):14-18. doi:10.65761/pjcr.2026.328 DOI: https://doi.org/10.65761/pjcr.2026.328	Background: Critically ill patients often experience impaired self-care due to respiratory compromise, immobility, weakness, invasive devices, and healthcare dependence. Orem's Self-Care Deficit Nursing Theory guides assessment of self-care needs and appropriate nursing interventions. Methods: This case report describes a 28-year-old man admitted to an intensive care unit after a severe road traffic accident with polytrauma (including a blunt chest trauma with pulmonary contusions, left femur fracture, and abdominal wall contusions) and acute respiratory failure. He required invasive mechanical ventilation for 20 days. One day following successful extubation (ICU Day 21), he developed post-extubation hypoxemia with an SpO₂ dropping to 80% on room air. High-flow nasal oxygen (HFNO) therapy was immediately initiated at a flow rate of 50 L/min and an FiO₂ of 0.50, successfully restoring SpO₂ to 95%–97%. He had marked generalized weakness, was lethargic, anxious, and irritable, had an ineffective cough with retained secretions requiring suctioning, and relied on enteral nutrition via a nasogastric tube and a Foley catheter for urine-output monitoring. He was completely dependent for hygiene, oral care, repositioning, and mobility. Results: Orem's theoretical concepts were applied to categorize self-care deficits and map nursing activities explicitly across Wholly Compensatory, Partly Compensatory, and Supportive-Educative nursing systems. Care transitioned dynamically from nurse-administered compensatory measures toward patient-partnered activities as functional participation improved. Conclusion: Orem's theory served as an effective conceptual framework for organizing clinical reasoning and structuring individualized care during recovery from prolonged mechanical ventilation. This report illustrates theoretical organization of care rather than a demonstrated causal effect on clinical recovery.

Keywords: Dorothea Orem; self-care deficit; intensive care nursing; mechanical ventilation; critical illness

INTRODUCTION

Nursing theories provide conceptual structures that help nurses organize assessment, clinical reasoning, intervention, and evaluation. Dorothea Orem's Self-Care Deficit Nursing Theory is particularly relevant when illness or treatment reduces a person's ability to perform activities necessary to maintain life, health, and well-being.^{1,2}

Orem's theory distinguishes between therapeutic self-care demand and self-care agency. When self-care agency is insufficient to meet therapeutic self-care demand, a self-care deficit occurs and nursing becomes necessary. The nurse then determines the degree of assistance required and selects an appropriate nursing system.^{1,2}

Patients recovering from prolonged mechanical ventilation may experience generalized weakness, impaired respiratory function, reduced mobility, dependence on enteral feeding or urinary devices, impaired oral hygiene, and difficulty performing activities of daily living. ICU-acquired weakness is associated with impaired physical function and may complicate recovery after

critical illness.³ Evidence syntheses also support appropriately timed and individualized mobilization and rehabilitation in mechanically ventilated and critically ill adults.^{4,5}

This case report describes the application of Orem's Self-Care Deficit Nursing Theory to a critically ill patient recovering after prolonged mechanical ventilation. The purpose is to demonstrate how theoretical concepts can be used to identify self-care deficits, determine nursing-system requirements, and organize individualized nursing care. The case is presented as a clinical application of nursing theory rather than evidence that Orem's theory independently caused clinical improvement.

CASE PRESENTATION

Patient Information and Clinical Scenario

A 28-year-old male was admitted to the intensive care unit following a high-velocity road traffic accident. Clinical evaluation upon admission (ICU Day 1) revealed traumatic injuries, including severe blunt chest trauma with bilateral pulmonary contusions, a



closed left femur fracture, and minor abdominal wall contusions. The acute respiratory compromise progressed to severe hypoxic respiratory failure, necessitating endotracheal intubation and mechanical ventilation.

The patient required mechanical ventilation for 20 consecutive days. On ICU Day 20, he successfully passed a spontaneous breathing trial and was extubated. On ICU Day 21 (one day post-extubation), a formal nursing assessment was conducted. Shortly prior to the assessment, while breathing room air, the patient developed post-extubation hypoxemia with an oxygen saturation SpO₂ dropping to 80%. High-flow nasal oxygen (HFNO) therapy was immediately initiated at a flow rate of 50 L/min with an inspired oxygen fraction FiO₂ of 0.50. Within 30 minutes of HFNO initiation, his oxygenation stabilized, achieving an SpO₂ of 95%–97%.

At the time of assessment on ICU Day 21, vital signs were: blood pressure 100/60 mmHg, pulse rate 82 beats/minute, respiratory rate 26 breaths/minute, and body temperature 98°F (36.7°C). The patient exhibited marked generalized weakness, lethargy, anxiety, and irritability. He demonstrated an ineffective cough with inability to clear copious bronchial secretions independently, requiring endotracheal/oropharyngeal suctioning to preserve airway patency.

Because of marked muscle weakness and prolonged immobility, he was unable to move independently in bed, placing him at elevated risk for pressure injury development. He remained dependent on enteral nutrition delivered via a nasogastric (NG) tube and had an indwelling Foley catheter in place for precise urine-output monitoring. His oral hygiene was compromised following prolonged intubation; while no active oral candidiasis was diagnosed, he was monitored for oral thrush risk.

Investigations

Initial arterial blood gas (ABG) analysis on room air post-extubation (ICU Day 21) showed acute hypoxemia (PaO₂ 52 mmHg, SpO₂ 80%), which corrected to PaO₂ 88 mmHg (SpO₂ 96%) following HFNO therapy (50 L/min, FiO₂ 0.50). Portable chest radiography demonstrated resolving bilateral pulmonary contusions with minor bibasilar atelectasis. Bedside hemoglobin was 10.2 g/dL, white blood cell count was $11.5 \times 10^3/\mu\text{L}$, and serum electrolytes were within acceptable limits.

Table 1. Clinical timeline structured by ICU days and self-care agency progression.

Time point	Clinical event	Relevance to Self-Care Demand & Agency
ICU Day 1	Road traffic accident; multiple trauma (chest contusions, left femur fracture); acute respiratory failure.	Abrupt elevation in therapeutic self-care demand; zero independent self-care agency
ICU Days 1–20	Invasive mechanical ventilation, enteral NG feeding, Foley catheterization, sedation.	Complete dependence; wholly compensatory nursing care required.
ICU Day 20	Successful spontaneous breathing trial and extubation.	Initial transition toward independent respiratory self-care agency.

ICU Day 21 (Assessment)	Post-extubation hypoxemia (SpO ₂ 80% on room air); HFNO initiated (50 L/min, FiO ₂ 0.50, SpO ₂ 95%–97%); marked generalized weakness; ineffective cough; full dependence for ADLs	High self-care deficit identified; mixture of Wholly Compensatory and Partly Compensatory nursing systems instituted.
ICU Days 22–25	Weaning from HFNO to nasal cannula (2L/min); active assistance in deep breathing, active-assisted bed mobility, self-feeding, and oral care.	Progressive increase in self-care agency; transition from Wholly to Partly Compensatory systems.
ICU Day 26 (Transfer)	Successful weaning to room air; independent oral intake; sitting at bedside with minimal support; transfer to step-down ward.	Restoration of self-care agency; transition toward Supportive-Educative system.
Recovery phase	Participation in breathing exercises, assisted repositioning and gradual mobilization described as strength improved	Movement toward greater participation

Management

Application of Orem's Self-Care Deficit Nursing Theory

Orem's theory structures nursing care around three central construct pillars: self-care agency, therapeutic self-care demand, and nursing systems.^{1,2}

1. Self-Care Requisites

- **Universal requisites:** Maintaining air balance, fluid/nutritional intake, elimination, activity/rest balance, hazard prevention, and personal hygiene.
- **Developmental requisites:** Adapting to sudden physical loss of autonomy and temporary total dependence in a critical care environment.
- **Health-deviation requisites:** *Managing complications of blunt chest trauma, pulmonary contusions, prolonged intubation, and mechanical ventilation recovery.*¹

2. Matching Interventions to Orem's Nursing Systems:

To strengthen the theory-to-practice link, nursing interventions were explicitly categorized into Orem's three nursing systems based on the patient's degree of active physical and cognitive capacity:

- **Wholly Compensatory System:** Applied when the patient had zero physical ability to perform the action. Examples included nasogastric tube administration of enteral nutrition, urinary catheter management, performative oral care/bed baths, closed oropharyngeal suctioning, and passive pressure-injury turn schedules during periods of severe lethargy.
- **Partly Compensatory System:** Applied as muscle strength and alertness improved. The nurse and patient shared execution. Examples included the nurse supporting the

patient's trunk while he actively performed deep breathing exercises, the patient holding a cup to rinse his mouth while the nurse provided suction/basin support, and active-assisted limb positioning.

- **Supportive-Educative System:** Applied when the patient executed the action independently but required instruction, guidance, or psychological encouragement. Examples included teaching incentive spirometry techniques, educating on cough expansion mechanics, and providing anxiety-reduction strategies during oxygen weaning.

Dynamic Transition in Care

As the patient's physical strength recovered, nursing care dynamically shifted along Orem's continuum:

- **Airway & Breathing:** Initial complete reliance on nurse-initiated suctioning and HFNO management (Wholly

Compensatory) transitioned to nurse-guided incentive spirometry, active huff-coughing, and self-administered inline deep breathing (Partly Compensatory to Supportive-Educative).

- **Hygiene & Oral Care:** Complete nurse-performed bed baths and oral swab cleansing (Wholly Compensatory) transitioned to the patient holding his toothbrush and cleaning his face while sitting supported at the bedside (Partly Compensatory).
- **Mobility & Repositioning:** Passive 2-hourly log-rolling by nursing staff (Wholly Compensatory) transitioned to active-assisted turning, sitting on the edge of the bed with minimal nurse stabilization, and active leg dangling (Partly Compensatory).

Table 2. Application of Orem's concepts to the patient's nursing care.

Orem Requisite / Concept	Clinical Finding	Orem Nursing System	Explicit Nursing Response	Clinical Goal
Air / Gas Exchange	Post-extubation SpO ₂ 80% on room air	Wholly Compensatory (Initial) → Supportive-Educative (Later)	Applied HFNO (50 L/min, FiO ₂ 0.50); monitored serial SpO ₂ /ABGs; titrated oxygen down to 2 L/min nasal cannula as tolerated	Restore and maintain adequate tissue oxygenation (SpO ₂ ≥ 95%)
Airway Clearance	Ineffective cough, retained secretions	Wholly Compensatory (Suctioning) → Partly Compensatory (Coughing)	Provided suctioning when indicated; assisted and coached patient in splinted coughing and incentive spirometry	Maintain airway patency and clear bronchial secretions
Nutritional Maintenance	Enteral nutrition via NG tube	Wholly Compensatory → Partly Compensatory	Administered enteral feeds per protocol; assessed swallow function post-extubation; transitioned to oral pureed diet with assistance	Maintain nutritional support and transition to oral intake
Elimination	Indwelling Foley catheter	Wholly Compensatory → Supportive-Educative	Maintained sterile catheter hygiene and monitored hourly output; trial catheter removal on Day 23; educated on voiding signs	Ensure output monitoring and restore independent voiding
Mobility & Activity	Marked generalized weakness; immobility	Wholly Compensatory → Partly Compensatory	Conducted passive ROM initially; progressed to active-assisted turning, dangling at bedside, and assisted chair transfer	Improve muscle strength and functional mobility
Hazard Prevention	High risk for skin breakdown	Wholly Compensatory → Partly Compensatory	Executed 2-hourly repositioning; conducted daily skin integrity checks; engaged patient in micro-repositioning	Preserve skin integrity and prevent pressure injury
Hygiene & Oral Care	Poor oral hygiene; dependence for ADLs	Wholly Compensatory → Partly Compensatory	Performed chlorhexidine oral rinses; assisted patient in grasping toothbrush and washing upper body	Re-establish oral mucosal health and self-care involvement
Psychological Balance	Anxiety and irritability	Supportive-Educative	Provided calm reassurance, orientation, structured care routines, and family	Reduce anxiety and build self-care motivation

			presence exercises	during	
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Outcome

Following the structured implementation of Orem-guided nursing care, the patient demonstrated qualitative and functional clinical progression between ICU Day 21 and ICU Day 26:

Respiratory Function & Oxygenation

On ICU Day 21, oxygenation required HFNO (50 L/min, FiO₂ 0.50). By ICU Day 23, the patient was successfully stepped down to a standard nasal cannula at 2 L/min (SpO₂ 96%). By ICU Day 25, he maintained an SpO₂ of 95%–97% on room air. Secretion clearance improved from requiring frequent nurse suctioning (4–6 times/shift) to independent, effective coughing with splinting.

Mobility & Functional Independence

Marked generalized weakness improved from complete bed confinement (ICU Day 21) to sitting unassisted on the edge of the bed for 20 minutes (ICU Day 24) and standing with minimal two-person assistance (ICU Day 25).

Activities of Daily Living (ADLs)

Assistance requirements for oral care, upper-body hygiene, and feeding transitioned from total dependence (100% nurse-performed) to moderate assistance (patient completing ~50% of tasks) by ICU Day 25.

Invasive Devices & Elimination: The NG tube was removed on ICU Day 23 following a successful swallow evaluation, with the patient tolerating soft oral diets. The Foley catheter was successfully removed on ICU Day 23, with adequate spontaneous voiding. On ICU Day 26, the patient was clinically stable and successfully transferred from the ICU to the step-down surgical ward.

The central clinical issue was the mismatch between therapeutic self-care demand and self-care agency. Following 20 days of mechanical ventilation and recent extubation, the patient continued to require respiratory support and assistance with most activities of daily living. From an Orem perspective, nursing was required because the patient could not independently meet the care demands associated with his current health state.^{1,2}

Respiratory status was a major determinant of self-care capacity. An oxygen saturation of 80% following extubation and the need for high-flow nasal oxygen indicate that respiratory needs remained substantial at the time of assessment. Ineffective cough and the need for suctioning further demonstrated that independent airway clearance was not yet adequate. Generalized weakness and prolonged immobility also limited self-care. ICU-acquired weakness can impair mobility and physical function and may prolong recovery after critical illness.³ Evidence syntheses support individualized early mobilization in mechanically ventilated adults, although timing and intensity should be determined by clinical stability and patient characteristics.^{4,5}

Airway care, oral hygiene, skin protection, nutrition, elimination, and mobility were interconnected components of the patient's self-care demand. Orem's framework helps the nurse distinguish activities that must initially be performed for the patient from activities that can be performed with the patient as capacity improves.

The original manuscript identified the partly compensatory nursing system as the principal approach because the patient was

conscious and able to communicate but remained too weak to perform most activities independently. This interpretation is reasonable for activities in which the patient could participate; however, Orem's framework is more precise when the nursing system is matched to each activity because the same patient may require compensatory assistance for one activity and partly compensatory assistance for another.^{1,2}

The case should be interpreted alongside evidence-based critical care practice. Orem's theory provides a conceptual structure for nursing assessment and progression of assistance, whereas clinical protocols and multidisciplinary expertise determine how respiratory support, suctioning, mobilization, nutrition, skin protection, and other interventions are safely performed.

Strengths and Limitations

A strength of this case is that it demonstrates the application of multiple Orem concepts to a critically ill patient with interacting respiratory, functional, nutritional, elimination, hygiene, and mobility needs. The main limitations are the single-case design and limited objective follow-up. No standardized functional scale, detailed diagnostic data, medication record, laboratory results, or formal measurement of self-care agency was provided. Consequently, the case illustrates theoretical application but cannot establish effectiveness, causality, or generalizability.

CONCLUSION

This case illustrates the application of Dorothea Orem's Self-Care Deficit Nursing Theory in guiding the care of a critically ill patient recovering from prolonged mechanical ventilation. Orem's constructs provided a structured method to systematically identify self-care deficits, match care to appropriate nursing systems, and dynamically transition care from wholly compensatory management to patient-partnered recovery. Frameworks like Orem's complement evidence-based medical protocols by offering an organized structure for individualized nursing practice.

Patient Perspective

Due to initial lethargy, anxiety, and post-extubation fatigue during the acute ICU phase, a direct formal written narrative was not recorded at the time of initial assessment. However, upon stabilization on ICU Day 25, the patient expressed his experience: "When the breathing tube first came out, I felt completely helpless and terrified because I couldn't even lift my arms or clear my throat. Having the nurses explain every step and push me gently to do small things for myself—like holding the cup or taking deep breaths—gave me back my confidence and strength day by day."

Ethical Approval

The case describes the application of Orem's Self-Care Deficit Nursing Theory during routine nursing care, without an experimental intervention or research procedure.

Data Availability

Not applicable. The case is described within the manuscript, and no separate dataset was generated. Any underlying clinical information remains subject to patient confidentiality and institutional requirements.

Author Contributions

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All authors agree to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying clinical information.

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Conflict of Interest

The authors declare no conflict of interest.

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Declaration of AI-Assisted Language Editing

The authors used ChatGPT (OpenAI) for language editing, grammar correction, and improvement of manuscript clarity and readability. The authors reviewed and verified all AI-assisted

content and remain fully responsible for the accuracy, originality, and final content of the manuscript.

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