

# Development of a Nursing Care Program for Children with Acute Lymphoblastic Leukemia Using Johnson's Behavioral System Model: A Pediatric Case Study Approach

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## Abstract

*The research examines how a nursing care system for ALL pediatric patients developed based on Dorothy E. Johnson's Behavioral System Model. According to the Johnson Behavioral Model all people have seven behavioral subsystems which have their own specific goals alongside related functions including attachment dependency ingestive eliminative sexual aggressive and achievement behaviors. ALL treatment of pediatric patients leads to illness-caused disturbances of their behavioral subsystems. Researchers adopt a complete systematic framework for leukemia care that integrates physical effects from the disease and treatments together with psychological and social and behavioral patient challenges. Through the adoption of Johnson's model nurses gain the capability to identify unbalanced behavioral subsystems therefore providing specific interventions that both restore systems and promote both adaptability and developmental needs. Nurses utilize this model through the examination of a chemotherapy case involving a 7-year-old patient for practical implementation. Healthcare practitioners implemented methods to enhance patients' food consumption as well as their emotional functions and social bonds alongside independent self-care skills. The study evidence indicates model-based nursing practice leads to improved patient results along with increased caregiver self-assurance while creating a systematic approach to holistic treatment. The study recommends pediatric oncology nurses to implement Johnson's behavioral model in their educational and clinical work for delivering individualized patient-centered approaches based on evidence and theory.*

**Keywords:** *Johnson Behavioral System Model, pediatric nursing, acute lymphoblastic leukemia, nursing care program, behavioral subsystems, case study, holistic nursing, pediatric oncology, child health, theory-based practice.*

## 1. Introduction

Children who have persistent illnesses face severe challenges which affect their entire family structure and healthcare systems' operation. Type 1 Diabetes Mellitus (T1DM) emerges through its continuous effects on patients alongside intensive daily management demands with substantial mental strain across patients and caregivers. Nursing care for these situations requires moves past typical clinical practices to address their emotional as well as cognitive requirements and developmental needs of the child. Medical practices that stick to traditional systems fail to support comprehensive patient care so nurses need to bring their theoretical models into active healthcare environments.

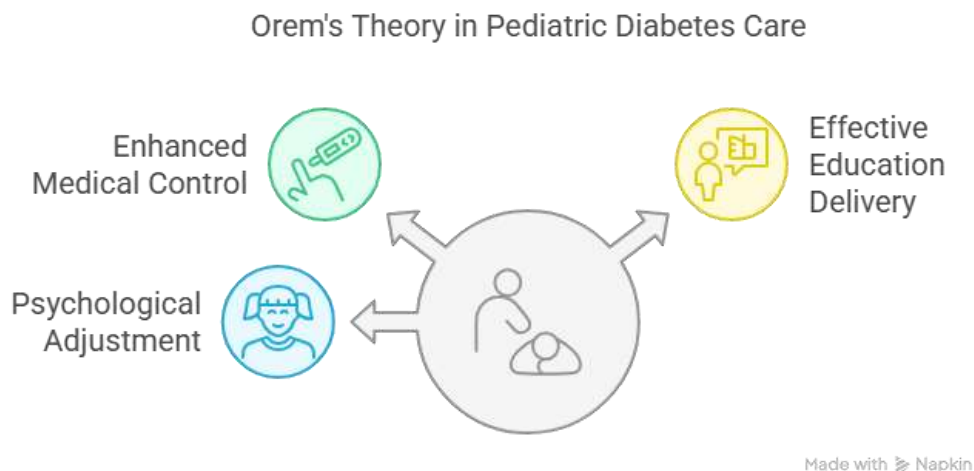
Pediatric nursing care for chronic illness management significantly benefits from using Dorothea Orem's Self-Care Deficit Nursing Theory (SCDNT) as an applicable and relevant framework. Self-care capability exists within individuals according to Orem but nursing serves as the support when people fail to complete their health-related self-care needs. The theory delivers nurses a step-by-step approach to identify patient needs together with self-care deficits followed by creating specific treatment plans for independence recovery. The theory strongly benefits chronic disease management because patients need continuous skills to maintain their health while improving their quality of life(1).

The theory of Medina's Self-Care Deficit Model emerges as essential for medical care planning for children diagnosed with type one diabetes mellitus. Such patients demonstrate insufficient life experience and academic understanding along with limited medical abilities when it comes to managing their health condition independently. Nursing care needs to move patients from complete dependence to partial care then to fully autonomous self-care while actively educating parents and teaching essential behaviors and delivering development-appropriate health promotion strategies. The supportive-educative segment of Orem's framework allows nurses to help pediatric

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patients and their families build competence for diabetes management tasks like blood glucose testing and insulin use and nutritional planning.

This paper examines an active implementation of Orem's theory within the nursing care of a ten-year-old T1DM patient after his diagnosis. Healthcare results improve through theory-based nursing practices because they enhance medical control performance in addition to education delivery and psychological adjustment abilities for children who receive ongoing self-care capabilities(2). The care plan with distinct nursing assessments and evaluation stages demonstrates how theoretical insight services as the connection between academic nursing information and actual pediatric clinical work.



**FIGURE 1** Orem's Theory in Pediatric Diabetes Care

### 2. Case Background and Theoretical Application

The pediatric endocrine unit accepted Ali, who was ten years old, due to his symptoms of polydipsia, polyuria along with fatigue and unintended weight loss and mild abdominal discomfort. When admitted to the hospital his blood glucose test results reached above 300 mg/dL while his HbA1c reached high levels at 10.8% indicating persistent hyperglycemic conditions. Medical professionals made an immediate diagnosis of Type 1 Diabetes Mellitus (T1DM). Physical symptoms of Ali's case fit the typical medical pattern but revealed larger problems with both psychological and educational factors. The child's parents showed intense anxiety because they lacked knowledge about diabetes care while expressing worry about the lifestyle adjustments ahead. The strong emotional distress from Ali led him to pull away from social contact and avoid eating and produce visible signs of grief while undergoing his insulin treatment. The medical situation required an organized nursing plan which would help stabilize physical health simultaneously with emotional transition goals(3).

A complex pediatric case needs intervention based on Orem's Self-Care Deficit Nursing Theory (SCDNT) to create a suitable framework for care. The self-care deficit theory developed by Dorothea Orem proves that people can maintain their own care but nursing steps in when anyone struggles with their self-care functions. The self-care deficit stems from Ali being young combined with his new chronic illness that needs technical alongside behavioral patient self-management. Orem emphasizes that nurses examine deficits before choosing from three nursing methods which include wholly compensatory and partially compensatory and supportive-educative systems

The beginning of hospitalization required Ali to receive total nursing care known as a wholly compensatory system. During this stage nurse professionals executed all duties connected to insulin treatments along with dietary management and blood glucose checks and proper hygiene. Hospital personnel identified Ali as emotionally sensitive which resulted in his resistance when it came to participating in his healthcare process. At this stage it was essential to achieve control of metabolic functions while building relationships with Ali. Nurses used this time to communicate with parents through recognition of their concerns and basic diabetes instruction which would help them transition into their coming care responsibilities.

The patient's recovery conditions together with his decreasing fear enabled healthcare providers to shift to the partially compensatory care model. The nursing personnel joined forces with the patient and his parents to share care responsibilities during this stage. Ali displayed curiosity about the glucose meter so he paid close attention as the nurse drew his insulin(4). The transition to self-care began when he started deciding his injection spot and measuring his blood glucose values. The nursing staff carried out instruction through step-by-step teaching combined with practice repetition and encouraging actions. Ali's fear of injections decreased after he received training through cartoon instruction and personal work with an insulin pen.

At the closure of the first week of treatment Ali achieved the supportive-educative system stage. As part of the supportive-educative system he began to take part in his care management with monitoring from staff members. Nursing staff helped Ali both track his glucose numbers through daily writing and practice real-time carbohydrate-based food selections. The transformation of his parents into competent caregivers enabled them to properly utilize medical guidance for insulin dose changes as well as identify both hypo- and hyperglycemic symptoms. Ali changed his actions from passive involvement to proactive participation and his family members developed better cooperative relations.

The use of Orem's theory required healthcare providers to understand that appropriate care provision depends on a person's development stage. Because Ali demonstrated intellectual readiness for self-care skills his teachers required teaching techniques tailored for pre-adolescents. Healthcare providers modified their patient teaching approach through storytelling alongside decorative visual aids and interactive play activities to instruct pathophysiology knowledge and glucose management. The nursing team provided repeated messaging to show Ali that managing diabetes allowed him to lead an active life thus helping him overcome his fear-based withdrawal from everything. In Orem's view self-care agency develops according to a person's age together with development level and existing knowledge base. The nurse's commitment to develop Ali's ability to manage himself led to his successful emotional transition.

The conditioning factors outlined by Orem consist of sociocultural background combined with environment and available resources. Ali grew up in a middle-class family that did not frequently interact with healthcare facilities. The care team selected clear terminology that avoided medical terms and educational resources which matched his cultural background. The healthcare team invested in both a social worker and medical equipment assistance to help Ali source his required post-treatment glucose meter and insulin delivery supplies(5). The nurse implements supportive-educative guidelines by providing tools with self-care instructions instead of imposing direct care approaches.

The intervention included emotional support as an essential component among other aspects. The child psychologist joined nursing staff to address Ali's refusal of engaging or eating. Ali experienced respect and understanding through a joint effort between these staff members. Nursing practice involved establishing daily routines because this element provided essential stability to children who faced chronic diseases. Through the nursing staff Ali received instruction about how to deal with stress through both deep breathing exercises along with writing in a journal. The nursing interventions resulted in better emotional stability together with better treatment compliance during the span of time.

The successful application of Orem's theory became obvious through Ali's progress at the conclusion of his 10-day hospital stay. Ali showed growth in his ability to administer his insulin under staff monitoring and identified any potential hypoglycemic symptoms as well as adhered to his dietary plan with minimal argument. His parents displayed competence in administering blood glucose tests and changing insulin requirements using test results. The hospital discharge allowed the family to carry instructions alongside self-assurance and acquired abilities in addition to home-based resources to handle their long-term medical condition.

The nursing care for Ali benefited from using Orem's Self-Care Deficit Nursing Theory through its structured approach that focused on individual patient needs. Within its framework the theory directed nursing interventions through physical and emotional and educational and social healthcare domains with structured adaptability. The nursing care strategy which moved through different phases replicated Ali's development path from emergency management to skill acquisition. The case exemplifies how theoretical nursing models enhance pediatric health results especially in situations that demand comprehensive patient education and sustained self-care management.

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### **3. Nursing Procedure and Assessment**

The nursing team developed an elaborate dynamic care plan guided by the nursing process assessment diagnosis planning implementation and evaluation while Ali stabilized and involved himself in his care. The nursing team integrated Orem's theory to deliver care that confronted Ali's clinical aspects while targeting his behavioral and educational barriers and those of his family system(6).

The first assessment stage revealed decompensation-related physical markers such as high blood sugar levels combined with weight loss and ketones as well as signs of emotional isolation and inhibited communication. The nursing staff simultaneously assessed Ali's developmental growth and his cognitive strength and family dynamics. During the structured nursing interview the family showed their ignorance about diabetes care while facing limited support resources while demonstrating high emotional tension. A psychosocial evaluation showed that Ali experienced an extreme fear of injections together with low self-confidence because of his physical differences and feelings of loneliness because of hospital confinement.

The assessment led to the development of various nursing diagnoses in this clinical scenario. The first nurse-practitioner diagnosis which emerged was "Deficient knowledge related to disease process and self-management" for new patients with diabetes since these conditions come with inevitable knowledge deficits. The patient also exhibited "Fear related to repeated injections" together with "Imbalanced nutrition less than body requirements" and "Risk for unstable blood glucose levels" and "Readiness for enhanced family coping." These diagnoses were measured through specified outcomes which received individualized treatment plans built on pediatric diabetes best practice guidelines and Orem's theory.

At the start of planning the team established four main objectives to maintain glucose levels between 90–130 mg/dL and achieve adequate nutrition and lower anxiety when giving injections and train family members about essential diabetes management. The nursing team established specific timeframes for each goal so Ali achieved proper supervised insulin injection by day seven and his parents needed to show hypo-and hyperglycemic signs by day five. During the implementation phase nurses utilized different strategies which aligned with Orem's supportive-educative approach. The education content went beyond traditional service delivery because it took a personal approach and involved learners in direct activities. Ali received one-on-one training sessions alongside his parents that used combination methods including role-play scenarios flashcard exercises cartoons along with hands-on demonstrations. The nurses implemented practical education by instructing Ali to conduct his glucose tests while reading food labels and assisting the preparation of insulin with proper supervision. The training integrated psychological interventions which included praising Ali through spoken words and tracking his development publicly to promote his positive behavior.



**FIGURE 2** Overcoming Challenges in Pediatric Diabetes Management

The dietitian worked together with nurses on developing nourishing child-friendly food selections which addressed both dietary needs and palatability. Ali and his mother received guidance about carb exchange since nurses also taught fluid consumption methods and recommended divided meals. The nurse employed Orem's model to develop Ali's capability through which he selected meals within approved menu options to experience better decision-making autonomy(7).

The nurses approached Ali's injection anxiety in a structured manner because this fear blocked his self-care progress. Nursing staff employed graded exposure by letting Ali view insulin injections performed by others before moving toward letting him touch and play with insulin pens on toys while leading him under supervision to self-administer the medication. The intervention utilized positive reinforcement while eliminating uncertainty which enabled the removal of his fear. The nursing practice of enhancing self-care agency described by Orem led Ali to develop growing satisfaction with his steadily advancing independence.

Testing during the evaluation step proved that the intervention achieved its desired results. Ali successfully demonstrated insulin administration abilities before nurse supervision or parental oversight because his fasting glucose reached target levels by day ten. Due to an improved appetite his weight started to increase moderately but progressively. The school-absentee days had ended for Ali since his mood significantly improved through interacting with staff and other patients while showing interest to return to school which led him to understand the significance of controlled glucose levels. His parents showed proper insulin preparation techniques while checking blood glucose levels with confidence and handling the case simulation scenarios regarding low or high blood glucose correctly.

The care team observed during subsequent evaluations how the family successfully advanced from getting medical instructions to actively managing their health needs. Along with treatment protocols they demonstrated understanding about long-term diabetes strategies including sick-day routines and glucose effects from exercise and the psychological burden of child-diabetes(8). A social worker provided the family with information about community resources through which they obtained local support groups and monetary help for buying medical supplies. The achieved outcomes demonstrated both the execution of care objectives and quantified the effectiveness of nursing practice based on theory.

Orem's framework showed extraordinary value in this situation by using developmental thinking to meet both patient and family requirements at different points in their journey. Ali and his parents received manageable

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treatment through an organized nursing procedure which combined patient-friendly and collaborative methods. The combined approach of explaining concepts along with supportive guidance and practical instruction created habits that patients could sustain for self-care. The team adopted an intervention approach at both hospital and home settings because Orem noted the environment's importance for patient care which led to creating safe transition paths with complete knowledge and resources after discharge(9).

Patients and nurses experience transformative changes through the nursing process when practitioners implement Orem's framework as their organizing framework. Ali's medical case demonstrates how systematically guided nursing care exerts strong positive results for pediatric management of chronic diseases. The nursing team utilized their knowledge to provide structured support so a young patient with his family could gain independence which enabled them to manage their life-changing condition effectively through competence and confidence(10).

### **5. Conclusion and Future work**

Orem's Self-Care Deficit Nursing Theory (SCDNT) successfully demonstrates the possibilities of translating nursing theoretical frameworks into practical healthcare by managing pediatric Type 1 Diabetes Mellitus cases. Ali's case demonstrated how a new pediatric patient with complete dependence became an autonomous individual who took part in his healthcare responsibilities. His parents became knowledgeable proponents who mastered the skills needed to handle chronic diseases inside their home environment. Healthy subject transformation emerged from methodical nursing approaches that base their work on human capability enhancement principles.

The nursing team delivered responsive and progressive care to the patient through Orem's nursing systems which were introduced in a staged manner starting with wholly compensatory and ending with supportive-educative care. Every intervention had both a present treatment approach and a gradual path for child and family to become responsible for their care. The nursing team's structured guidance enabled Ali to take over more responsibility related to insulin pen handling and glycemic imbalance detection and diet maintenance thus proving Orem's key principle that proper support helps patients develop self-care capabilities despite their chronic illness diagnoses.

The presented case illustrates the various aspects that nursing encompasses when treating pediatric patients with chronic diseases. Nursing professionals engage in providing patient education while offering psychological assistance and fighting for their rights because they also construct long-term care plans and administer medications next to monitoring blood glucose levels. Through Orem's theory nurses gained an evidence-based approach to deliver whole-person care which addressed all the necessary steps. The incorporation of family education alongside emotional counseling and culturally sensitive materials and social work referrals marked a comprehensive model of care that satisfies the best contemporary nursing practices.

The outcome assessment of this case extended beyond blood glucose regulation and patient weight changes since its complete success included other important factors. A child regained his control instead of facing abandonment while his parents transitioned from fear to confidence as the entire family received support to maintain their strength. The practical implications from this study demonstrate that Orem's theory alongside others proves necessary as well as functional and adaptable for delivering effective clinical nursing care.

The case study findings strongly establish that theoretical integration holds essential worth for nursing practice. Nurses incorporated Orem's Self-Care Deficit Nursing Theory in all nursing process dimensions to deliver highly effective dynamic patient-centered care. Through Ali's experience both pediatric nurses and nurse educators can learn how theory functions to bring clinical ability together with compassionate sustainable healthcare practices. The evolving nature of chronic pediatric illness demands these approaches to become mandatory requirements that cannot be avoided.

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### **Conflicts of interest**

The authors have no conflicts of interest to declare

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