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Orem Self-Care ModelForPatients Undergoing Stem Cell Transplantation

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Abstract
Stem cell transplantation (SCT) is a complex and challenging treatment that may be a treatment option for patients who have been diagnosed with a haemato-oncological condition, such as neuroblastoma, leukemia, or multiple myeloma. In particular, SCT is a challenging and risky procedure that significantly increases the risk of developing infections. Orem's self-care theory of nursing provides a framework for holistic paediatric oncology nursing. In this article, an overview of Orem's theory is provided. The theory is used to assess the self-care deficits of a 6-year-old child diagnosed with high-risk neuroblastoma,the ability of the child to meet his self-care demands, and the nursing system needed to meet his self-care demands. The theory is used to plan and evaluate the nursing care of this child.

Keywords:*Orem theory, Self-care, Stem cell transplantation, Haemato-oncological disorders*

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I. Introduction

Nursing models and theories offer a scientific foundation and guide for nursing practice by describing, explaining, or predicting phenomena. Nursing conceptual models do not provide, regulate, or specify patient care records, but give the nurse a frame of reference for providing nursing care.[1] It could be stated that since the writings of Florence Nightingale, the nursing profession has been grounded in theory. The perspective of theory-based care continues today. The application of nursing theory to practice can help our nursing profession to expand our nursing science.[2] Numerous nursing models and theories are presented in the literature. One such theory is Orem's self-care theory. Orem presented her first self-care deficit theory in 1959. In Orem's conceptual framework, everybody is a self-care agent and nurses can help patients to engage in self-care behaviors which can lead to the achievement of desired goals, decrease the risk of complications, and reduce the rate of readmission.[3] The increased feeling of control, responsibility, and autonomy felt by patients improves their coping, decreases the load of chronic disease, and improves their well-being, overall performance, and quality of life. These improved outcomes, in turn, help for better symptom management and lessen healthcare charges.[4] A need to apply nursing theory to practice exists as there are scarce of applications of nursing theory in bone marrow transplant patients. Keeping in mind the paucity of research related, the purpose of this article is to illustrate the limited use of nursing theory in the specialty of haemato-oncological nursing and to suggest Orem's Self-Care Model as a valid basis for delivering care in this specialty area. This article presents a case study in which a nurse used Orem's self-care theory-led practice within a tertiary hospital to illustrate how the theory is applied to case management. This case study allows an understandingof the parameters of the practical application of theory-based advanced nursing practice.

II. Backgroundand overview of Oremtheory

Orem's theory has been implemented in lots of research studies. The application of this self-care model has had high-quality outcomes on patients with multiple sclerosis,[5,6] myocardial infarction,[7] heart failure,[8] diabetes,[9,10]asthma,[11,12]and cystic fibrosis.[13]However, we observedrarestudies that used this model on acute patients such as those undergoing hematopoietic stem cell transplantation (HSCT). We assumed that Orem's self-care theorycan assist transplant patients in managing their complications.

A nursing system within Orem's theoryconsists ofaction sequences and coordination of both nurse and patient in the interest of achieving the patient's goals for self-care. The correlation of Orem's three systems (i.e., wholly compensatory system, partially compensatory system, and supportive/ educative system) to the unique care needs of bone marrow transplant patients with varying levels of acuity is the key to knowing how the application of this theory to the practice of care of patients with HSCT.**A whollycompensatory system** dictates that the nurse provides total care to the patient as he or she is unable to perform any level of self-care. Ina **partially compensatory system** as the patient progresses with healing, the nurse-patient relationship changes to

the partially compensatory system. This system is characterized by the nurse promoting the patient as a self-care agent, as the patient is attempting to perform all levels of self-care. As this system may be in place longer for some patients than others, the nurse must be aware of the patient's physical, psychological, and social factors that influence the recovery period. Whereas **supportive-educative System** Orem's theory tells us that this phase is characterized by the patient beginning to perform all levels of self-care and the nurse promoting the patient as a self-care agent. In this system, the nurse is present to teach, support, and suggest ways to integrate back into society.

III. Application of Orem's theory of nursing

Literature available on the application of the Oremself-care theory to nursing practice is prevalent. Among the practice settings using Orem's model as the basis for care include children, adolescents, adults, families, communities, diverse practice settings, and different ethnic groups. What is glaringly missing are studies using the Oremself-care theory to guide haemato-oncological nursing practice. Moreover, haemato-oncological nursing has shown limited use of any nursing theory in practice. With its relative simplicity, clear definitions, and logical application to the induction phase and posttransplant days, Orem's self-care model is a logical theory for HSCT patients to choose as a framework on which to base their practice.

Orem's self-care theory of nursing was used to assess a 6-year-old boy who had been found to have high-risk neuroblastoma. The child lives in a small rural community with his parents, and a 4-year-old sister. His father is a farmer and his mother does not work outside the home. He was admitted for peripheral blood stem cell transfusion. The child had completed induction with busulfan on the day (-6 to -3) and melphalan 140mg/m^2 on the day (-2). After PBSCT, he had been having persistent loose stools and vomiting from day +4 without any abnormal pain. On day +6 he developed 103. 2°F fever and increased irritability. 0.45% DNS was begun at 40 ml/h. Administration of injection Zoysn2.2g every 8 hours and injection teicoplanin every 24 hours was initiated after obtaining blood and Hickman catheter (exit-site) cultures. Orem's self-care theory of nursing was used to determine child self-care deficits, and hispotential to meet his self-care demands. Nursing diagnoses were formulated primarily based on the assessment data. Then, the nurse selects the best nursing system to overcome the self-care deficit. Goals, nursing systems, nursing actions, and nursing outcomes for four nursing diagnoses are shown in Table 1.

Table 1: A partial care plan for a child with high-risk neuroblastoma

Nursing Diagnosis /Self-Care Deficit	Goals	Nursing system	Nursing Interventions	Nursing Outcomes
Fever related to decreased immunity	The child will have a body temperature of less than 98.6°F	Partly compensatory System	• Take temperature and perform tepid sponging every 4 hours to evaluate the effectiveness of treatment and reduce heat • Advise child to take complete rest to minimize unnecessary energy expenditure which may increase body temperature • Give prescribed antibiotics and antipyretics	The child body temperature reduces to 98.6°F
Sleep pattern disturbance related to increased irritability and temperature of 103.2°F	Child will be able to have adequate periods of sleep	Partly compensatory	• Monitor temperature every 4 hours. • Maintain a cool, comfortable environment and provide a variety of fluids to encourage intake • Encourage quiet actively such as watching favorite cartoons before bedtime	The child increased his fluid intake and sleep periods gradually increased over the time

			• Cluster nursing activities to limit disruptions during hours of sleep • Administer medications as indicated by the physician.	
Potential infection related to altered immune status and invasion of bacteria through Hickman catheter site	After the nursing intervention the child will identify actions to prevent or reduce the risk of infections	Partly compensatory	• Monitor vital signs every 4 hours • Require good hand-washing protocol for all personnel and visitors • Limit visitors and instruct child to wear mask when anyone is entering the room • Restrict fresh fruits and vegetables or make sure they are washed or peeled • Provide good oral and perineal hygiene and provide sitz bath • Administer medications as indicated by the physician	After nursing intervention, the child was able to identify actions to prevent or reduce the risk of infections.
Potential bleeding related to decreased platelet count	After nursing intervention skin will remain intact with no sign of bleeding, the mucus membrane will remain intact and stool and urine will remain free of blood.	Partly compensatory	• Assess vital signs every 4 hours and skin and mucous membranes for ecchymoses, petechiae and hematoma formation • Assess gums and nasal membranes for bleeding, vomitus and encourage the use of a soft bristle toothbrush to prevent bleeding • Assess stool and urine for visible or occult blood • Avoid invasive procedures as possible e.g.- rectal temp and suppositories • Instruct client to avoid forceful blowing, coughing, sneezing, and straining to have a bowel movement.	Child's skin was intact and no signs of bleeding, mucus membrane was intact, urine and stool were free of blood

IV. Conclusion

Even though much information can be found within the literature associated with nursing theory, the lack of literature that identifies theory as a basis for the delivery of care within the specialty of haemato-oncological nursing is evident. Orem's self-care model is suggested as a suitable theory to guide nursing practice and is applicable to the care of haemato-oncological patients. Educating our current and future nurses in the application of a theoretical framework to guide their practice begins in our nursing programs but should be continued with renewed specificity in our practice settings.

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