

AMERICAN UNIVERSITY OF BEIRUT

OPTIMIZING SELF-CARE AMONG POST-BONE MARROW
TRANSPLANT PATIENTS: TRAINING THE TRAINER
PROGRAM

by
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ABSTRACT

OF THE PROJECT OF

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Title: Optimizing Self-Care among Post-Bone Marrow Transplant Patients: Training the Trainer Program

Patients who undergo bone marrow transplant at the American University of Beirut Medical Center (AUBMC) face multiple challenges that make the transition from hospital setting to home setting frustrating. Patients feel as if they are not self-efficient in managing post bone marrow transplant symptoms when at home, and this affects their quality of life. Patients' need for information regarding managing bone marrow transplant symptoms is essential and thus providing them with early education upon admission is paramount. The aim of this 12-session program is to train AUBMC nurses working in the Hematology Oncology and Bone Marrow Transplant departments on how to identify learning needs of patients post bone marrow transplant and educate them and their caregivers on how to self-manage their symptoms at home.

A thorough literature search was done to identify topics pertaining to symptom management of post bone marrow transplant patients. From the European Society for Bone Marrow Transplantation (EBMT), European Society of Medical Oncology (ESMO), American Society of Clinical Oncology (ASCO), as well as recent studies on the topic.

The program is compiled to include program outcomes, content, and evaluation tools. Input on the program was sought from the hematology-oncology unit nurse manager and the Clinical and Professional Development Center (CPDC) office for validation of program content and potential incorporation in the training of the hematology-oncology and bone marrow transplant nurses, changes were made accordingly.

The program aims at educating oncology nurses and preparing them regarding assessing learning needs of post bone marrow transplant patients, educate and empower them to implement self-management strategies.

Conclusion: The bone marrow transplant population has unmet informational needs. The project aims at developing a training program for nurses working on the hematology oncology and bone marrow transplant units and who are experts in their field of practice. The program equips nurses with knowledge, skills, and attitude, enabling them to identify learning needs and initiate early patient education. The end goal is to have patients who are self-efficient in implementing self-management strategies once discharged to optimize their quality of life. Further projects need to be developed to ensure knowledge sustainability in both nurses and patients and proper implementation and monitoring of education in the hospital setting.

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ABBREVIATIONS

American University of Beirut Medical Center (AUBMC)

American Society of Clinical Oncology (ASCO)

Bone Marrow Transplant (BMT)

Clinical and Professional Development Center (CPDC)

European Society for Bone Marrow Transplantation (EBMT)

European Society of Medical Oncology (ESMO)

Graft vs Host Disease (GVHD)

Hematopoietic Stem Cell Transplant (HSCT)

Hariri School of Nursing (HSON)

Quality of life (QoL)

Naef K. Basile Cancer Institute (NKBCI)

CHAPTER I

INTRODUCTION

Patients who undergo Bone Marrow Transplant (BMT) encounter difficulties in coping with transitioning from the hospital to their home setting. The most prominent difficulties are mainly linked to self-management and self-care. An example of self-management can be taking small and frequent meals to prevent nausea and optimize daily caloric intake. Nurses are responsible for educating and preparing BMT patients to self-manage and self-care post discharge. The aim of this project is to develop a training program designed for Hematology Oncology / BMT nurses that enables them to identify learning needs of patients and initiate early patient education on managing symptoms post-transplant and improving self-care.

A. Patients' Needs Post BMT

The discomfort that patients experience after a bone marrow transplant experience could negatively affect their physical, psychological, emotional, and spiritual wellbeing (Alnasser et al., 2018), thus jeopardizing their quality of life. The transplant procedure results in a lot of changes and some patients feel like they have not been prepared enough (Alnasser et al., 2018). These patients face setbacks the first couple of months post BMT due to multiple factors such as infections, gastrointestinal complications, graft versus host disease (GVHD), and relapse that may result in multiple unexpected readmissions. Despite the fact that both patients and their families look forward to going back home, instructions they are provided with prior to their discharge can be overwhelming. The informational needs in this patient population

remains high, and they feel that the care once home is complex. However, adequate patient preparation through providing continuous education could decrease the number of readmission as well as hospital stay (Cooke et al., 2012).

B. Motivation for the Project

The care post BMT is complex. To optimize patient outcomes, education during admission for the BMT procedure is essential. Patients undergoing bone marrow transplant have reported been provided with infrequent, unreliable, and outdated content due to inadequately prepared nurses to give such information (Armato et al., 2019).

The American University of Beirut Medical Center (AUBMC) has been performing bone marrow transplants (BMT), both autologous and allogenic, since 1998 (Zahreddine et al., 2020). At AUBMC, the follow-up of patients after the BMT includes a number of steps that starts with discharge education and instructions provided to patients prior to leaving the hospital setting. The BMT coordinator, specialized experienced nurses, are responsible for patient and family education as well as preparation for mobilization, stem cell collection, admission for transplant, preparation for transplant discharge, and follow up until day 100 post Hematopoietic Stem Cell Transplant (HSCT). These coordinators walk hand in hand and guide patients and their caregivers throughout the whole process. Once the patient is set for transplant, the BMT coordinators are informed and the preparation starts.

In line with the above discharge procedure and while shadowing the physician in the BMT clinic, I have noticed patients very anxious after discharge; they find it stressful and challenging to take care of themselves at home. Nurses and health care

professionals have a crucial role towards these patients, especially to empowering them and promoting self-management skills. To be able to do so, we need to provide nurses, as they are the ones who spend the most time with patients, all what they need of knowledge and skills appropriate to strengthen patients' self-management skills. This program is designed to create champions in patient education. The program aims at developing a training program for nurses working in the hematology oncology and bone marrow transplant units at the American University of Beirut Medical Center (AUBMC) to prepare them to educate BMT patients about self-care post bone marrow transplant discharge. The three objectives that guided the development of the program were:

1. Conduct an extensive review of the literature to identify topics and concepts related to patient education post BMT, symptom management, and self-care principles.
2. Design the program including purpose and outcomes, content, and evaluation process.
3. Solicit input from unit managers and the Clinical and Professional Development Center (CPDC) office at AUBMC for further validation of program content and implementation and for future incorporation in the training of nurses working in the hematology oncology and bone marrow transplant settings.

CHAPTER II

LITERATURE REVIEW

Hematopoietic stem cell transplant (HSCT) or Bone marrow transplant (BMT) is defined as the allogenic stem cell transplant (the transfer of hematopoietic stem cells from either one individual to another) or autologous stem cell transplant, from the same individual to themselves (Mackall et al., 2009). It was first implemented in 1957 as a treatment for acute leukemia. Today, this treatment method is used worldwide to improve outcomes and cure hematologic malignancies such as Leukemia, Aplastic Anemia, Lymphoma, Multiple Myeloma, Myeloproliferative disorders, and Myelodysplasia, as well as solid tumors (Neuroblastoma, Sarcoma, Germ Cell Tumors). Other less common indications for HSCT include autoimmune diseases such as Crohn's disease, Systemic Sclerosis, and Multiple Sclerosis (Henig et al., 2014).

HSCT was first adapted in Lebanon in the late 1990. Until 2020, there have been only four centers that do this procedure. The Hematopoietic Stem Cell Transplant program was established at the American University of Beirut Medical Center (AUBMC) in 1998. By 2017, the program had performed 890 transplants and 704 HSCTs for adult patients. Of these transplants, 43.9% were performed on patients with lymphoma, 30.5% with Multiple Myeloma, 19% with Myelodysplastic Syndrome/Leukemia, 3% with solid tumors, 2.7% with benign disorders, and 1.4% with Myeloproliferative disorders (Zahreddine et al., 2020).

The treatment regimen in preparation for the Stem Cell Transplant depends on patient characteristics, disease, and type of transplant. It can be either Myeloablative or of Reduced Intensity (Zahreddine et al., 2020). Conditioning regimen can include chemotherapy, cryotherapy, irradiation, targeted therapy, and monoclonal antibodies.

A. Complications post BMT

The patients who undergo Hematopoietic Stem Cell Transplant (mostly allogenic) experience multiple symptoms, and are at a higher risk for developing complications before, during, or after HSCT. These symptoms or side effects post BMT include infection, anemia, thrombocytopenia, pain, fluid overload, respiratory distress, infection, dry mouth, low appetite, nausea, vomiting, diarrhea, fatigue and psychological distress (John Hopkins, 2021). In light of the myriad side effects or potential complications following HSCT, it is important that patients be well informed and educated to empower them and promote their self-efficacy and self-management skills. Health care professionals play a significant role in empowering patients through health education (Angwenyi et al., 2019).

B. Self-management and Self-Efficacy Post BMT

Self-management falls under the umbrella of self-care (Richard et al., 2011); it is a building process in which multidimensional strategies are incorporated to help patients attend to their self-identified needs. Self-management interventions have been effective with appropriate preparation and proven to improve patient efficacy in general (Angwenyi et al., 2019). Self-efficacy is a person's belief in their capacity to carry out

desired behaviors and reach goals, such as symptom management (Hoffman et al., 2011). A patient that is self-efficient regarding symptom management will be able to recognize, prevent, and relieve symptoms post BMT (White et al., 2017). An example of self-management for low appetite is planning the meals ahead of time, eating small and frequent meals, avoiding drinking with food, maintaining good oral hygiene, increasing intake of preferred food and drinking fluids that are high in calories such as juice, milkshakes and yogurt (AUBMC, n.d.).

There are no specific guidelines for self-management or self-care post stem cell transplant. Rather, each facility has developed its own list of discharge instructions to prevent complications post-transplant. Most of these instructions include personal hygiene, mouth care, infection prevention, catheter care, dealing with pets, home environment changes, dealing with bleeding, dental care, eye care, resuming activities, patient follow up, and medications to avoid (Memorial Sloan Kettering Cancer Center, n.d.). Nutritional instructions include management of decreased appetite, taste alterations, dry mouth, oral mucositis, nausea, diarrhea, constipation, dehydration, difficulty swallowing, neutropenia. These instructions also include food to avoid and food handling (American University of Beirut Medical Center, n.d.).

C. Effects of Self-Management on Quality of Life Post BMT

To our knowledge, there is no existing literature in Lebanon that evaluates the effect of improving self-efficacy on patients post-transplant. Lower levels of self-efficacy indicated by HSCT survivors were linked to greater symptoms such as fatigue and depression, reduced quality of life, and more cancer-related suffering (Farhadfar et al., 2021). Young adults, females, survivors with chronic GVHD and patients with

lower incomes, are more likely to have low self-efficacy. The findings suggest that self-management therapies are effective in reducing numerous symptoms and enhancing quality of life in HSCT survivors (Farhadfar et al., 2021).

The bone marrow transplant population is understudied and little studies that support our topic of interest are found. However, an improvement in quality of life and increased self-management information was found for patients with chronic back pain when partnered with health care professionals (Fu et al., 2016). This finding was supported by another study where an improvement in self-management strategies has led to an improvement in clinical outcomes in patients with chronic diseases such as Diabetes, hyperlipidemia and hypertension (Kang et al., 2020).

D. Patient empowerment

The concept of patient empowerment has been introduced since the 1960 by Paulo Freire, a Brazilian pedagogue. This concept is defined as the patient's abilities to make their own decisions when it comes to their health, to be able to take control over health-related aspect. When the health care team member focuses on the patient's ability to be autonomous, take informed decision, and set realistic goal, patient empowerment happens (Collins et al, 2016). Studies on patient empowerment in general practice and primary care to enhance the management of chronic illnesses have had positive results in boosting patient and healthcare provider satisfaction, adherence to recommendations and treatment, and improving clinical outcomes (Molal, 2013).

Although there are numerous aspects that affect empowerment, including culture, age, and socioeconomic resources, it is suggested that empowerment may be

thought of as either a process or a consequence, and that patients can be empowered by their health professionals (Collins et al., 2016).

No studies were found to evaluate the effect of patient empowerment on self-care in the BMT population. However, diabetes empowerment in Chinese patients with type 2 diabetes was a predictor of self-care behavior and HbA1c level. In order to increase self-care behavior and glycemic control, interventions to develop and encourage patient empowerment was advised in diabetes education programs (Yang et al., 2015). Moreover a patient empowerment program was found effective in increasing empowerment levels and self-care and self-efficacy of the hemodialysis patients (Royani et al., 2015). Finally, health literacy might be more effective when making clinical decisions, while empowerment might be more influential in influencing habitual health behaviors (Eyüboğlu et al., 2016).

E. The Role of Hospitals in Promoting Healthy Lifestyle

It is crucial that patients adapt a healthy lifestyle, follow measures of prevention and be able to detect and treat possible complications as soon as possible. A close follow up from the multidisciplinary team is necessary. This is done through systemic screening both short and long term. By doing so, the team is able to identify risks and promote behavioral or lifestyle changes accordingly (European Society for Bone Marrow Transplantation [EBMT], 2019). Given the many complications that BMT patients can be subjected to and develop, hospitals should have programs on how, when, and what discharge education and instruction must be provided to both the autologous and allogenic transplant recipients.

F. The Role of Nurses in the BMT Settings

Hematology oncology nurses play a vital role in patient assessment, intervention delivery, and patient education. Nurses play an indispensable role in educating and preparing patients and primary caregivers for the complex care once at home. This constant preparation and education should take place prior, during, and after discharge (Fauer et al., 2019). When nurses provide efficient patient education, the readmission rate post discharge could decrease (Armato et al., 2019).

G. The Role of Nurses in Self-Care Promotion

Self-care is the ability of the person to take care of themselves and be able to perform necessary tasks to promote, maintain, and achieve optimal health. Self-care can be placed on a continuum that can range from being completely dependent on the health care system to being completely independent in the management of one's own health ((Richard et al., 2011). Factors that affect self-care include the individual's culture, own values, self-efficacy, skills and knowledge. Promoting self-care remains an essential nursing invention. These interventions can be implemented through providing patient education with the intention of improving the ability of patients or caregivers to assume responsibility for health needs. Improving self-care has become a dominant nursing goal. Self-care in nursing research is commonly guided by Orem's self-care model where self-care is explained as actions that are performed to regulate development and functioning (Richard et al., 2011).

Healthcare trends nowadays require the involvement of patients in the care, making patient education essential in nursing care. Having a focus that is balanced between teaching-learning, good session planning, special attention to the disease and

the population, and good relationship between the patient (learner) and nurses (educators) form the conceptual boundaries of patient education. Nurses and their patients are co-participants in the learning process and thus, they need to build a relationship that is based on care and dialogue to identify the meaning and nature of illness, disease, and health (Yoon et al., 2006). Successful patient education leads to an improved patient participation in the decision making of the healthcare, better commitment to the treatment, decreased anxiety and an enhanced quality of life, coping with illness, and patient satisfaction.

The patient education process is similar to the nursing process as it entails assessing the patient's readiness and learning needs, planning education and setting desired outcomes, implementing the educational session, and evaluating teaching effectiveness (Yoon et al., 2006). Methods to provide education include support, guidance, teaching counseling, and behavior modification techniques (Yoon et al., 2006).

To provide basic and mid-range learning, discharge instructions need to be given to both the patient and caregivers, using the first 3 levels of Bloom's taxonomy: remembering, understanding, applying (Harden et al., 2015). The revised version of Blooms' Taxonomy incorporates 6 stages of cognitive learning: analyzing, evaluating and creating (Colorado college, n.d). To garner the success of discharge planning, nurses need to make sure that patients and their caregivers are able to remember, understand and apply knowledge related to self-management (Mack, 1992).

In order to provide self-care while using Orem's self-care model, the nurse needs to assess the patient's health status, the views of the medical team on the patient's

health status, the patient's perspective on own health and health-related goals, and the patient's ability to perform self-care and personal requirements (Haws, 2021).

H. Orem's Self-care model

Orem's self-care model is developed by Dorothea Orem between 1959 and 2001. It is regarded as a grand nursing theory, which denotes that the theory has a broad scope and general principles that apply to all nursing situations (Gonzalo, 2021). The model links ideas in a way that generates a new perspective on a particular phenomenon. This principle is rather straightforward; it can be applied to a wide range of patients. This model assumes that "people should be self-reliant, and responsible for their care, as well as others in their family who need care; people are distinct individuals... nursing is a form of action; it is an interaction between two or more important component of primary care prevention and ill-health; a person's knowledge of potential health problems is needed for promoting self-care behaviors; and self-care and dependent care are behaviors learned within a socio-cultural context" (Nursing Theory, 2020). This theory combines theory of nursing system, the theory of self-care deficit, and theory of self-care (Nursing Theory, 2020).

The theory of self-care includes three components: (1) self-care, which is the practice of actions that a person initiates and performs on their own behalf to maintain life, health, and well-being; (2) self-care agency, which is a human ability that is "the ability for engaging in self-care," conditioned by age, developmental state, life experience, socio-cultural orientation, health, and available resources; and (3) therapeutic self-care demand, which is the total self-care actions to be performed.

The maintenance of integrity of human structure and function, as well as life processes, are all related to the necessity of universal self-care. These requirements, often known as activities of daily living, or ADLs, are listed by Orem as follows:

1. Having an adequate intake of food, water and air
2. Providing care related to toileting (elimination process)
3. Being able to balance between activity and rest
4. Being able to balance between social interactions and solitude
5. Preventing harm
6. Promoting functioning

Health deviation self-care is needed in conditions of injury, disease or illness such as:

1. Securing and seeking proper medical assistance ,
2. Knowing and being able to attend to the pathologic condition's consequences and complications,
3. Following effectively the health care team's instructions,
4. Adjusting one's concepts to accept that they are in a given state of health and receiving a particular type of medical care, and
5. Learning to live with the pathologic condition's consequences and effects
(Nursing Theory, 2020).

The second part of this model is Orem's Self-Care Deficit Theory. This theory highlights when nursing is required. Nursing is needed when the adult is unable to or is

struggling with providing effective and continuous self-care (Gonzalo, 2021). The five methods of helping as per Orem are:

1. Guiding,
2. Supporting,
3. Teaching,
4. Providing an environment that promotes personal growth to meet future demands, and
5. Doing and acting for others (Gonzalo, 2021).

The third component of Orem's self-care is the theory of nursing system. This theory explains how nurses, patients or both meet the self-care needs of patients. There are three nursing system classifications that meet the patient's self-care requisites, which include the: "supportive-educative system; partially compensatory system; and wholly compensatory system" (Nursing Theory, 2020).

The wholly compensatory system is applied when self-care is hindered by physical barriers, resulting in unmet patient needs. These patients tend to rely on others and are socially dependent. Here, the focus is on the provision of physical care including: Protection equipment and technique, positioning equipment and technique, activities of daily living equipment (grooming, toileting, feeding, dressing, bathing and transferring), and instrumental activities of daily living assistance that includes: grocery shopping, meal preparation, using transportation (Haws, 2021).

The partially compensatory system is applied when the patient has some physical barriers that require assistance of others to meet their needs. These barriers

hinder the patient's ability to independently perform some self-care activities. A nurse-patient relationship based on trust is necessary here (Haws, 2021).

The supportive-educative system is used when individuals need help but are not able to meet their own needs because of environmental barriers. Individuals who have needs are able to meet them effectively, but may benefit from instruction on how to do so. This system focuses on meeting mental care needs that include teaching people how to care for themselves, making sure they are aware of self-care skills, and providing assistance with developing healthy environments (Haws, 2021).

This model is simultaneous with the concepts of health promotion and health maintenance, and delimits nursing practice of comprehensive basis and is practical in nursing practice, administration, and education. It also specifies clearly when and where nursing is needed, specifically when the patient is incapable of providing the level and type of self-care required to continuously maintain health and life (Haws, 2021). When integrating Orem's self-care model in their daily practice, nurses will assess, diagnose, plan, implement and evaluate all while taking into consideration the patient's need to be independent (Haws, 2021).

I. Teaching Nurses

This program is designed to prepare hematology oncology and bone marrow transplant nurses on how to conduct effective patient education. No studies were found that propose teaching strategies for staff nurses. However, lecture-based learning and problem-based learning have been the most frequently used modalities that have been proven effective in nursing education. Lecture-based learning is a traditional strategy

commonly used where the learner is provided with the necessary information. Problem-based learning on the other hand is a new methodology that supports learners to achieve a higher levels of understanding through problem-solving (Lauver et al., 2009). Combining both methodologies helps in applying and retaining knowledge and enhances critical thinking skills (Lauver et al., 2009).

The reason behind choosing to give a course to nurses is that it will not only give them tools about patient education, but will also provide in-depth information on the transplant process as well as post-transplant complications. In fact, nurses end their orientation without information and/or skills necessary to provide their inpatient population with proper care. These nurses begin their solo practice with different degrees of competency, depending on experiences they are exposed to during orientation (Galligan et al., 2010). Therefore, nurses who are new to the hematology oncology and bone marrow settings will highly benefit from a program that prepares them on the care of patients with acute outcomes post BMT, on the transition to the survivorship, with special considerations for the geriatric population and palliative care. A well prepared nurse will be able to meet the needs of these patients (Fauer et al., 2019).

Moreover, when offering nurses a program that orients them on transplantation and the rationale behind complications that follow BMT, their competence, clinical performance on the unit and their confidence would improve (Pimmel et al., 2016). Nurses that are more competent will provide high quality care, leading to better patient satisfaction (Lalithabai et al., 2021).

J. Summary

To sum up, the care post BMT is complex as patient might suffer from multiple complications and side effects. Since patient and family education is initiated before their discharge, this population has multiple unmet informational needs, making it difficult for them to self-manage once home; eventually affecting both self-efficacy and quality of life. The more educated patients are and more prepared for discharge, the better will their self-management skills become, and the more empowered these patients are by their nurses, the better they are in applying self-care practices. This highlights the need to have nurses on the units who are experts in knowledge and who are able to identify the learning needs of their patients to initiate early education upon their admission. Orem's self-care model can be used to help guide nurses while educating their patients. Finally, nurses working with the bone marrow transplant population would highly benefit from a program that orients them about transplant, transplant complication, and the management of these complications.

CHAPTER III

THE PROGRAM

The Optimizing Self-care among Post-Bone Marrow Transplant Patients program_aims at preparing the hematology-oncology and BMT nurses to educate patients on how to optimize their self-management skills post bone marrow transplant. An extensive literature search was done to identify important concepts to include in the program. Resourceful web sources were the European Society for Bone Marrow Transplantation (EBMT), European Society of Medical Oncology (ESMO), American Society of Clinical Oncology (ASCO) as well as recent studies. MESH words were used to find appropriate articles through AUB libraries and Google scholar, such as “Self-Care”, “Bone marrow transplant”, “Quality of life post BMT”, “Importance of early discharge planning”, “Discharge instructions for BMT patients”, and “Self-management post BMT”. The program is guided by Orem’s self-care model. The model dwells on the ability of patients to take care of themselves, and provides a systematic method to both assess the patient’s needs and provide care accordingly (Mack, 1992). This chapter provides a clear description of the program in terms of the desired learning outcomes, targeted population, instructional approaches, content, and assessment methods.

A. Program Description

This program is a 16-session program that intends to improve the nurse’s knowledge on complications post bone marrow transplant and to prepare and empower them on embedding self-care concepts in their patients following Orem’s self-care model. The aim is preparing nurses about effective patient education to increase patient

self-efficacy and self-management skills once discharged home. Instructional approaches will include lectures to provide participants with the essential knowledge, videos and readings to engage participants and make the sessions interactive, and in sessions assignments to promote group work and foster critical thinking skills. Participants will receive a certificate at the end of the program and will be given the title of “bone marrow transplant, patient self-management champion”.

1. Targeted Participants

This program is designed for nurses on all oncology settings at the AUBMC: oncology clinic, inpatient, outpatient and Bone Marrow Transplant units. The program will introduce bone marrow transplant, its complications, ways of management and what is expected from the patient at home after discharge, to optimize care at home and minimize hospital re-admission. The expected number of participants is 12 nurses.

2. An Overview of Program Content

The program emphasizes the principles of nursing practice as endorsed by the European Bone Marrow Transplant for Nurses. The content is evidence-based, supported by recent articles and videos on topics related to BMT care and factors that affect the quality of life of the patients.

3. Program Purpose/Goals

The purpose of the program is to prepare nurses to be champions in patient education and to educate BMT patients to optimize their self-care post discharge.

4. Format and Conceptual Structure Organizing the Program

All sessions will have a theory component and an application. Sessions will be held every Thursday and Friday. During the application sessions, participants will be divided into groups where they will explore topics under discussion using case studies or clinical situations. The application sessions are designed to be interactive, enhance group work, and improve reasoning and critical thinking skills.

5. Program Prerequisites

There is no prerequisite for this course. However, nurses attending this program need to be working with oncology patients who are either planned to undergo a bone marrow transplant, are currently undergoing a bone marrow transplant, or who have undergone a bone marrow transplant.

6. Program Learning Outcomes

1. Describe the role of the nurse in preparing patients for discharge after BMT.
2. Outline potential complications and risk behaviors that may jeopardize the health of patients following bone marrow transplant.
3. Describe the appropriate medical management for the BMT complications using latest evidence.
4. Outline all interventions that help promote self-care at home using Orem's self-care empowering principles.
5. Identify the appropriate tool that measures quality of life attainment in BMT patients.

6. Assess the learning needs of the post bone marrow transplant patients and caregivers upon planning for their discharge instruction.
7. Design an educational activity to promote self-care management of the post bone marrow transplant patient.

7. Instructional approach

This program will follow a mixed method instructional approach: lectures, narrative pedagogy, and discussion using case studies. As stated previously, the sessions in this program will be divided into ‘theory and application sessions. The instructional approaches used in the ‘Theory session’ will be both lectures and narrative pedagogy. The material will be delivered through PowerPoint presentations supported by videos and recent articles. Learning through lectures is a traditional teaching method that is commonly used in medical education. The important content is delivered by the educator through a one-way communication and learners adopt a passive role (Sangestani et al., 2013). This method is effective in tailoring the information to the learner’s needs and summarizing necessary up-to-date information from multiple sources (Stover, 2016).

The use of videos has become a popular method to transfer knowledge in higher education (Brame, 2016). When using videos and multimedia, learners are enabled to visualize the given knowledge, and both retain and remember the knowledge better. They are also more satisfied from this learning experience and become more motivated to learn (Kosterelioglu, 2016). Adding recent articles will expose nurses to the latest evidence.

A disadvantage to lecture-based learning is that it may promote passive learning and poor knowledge retention (Stover, 2016). For this reason, the application session will be problem-based. Problem-based learning aids in linking theory to practice, fostering critical reasoning skills, and actively engaging nurses in the learning process (Creedy et al., 1992). Here case scenarios will be presented with questions that learners have to think about. Following each class assignment, case scenarios will be discussed, allowing nurses to exchange their ideas and point of views.

I chose both methods because I believe that nurses should have the knowledge to be put into practice. The lecture-based approach will give nurses a strong theoretical knowledge on complications of bone marrow transplant, management, and ways of self-care. The problem-based approach complements lectures by strengthening nurses' critical thinking skills and preparing them to apply in current practice. Through the case scenarios, nurses will be able to analyze situations and identify learning gaps and needs of patients.

8. Program Policies

The attendees are AUBMC nurses and thus are familiar with the hospital's code of conduct: <http://aubmc.org.lb/clinical/hr/Documents/New%20Employee/4-EmployeeHandbook.pdf>

Title IX: <https://www.aub.edu.lb/president/titleix/Pages/default.aspx>

8. *Program Outline*

Table 1 Program Outline: Modules and topics

Modules	Topics / Content	Justification for Content
Module 1: Introduction to Bone Marrow Transplant	1. Definition of BMT and an overview on stem cell biology	Nurses attending this program are novice nurses and so, need to have the fundamental knowledge on bone marrow transplant, its history, types and process.
	2. Candidates for bone marrow transplant	
	3. Types of bone marrow transplant	
	4. Stem cell mobilization and collection for different types of transplant	
	5. Bone marrow transplant donor	
Module 2: Complications of bone marrow transplant	6. Oral care for bone marrow transplant patient.	To be able to prepare patients for discharge and education for self-care post bone marrow transplant; nurses need to master their knowledge on the possible complications/ side effects of the transplant in order to be able to deliver it to patients.
	7. Fatigue	
	8. Gastro-intestinal GI disturbances	
	9. Infection	
	10. Hematologic disturbances	
	11. Hemorrhagic cystitis	
	12. Veno-occlusive disease	
	13. Idiopathic pneumonia syndrome	
	14. Diffuse Alveolar Haemorrhage	
	15. Transplant-associated microangiopathy	
	16. Graft vs host (Acute/chronic)	
	17. Other Early Complications of Endothelial Origin	

18. Hormonal/Endocrine dysfunctions
19. Mental Health and Sexual Disturbances

Module 3: Orem’s self-care model

Definition of Orem self-care model
Integrating this model in the care of patients post bone marrow transplant

This program will focus on Orem’s self-care model for improvement of quality of life. To guide patients towards self-care, nurses need to know the keys concepts of this model and how to apply it in practice.

Module 4: Educational role of the nurse in discharge planning

1. Multidimensional concept of QoL
2. Patient education (when to educate/ how to educate and tips to insure maximal understanding)
3. Identifying gaps in knowledge of patients and caregivers
4. Assessing learning needs of patients and caregivers
5. Tools for QoL measurement.

Education is a skill that is taught and developed. To be able to insure good patient education, the nurses need to be trained to assess the knowledge of their patients, identify learning needs, plan and implement education then evaluate understanding.

B. Class schedule: Assessment approach, class content, instructional material and learning outcomes

Assessment approach		Class content	Instructional material	Learning outcomes
Questions in the lecture PowerPoint	Session 1	- Program introduction - Module 1: Introduction to Bone Marrow Transplant	- PowerPoint presentation - Video	1

Questions in the lecture PowerPoint	Session 1	Module 2: 1) Oral care for bone marrow transplant patient 2) Hemorrhagic cystitis	PowerPoint presentation	1-2-3-4
Graded case study	Application 1	Application session 1 for content of session 1		2-3-4-6
Questions in the lecture PowerPoint	Session 2	Module 2: Idiopathic pneumonia syndrome 2) Diffuse Alveolar Hemorrhage 3) Other early complications of endothelial origin	PowerPoint presentation	1-2-3-4
Graded case study	Application 2	Application session 2 for content of session 2	Graded case study	2-3-4
Questions in the lecture PowerPoint	Session 3	Module 2: - Veno-occlusive disease - Transplant-associated microangiopathy	- PowerPoint presentation - Video add the link!	1-2-3-4
Graded case study	Application 3	Application session 3 on content of session 3		1-2-3-4-6
Questions in the lecture PowerPoint	Session 4	Module 2: 1) Engraftment Syndrome (ES) 2) Graft Vs Host Disease	- PowerPoint presentation - Article discussion	1-2-3-4
Graded case study	Application 4	Application session 4 of session 4	Graded case study	2-3-4
Questions in the lecture PowerPoint	Session 5	Module 2: Infection post bone marrow transplant. (pharmacologic and non-pharmacologic) Module 2: Hematologic disturbances	PowerPoint presentation	1-2-3-4

Graded case study	Application 5	Application session 5 of session 5	Graded case study	2-3-4-6
Questions in the lecture PowerPoint	Session 6	Module 2: GI disturbances-fatigue Module 3: Nursing education/ Orem's self-care model	-PowerPoint presentation Article discussion -Tools discussion (Fact and Promise) -Video	1-2-3-4-5
Graded case study	Application 6	Application session 6 of session 6	Graded case study	2-3-4-7
Questions in the lecture PowerPoint	Session 7	Module 2: 1) Hormonal/Endocrine dysfunctions 2) Mental Health and Sexual Disturbances	- PowerPoint presentation -Article discussion	1-2-3-4
Graded case study	Application 7	Application session 7 of session 7	Graded case study	2-3-4-5
	Session 8	Final Exam Program evaluation		

The link to all videos and articles can be found under Reading and Supplementary sections of this chapter. The applications can be found in Appendix I.

C. Assessment approaches

The participants will be evaluated based on their participation, attendance and performance in the in-class assignments (see Appendix I) and on an exam (see

Appendix II). Assignments and the exam are aligned with the program's learning outcomes.

The participants will be graded as per the following:

1. In-class applications 70% (10% each)
2. Final exam 20%
3. Class Participation 5%
4. Class attendance 5%

A grade of 80% is required to have a certificate of program completion. If the participants get a grade below 80%, they will have the chance to repeat the final exam. They will be given the certificate if they get a score above 80%.

D. Textbooks and assigned readings

Textbook

Kenyon, M., & Babic, A. (2018). *The European blood and marrow transplantation textbook for nurses: under the auspices of EBMT*. Springer Open.

Readings

Guide for Bone Marrow Transplant

Autologous Stem Cell Transplant: A Guide for Patients & Caregivers. Memorial Sloan Kettering Cancer Center. (n.d.). <https://www.mskcc.org/cancer-care/patient-education/autologous-stem-cell-transplant-guide-patients-caregivers>.

Your Guide to the Allogeneic Hematopoietic Stem Cell. (n.d.). <https://www.massgeneral.org/assets/MGH/pdf/cancer-center/bmt/guide-allogeneic-hematopoietic-stem-cell-transplant.pdf>.

Patient Self-Care

Mack, C.H. (1992). Assessment of the autologous bone marrow transplant patient according to Orem's self-care model. *Cancer Nursing*, 15(6), 429-436. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/1473087/>

Robinson, T. (1994). *The Self-Care Deficit Nursing Theory and Allogeneic Stem Cell Transplantation*. Retrieved from https://dspace.library.uvic.ca/bitstream/handle/1828/4257/Robinson_Tracy_MN_2009.pdf?sequence=1&isAllowed=y

Graft Vs Host Disease

Garnett, C., Apperley, J. F., & Pavlů, J. (2013, December). Treatment and management of graft-versus-host disease: improving response and survival. *Therapeutic advances in hematology*. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854558/>.

Publications, P., & mark123. (n.d.). *JCS - Journal for Clinical Studies*. Issuu. https://issuu.com/mark123/docs/jcs_-_volume_11_issue_1.

Engraftment Syndrome

Spitzer, T. R. (2001, July 2). *Engraftment syndrome following hematopoietic stem cell transplantation*. Nature News. <https://www.nature.com/articles/1703015>

Fatigue Post Bone Marrow Transplant

Hacker. (2016). *Managing Fatigue after Transplant* | BMT Infonet. Retrieved from <https://www.bmtinfonet.org/video/managing-fatigue-after-transplant>.

Sexual Health

Moravek, M. B., Confino, R., Smith, K. N., Kazer, R. R., Klock, S., Lawson, A. K., & Pavone, M. (2017). Fertility Preservation (FP) is successful prior to bone marrow transplant (BMT) and does not worsen outcomes. *Fertility and Sterility*, 108(3). <https://doi.org/10.1016/j.fertnstert.2017.07.550>

Mental Health

Liang, J., Lee, S. J., Storer, B. E., Shaw, B. E., Chow, E. J., Flowers, M. E., Krakow, E. F., Bar, M., Syrjala, K. L., Salit, R. B., Kurukulasuriya, C. E., & Jim, H. S. L. (2019). Rates and risk factors for post-traumatic stress disorder symptomatology among adult hematopoietic cell transplant recipients and their informal caregivers. *Biology of Blood and Marrow Transplantation*, 25(1), 145–150.
<https://doi.org/10.1016/j.bbmt.2018.08.002>

E. Supplementary material such as tools, software, videos etc...

Below are some additional videos that can be used to better understand concepts:

Fact-BMT (Version 4). (n.d.). Retrieved June 1, 2022, from
<https://www.facit.org/measure-english-downloads/fact-bmt-english-downloads>

Promis. (n.d.). Retrieved June 9, 2022, from <https://www.healthmeasures.net/explore-measurement-systems/promis>

YouTube. (2021). *Allogeneic stem cell transplant discharge: caring for yourself*.
YouTube. https://www.youtube.com/watch?v=Vzw_dMe8YiA

YouTube. (2009). *Bone Marrow Transplant - Mayo Clinic*. *YouTube*
<https://www.youtube.com/watch?v=GIy2nMnuGGI>

YouTube. (2008). *Duke Adult Bone Marrow Transplant Program: Going Home*.
YouTube. <https://www.youtube.com/watch?v=ayuAVcn5OIE>

YouTube. (2015). *Stem cell donation: Step by step*. *YouTube*. Retrieved July 13, 2022,
from <https://www.youtube.com/watch?v=FyriQibRhLA>

YouTube. (2016). *The pathology, diagnosis, and treatment of hepatic Vod/Sos post Sct*.
YouTube. Retrieved July 13, 2022, from <https://www.youtube.com/watch?v=QmHXI-14tDw>

Below are some pamphlets that can be used:

Chelsea Harding RN, BSN, OCN. (n.d.). *Autologous Stem Cell Transplant Discharge Instructions*. Retrieved from <http://www.med.umich.edu/1libr/BMT/AutoDischargeInstructions.pdf>

Massachusetts General Hospital Cancer Center. (n.d.). *Discharge Guidelines Following Allogeneic Hematopoietic Stem Cell Transplant*. Retrieved from <https://www.massgeneral.org/assets/MGH/pdf/cancer-center/bmt/discharge-guidelines-allogeneic-hematopoietic-stem-cell-transplant.pdf>

F. Summary

This 16-session program will be delivered to AUBMC nurses working in the bone marrow transplant unit and inpatient, outpatient, and clinic units of the adult hematology oncology department. Sessions will be offered over eight weeks, two days a week, and the expected duration of each session is 2 hours. First session of the week will be lecture-based where the nurses will be provided with the essential content. The second session will be for application where case scenarios will be worked on and discussed in groups. Nurses will be evaluated based on their performance in the class assignments, final exam, participation, and attendance.

CHAPTER IV

PROGRAM IMPLEMENTATION AND EVALUATION

Patients who undergo bone marrow transplant face multiple challenges once discharged home. Part of that is due to the fact that they are not properly prepared ahead of time for what to expect when they go home. Education is given to patients as well as caregivers once the decision for discharge is made. Thus, it is very important to have competent nurses who are highly knowledgeable and are able to properly prepare their patients for discharge. Having confident patients who are able to properly self-manage at home will increase their quality of life. The goal of this project is to prepare nurses to teach patients and care givers upon discharge home after BMT. By doing so, we are improving patients' self-efficacy and outcomes after BMT, and allowing them to feel like they have better control of their state by intervening early in case of any arising complications, and thus having a better quality of life. The target population was chosen and a clear outline of the program content was developed.

Following this, I met with the unit manager so that he can go over the program content, approve and validate the program objectives. The final step was meeting with the Clinical and Professional Development Center - Nursing Services Department (CPDC) at the AUBMC to further approve the program content and incorporate it in the training and education of the Hematology Oncology/ BMT nurses on the unit. This chapter will be devoted to discussing program implementation. Program facilitators and challenges will be highlighted, and the various means of program evaluation will be discussed.

A. Program implementation

1. Implementation budget

When developing our budget plan, we need to take into consideration:

- Cost of paper that need to be printed (pretest- post-test) (20,000 lb)
- Cost of 1 box of facemasks (100,000 lbp)
- Cost of hand sanitizer (100,000)

And so, the total cost for the first implementation will be around 220,000 LBP.

2. Unit Manager Verification

The program syllabus was sent to the Oncology Unit manager to verify appropriateness of program content, feasibility to conduct the program, and any potential challenges to be attended to. The questions asked were the following:

“Are the topics included appropriate?”

“Is there any other topic that has to be listed in the program content?”

“Is this educational program applicable, feasible and acceptable?”

“What are possible challenges that can be anticipated?”

The content was validated and approved. No additional topics were recommended. The program was deemed as feasible, applicable, and acceptable. The manager proposed to hold the classes on two consecutive days (Thursdays and Fridays) as it is easier for scheduling and staffing, and requested to have the names of the participants sent on weekly basis with time during which they need to be off duty to avoid having time conflict.

3. CPDC validation

The syllabus was communicated with the CPDC staff whose feedback was as follows: “It is better to have an overview of stem cell biology as it saves a lot of time while discussing complications like GvHD. Mental health is a major dimension in assessing the quality of life for any patient, above all the patients with cancer and bone marrow transplant; it is important to emphasize the issues of anxiety, PTSD, depression, and decreased cognitive function during and after transplant. Hormonal/endocrine dysfunctions are major post-transplant complications that cause symptoms affecting the patient’s quality of life. What is listed on the ‘topic/content’ column are the immediate/acute complications that happens during the first 3 months after transplant, but when looking at QoL in survivors, it is important to educate the oncology nurses about the long-term effects of transplant. It is essential to discuss post-transplant sexual dysfunctions in both men and women since the whole reason of this program is to improve the patient’s QoL; it is important to discuss multidimensional concept of QoL, as well as the ways to assess/measure QoL, specifically in transplant patients.”

Adjustments were made accordingly.

4. Inviting participants

A formal invitation with the program’s poster (see Appendix III) will be sent to the nurses working on the AUBMC Bone Marrow Transplant unit as well as the Adult Hematology Oncology department (inpatient, outpatient, and clinic units). Names and emails of the nurses will be gathered from the unit manager. Nurses who wish to attend the program will inform the unit manager, after which the unit manager will send names of interested nurses. The target number of participants is 12.

5. Facilitators

Facilitators for the implementation of this program include the presence of a room in the HSON in which classes can be held. Alongside, the availability of virtual platforms that facilitate knowledge communication and program implementation such as Moodle, Epic, Mychart, and Wi-Fi all around AUB and AUBMC help to promote easy access to information for both staff and patients. Lastly, the support of the unit manager and the CPDC is one major facilitator in program implementation. In fact, the driving forces for participating in continuing nursing education programs are: (a) having the support of the nurse manager and (b) providing ways for these nurses to update their knowledge and improve their clinical skills and overall performance at work (Shahhosseini et al., 2014).

6. Challenges

Challenges that were crossed during program preparation were the lack of studies, both qualitative and quantitative, on the effect of bone marrow transplant on the quality of life of patients, and the lack of work exploring the lived experiences of patients who undergo hematopoietic stem cell transplant.

For program implementation, the challenges may be related to the shortage of nursing staff; accordingly, nurses may not have free time to attend all of the sessions. Moreover, nurses are usually overwhelmed and face burnout, making them less motivated to learn and less receptive of information.

Another factor that must be attended to in this program is the fact that while preparing these nurses to become experts in patient education, some of them may be planning to leave the country. Even those who are planning to stay, the acquired information may subside overtime. A proposed solution is to offer the program on a yearly basis, especially for new nurses. A yearly refresher program through the online offering format, and a yearly exam may be deemed necessary to maintain and update nurses' knowledge on the topic.

7. Available Resources

There are three available resources that can be used for the implementation, continuous education, follow up, and implementation of the course. The resources include: Moodle, Epic system, and My Chart. Moodle is an online platform used to educate AUBMC staff. All of the information given during the program will be summarized and uploaded on Moodle as a reference source for the staff. Brochures on each topic will be made and uploaded as well. The content will be run and approved by the CPDC. These brochures can be printed and handed out during the program offering. They will serve to guide and lead the education of patients. Yearly refresher exams will be done through this platform.

The Epic system can be used to track the implementation of this program and the data can be retrieved for program evaluation. A list of topics on which patients must be educated on will be integrated in each patient's file. Each time education is provided, the nurse will document it on the system. With each completed topic, the nurse would document who it was provided to; how interactive the discussion was; and whether or not the person was receptive, a brochure given, and need for a refresher. The data

provided on Epic will help in future research through tracking program implementation, evaluating effectiveness, identifying possible gaps, and developing new programs.

My chart is the third platform that can be used. This application will be downloaded once the patient is admitted. A list of topics that the patient will be educated on will be posted. Each time an educational session takes place, the patient can choose the topic on *Mychart*, evaluate it through a survey, provide feedback, and state whether or not a refresher session is needed. The data provided here can also be retrieved and used in future research to evaluate the implementation of the course, effectiveness, identify possible gaps, and develop new programs. Brochures will be available under “Patient education section” and will serve as guides for self-management once discharged home.

8. Suggestions for Future Research

Future research is needed to study the effect of self-management and self-efficacy on quality of life of BMT patients. Surveys can be posted under “questionnaires” on Mychart. A proposed tool to evaluate self-efficacy is the PROMIS Self-Efficacy for Managing Symptoms item bank (see Appendix IV) and a proposed tool to evaluate quality of life post BMT is the FACT Tool (see Appendix V).

The PROMIS self-efficacy tool consists of 5 item banks that are tested using the item-response theory and psychometrically developed. These item banks have been validated and are available for researchers and clinician to help evaluate both patient’s confidence while carrying out tasks as well as their behaviors while managing their medical condition (Gruber-Baldini et al., 2017).

The Functional Assessment of Cancer Therapy Bone Marrow Transplant Tool (FACT- BMT) is reliable and valid tool to Health Related Quality of Life (HQRL) In patients who underwent BMT. It was validated in 1997 and has been used worldwide since that to study the quality of life in patients post BMT (Zahreddine et al., 2020).

B. Evaluation

1. Instructor evaluation

The most effective way of measuring the instructor's competency is by gathering feedback from the participants through surveys after completing the program. The data gathered can be used to improve the instructor's performance (Agaoglu, 2016). For that, participants are requested to fill in an instructor evaluation form at the end of the program (see Appendix VI).

2. Program evaluation

Program evaluation is a must to improve pedagogy and the delivery of program (Medina et al., 2019). For that, participants will be requested to fill in a survey at the end of the program (see Appendix VI). The data will be gathered and changes will be made according to the feedback.

3. The instructor – program evaluation form

The evaluation tool was chosen following “Gagne’ condition of learning theory” more precisely “Gagne's 9 Events of Instruction” (see Appendix VII). This model has been used to evaluate teaching effectiveness in the classroom. The 9 events include: “Gain attention”, “Inform learners of objectives”, “Stimulate recall of prior learning”, “Present stimulus”, “Provide learner guidance”, “Elicit performance”,

“Provide feedback”, “Assess performance”, “Enhance Retention and Transfer”
(Miner et al., 2015).

C. Summary

This section provided an insight on the implementation and evaluation of the program. To successfully implement the program, we needed to get both the unit manager and the CPDC on board. The program content was sent to both and changes were made as per their feedback. An official invitation will be sent to the nurses and those who wish to participate will inform their manager. Facilitators and challenges to the implementation were discussed here. To assess learners, in class assignments will be done and an exam will be taken at the end of the course. To evaluate the instructor and the overall program, a survey will be distributed during the last session. Changes will be made to the program according to the feedback gathered from the nurses.

CHAPTER V

CONCLUSION

The transition from the inpatient unit following a bone marrow transplant to the community is frustrating for both patients and their caregivers. The need to have nurses that are experts in education, quality of life promoters, and who are able to prepare their patients for discharge is indispensable. This program was developed to train nurses how to empower their patients and embed in them the concepts of self-care. The model of choice was Orem's self-care model. The program content was disseminated to and validated by the unit manager and the CPDC. Further studies are needed to evaluate its implementation and its effect on patients' self-efficacy and quality of life once at home.

APPENDIX I

APPLICATIONS

1. Application 1 (10 points):

The content of application session one will revolve around Oral care for bone marrow transplant and Hemorrhagic cystitis. Four different case studies will be given. Three on oral care and one on Hemorrhagic Cystitis. In groups, participants will have 30 minutes to work on the case study and answer questions. Each group will then have 20 minutes to present their case study to the class and discuss their answers. Each group is expected to write down the answers to the case study and hand in the paper after presenting.

The aim to this activity is to expose nurses to 4 different scenarios that they may encounter, to let them identify behaviors that put the patient at risk for the specific outcome and to assess learning needs of both the patient and caregiver.

The case scenarios are the following:

Scenario one

Mr. KI is a 56-year-old male patient with Hodgkin Lymphoma day 38 post BMT. He presented to the ED with fever reaching 38.5 at home and was admitted to the unit for IV antibiotics. Upon assessment, the nurse notices that the patient's oral mucosa is sore and erythematous. When asked about it, the patient reports having a dry mouth for a week now but denies any difficulty in swallowing. When asked about oral

hygiene, the patient stated that he brushes his teeth every morning. When asked about his dietary habits, the patient reported that he likes to add spices to his food and likes to drink lemon juice. He also reported not being able to quit smoking, and having at least half a pack of cigarettes per day.

To note that Mr. KI works as a farmer, is a father of 4. His wife is unemployed. Both him and his wife do not have a school diploma.

Scenario Two

Miss DM is a 35-year-old female with acute myeloid leukemia, day 14 post allogenic bone marrow transplant. the patient report laceration in her mouth and difficulty swallowing. She states that she is even having difficulty drinking water and is unable to eat. When assessing the oral mucosa, ulcers and extensive erythema were seen.

To note that Miss DM is not married with no kids and works as a program developer in a firm.

Scenario Three

Mr WA is a 29-year-old male patient with Hodgkin lymphoma day 17 post BMT. He is getting prepared for discharged and being given the necessary instructions for oral care at home. Mr WA is not complaining of any dryness, soreness or difficulty swallowing and his oral mucosa was intact upon assessment.

To note that the patient earned his degree in business and has been working at the bank for 6 years. He is married and has a child. His wife, a full time school teacher is also his primary caregiver. When the nurse entered the to provide him with some discharge instruction, the patient and his wife verbalized being anxious about going back home.

Scenario four:

Miss RA is a 64-year-old female patient with Acute Myeloid Leukemia s/p allogenic BMT. She is married with 4 kids. She and her husband both work as university professors. The patient was recently admitted with hematuria and workup was positive for BK virus. The patient is currently on antiviral therapy and Foley irrigation. Due to her condition, Miss RA has very low energy and spends most of her time in bed.

2. Application 2 (10 points)

This application will revolve around Idiopathic pneumonia syndrome, Diffuse Alveolar Hemorrhage and Other Early Complications of Endothelial Origin. The class will be divided into groups of 4. Questions will be distributed. Nurses will have 60 minutes to answer these questions. All questions will be handed in once filled. Each group will then have 20 minutes to discuss 5 questions and explain their choice of answers. Questions will revolve around class content, ways on management, risk assessment, and related nursing interventions. The aim of this activity is to assess the knowledge of nurses, critical thinking skills, and train them on how to choose the most appropriate intervention.

(Each question is worth 0.5 points, and the participants either get a 0.5 if answered fully or 0)

The questions are the following

1. Define early complications of endothelial origin
2. In which transplant (autologous or allogenic) do these complications occur?
3. List the early complications of endothelial origin
4. List 4 risk factors for complications of endothelial hemorrhage
5. Describe the pathophysiology of alveolar hemorrhage
6. What are 2 risk factors of alveolar hemorrhage?
7. What are the diagnostic tests used to confirm alveolar hemorrhage?
8. When after transplant can alveolar hemorrhage occur?
9. What are 3 treatment modalities for alveolar hemorrhage
10. List 4 the factors to be monitored in a patient with alveolar hemorrhage
11. What are the effects of hemorrhage on the patient's quality of life?
12. List 3 self-management skills for alveolar hemorrhage
13. Describe the pathophysiology of idiopathic pneumonia
14. When after transplant can idiopathic pneumonia occur?
15. List 4 signs and symptoms idiopathic pneumonia?
16. List a diagnostic method for idiopathic pneumonia

17. List 3 treatment modalities for idiopathic pneumonia
18. List 4 factors that need to be monitored for in a patient with idiopathic pneumonia
19. List 4 effects of idiopathic pneumonia on the patient's quality of life
20. List 3 self-management skills that can be taught for patients with idiopathic pneumonia

3. Application 3 (10 points)

This application revolves around Venous-occlusive disease and Transplant-associated microangiopathy (TMA). Four different case studies will be given. In 2 scenarios, the patient has suffered from VOD during hospital stay. In the 2 other scenarios, the patient has suffered from TMA during hospital stay.

Each group is required to identify symptoms and relate them to the complication (2 points). Each group is asked to explain the pathophysiology of the complication (2 points) and list 3 interventions for self-management (3 points). The nurses need to set criteria for the assessment of the patient's knowledge and evaluate the effectiveness of their education (3 points). Nurses have 30 minutes to do so. Each group will then be granted 20 minutes to present their work and discuss their activity with the other. Work will be submitted for grading.

The aim of this activity is to let nurses link knowledge into practice, train critical thinking and reasoning skills and use the knowledge to educate the patients on self-care during hospital stay.

The scenarios are the following:

Scenario One

Miss SK is a 69-year-old male with Acute Myeloid Leukemia s/p allogenic bone marrow transplant. Miss SK has a history of hypertension, dyslipidemia and a preexisting hepatic condition. The patient has 3 kg increase in weight in 2 days, daily labs showed direct bilirubin level of 1 mg/dl and total of 2 mg/ dl. Liver tenderness was noted on assessment. Ultrasound abdomen was done can confirmed the diagnosis of VOD.

Scenario Two

Miss YB is a 56-year-old male with Acute Myeloid Leukemia s/p allogenic bone marrow transplant, he suffers from VOD post-transplant and started on defibrotide, albumin and required abdominal tap twice. Despite treatment, the patient still has hyperbilirubinemia. He still suffers from jaundice and ascites. Due to his condition, he spends most of his time in his bed.

Scenario Three

Mr. IG is a 56-year-old male patient with IgI kappa multiple myeloma s/s reduced intensity allogenic stem cell transplant from 9/10 HLA- matched unrelated donor. Conditioning treatment was fludarabin-melphalan. On day 27 post BMT, he developed acute kidney injury followed by multiple episodes of GVHD and CMV colitis induced diarrhea. despite treatment his cases kept deteriorating. His labs showed thrombocytopenia and anemia, low haptoglobin, elevated LDH and the presence of schistocytes on peripheral smear.

Scenario Four

Miss GD is a 64-year-old female with Acute myeloid leukemia day + 23 of allogenic transplant from unrelated donor, suffers from acute GVHD. The patient is reporting fatigue, shortness of breath. Her latest vital signs were the following: BP 190/63 HR: 74 RR: 19 SPO2: 96% and last 24 hours urine output was: 500 ml. Recent workup turned back positive for TMA.

4. Application 4 (10 points)

This application will revolve around Engraftment Syndrome and Graft vs host (Acute/chronic). Each group will be assigned one of the following cases to answer questions pertaining to the assigned complication in 40 minutes.

1. Skin Graft Vs Host Disease
2. Gastro-intestinal Graft Vs Host Disease
3. Ocular Graft Vs Host Disease
4. Engraftment Syndrome

Groups are requested to answer the following questions:

1. Define the complication (1 point)
2. Define 4 signs and symptoms of this complication (2 points 0.5 each)
3. Relate signs and symptoms of this complication to the assigned case (2 points)
4. List 3 ways of medical management for the following condition. (1.5 points, 0.5 each)

5. List 5 interventions that the patient can do to improve self-care and have better quality of life. (2.5 points, 0.5 points each)

Each group will be granted 20 minutes to present and discuss the assigned case. By the end of the presentation, each group is requested to submit their answer sheet for grading.

The aim of this activity is to test knowledge of nurses on the topic and designate ways for self-management, develop critical thinking and reasoning skills, and enhance team work. This activity also aims at shifting the nurses' way of thinking, from 'what the complication is' to 'what can nurses do to improve quality of life of the patient living with this complication after their discharge'. (1 point will be granted for clear presentation)

5. Application 5 (10 points)

This activity revolves around infection post bone marrow transplant with emphasis on the pharmacologic and non-pharmacologic approaches. Nurses will be divided into groups of four. Each group will have to think about one case of readmission for management of infection post bone marrow transplant discharge that they have encountered at work and do the following:

1. Present the case and reason for admission and management done in the hospital (2 points).
2. Identify 3 behaviors that the patient was doing at home that could have put them at a higher risk for infection (1.5 points, 0.5 each).

3. Identify 3 behaviors that the patient was doing at home that decreased their risk for acquiring an infection (1.5 points, 0.5 each).
4. Describe the knowledge/ knowledge gaps of the patient on infection prevention and link it to their background (socio-economical background / educational background / age, etc....). (2.5 point, 0.5 each)
5. List 5 interventions that can be done to optimize patient hygiene after discharge and prevent readmission. (2.5 points, 0.5 point each)

Each group will then have 20 minutes to present and discuss the case. The answer sheet will be submitted for grading.

Nurses are the most at contact with the patient. They spend hours each day in the patient's room caring for them and building a rapport. Each nurse can deduce from conversations with patient multiple things including their daily habit, behaviors that put at risk, knowledge and understanding of one's condition. The aim of this activities is to get the nurses to reflect on a case that they have encountered at work and use their critical thinking and reasoning skills to upraise the case and find ways to improve patient care after their discharge.

6. Application 6 (10 points)

Just like the others, the class will be divided into groups of 4. Each group is expected to:

1. Choose a topic and justify their choice (Fatigue- Nausea- Vomiting- Decrease oral intake). (1 point each)

2. Choose 4 instructional material (exp: brochure, video ...) and justify the choice for each. (4 points)
3. Develop an educational plan and explain how the education will be delivered. (2.5 points)
4. Integrate 5 self-strategies according to Orem's self-care model in the teaching process. (2.5 points)

Each group will then have 20 minutes to present and discuss their case. The answer sheet will be submitted for grading.

The aim of this activity is to take what they have learned, apply to it the self-care model and integrate it in their day to day work. It is meant to challenge their critical thinking and reasoning skills to provide good education so that patients will be able to take care of themselves once they are discharged home. they are discharged home.

7. Application 7

This is the final application of this course. The class will be divided into groups of four. The topics discussed are: Hormonal/Endocrine dysfunctions, Mental Health and Sexual Disturbances. Three case studies will be distributed, one for each topic. The attendees are required to:

1. Choose a differential diagnosis and justify your choice (2 points)

2. Identify signs and symptoms for each complication (3 points).
3. Apply 4 managements strategies (4 points).
4. Choose the appropriate tool for QoL measurement. (1 points)

Each group will then have 20 minutes to present and discuss their case. The answer sheet will be submitted for grading.

The aim of this activity is to assess the ability of nurses to properly identify signs and symptoms of Hormonal/Endocrine dysfunctions, Mental Health and Sexual Disturbances, elaborate on their proper management and choose the appropriate tool that measures the quality of life in each case.

The case scenarios are the following:

Scenario One

Mr. MZ is a 20-year-old male patient with aplastic anemia s/p allogenic BMT 1 year ago. He presented to the clinic for follow up. Upon assessment, the patient reported feeling tired, having trouble concentrating, and feeling cold for the past 2 weeks. Knowing that Mr. MZ doesn't have any previous history of thyroid dysfunction, his physician ordered a full workup to rule out hypothyroidism. His labs showed a TSH level of 5, a free T4 level of 2.1 mcg/dl and a T3 level of 134 ng/dl.

Scenario Two

Miss IY is a 62-year-old female patient with myelofibrosis day 60 post BMT, presenting to the clinic for follow up. Upon assessment, Miss IY reported having a low mood for the past month, not wanting to spend time with friends and family and having difficulty sleeping. When asked about her dietary intake, she stated that she has been

having low appetite for a while now and that her nutritional intake has decreased the past two weeks.

Scenario Three

Miss LH is a 32-year-old female with Hodgkin lymphoma s/p BMT one year ago. She is married with two kids. The patient presented to the clinic for follow up. During her clinic visit, she reported pain during intercourse, inability to be aroused and lack of sexual interest. Miss LH was discussing this matter in private with her nurse and verbalized that this has been very frustrating for her and doesn't know how to talk about it with her husband.

Scenario Four

Mr. HA is a 31-year-old male patient with Hodgkin Lymphoma day 15 post BMT. While assessing the patient, the nurse notices that he was a bit agitated and his left leg was restless. When asking him if he was okay, the patient stated that he has been unable to sleep for the past 3 days. He also reported feeling as if "his heart is pounding" and is having difficulty breathing.

APPENDIX II

THE TEST

The test will include 10 multiple choice items and 5 essay questions.

Questions (10 points):

1. **Miss AD, a 45-year-old female with Acute Lymphoid Leukemia on day 58 post auto BMT, is reporting temperature of 38.7. The patient should: (1 point)**
 1. Take acetaminophen every 6 hours and monitor temperature at home
 2. **Notify the health care immediately and prepare to come the emergency room**
 3. Start over the counter broad spectrum antibiotic and present to the emergency room in case of worsening symptoms
 4. Wait and repeat temperature after 30 minutes, then notify the health care team

Learning Outcome (number).

Describe the appropriate medical management for the BMT complications using latest evidence.

2. Behaviors that increase risk for infection include: (1 point)

1. Minimizing direct contact with animals
2. Daily oral (mouth) care, using a soft, nylon-bristled toothbrush or sponge toothette
3. Having a Room humidifier
4. Avoiding being in a crowded room

Learning Objective:

Outline potential complications and risk behaviors that may jeopardize the health of patients following bone marrow transplant.

3. Corticosteroid use remains the 1st line treatment for graft vs host disease.

When educating a patient on self-care while on steroids, the nurse should mention all except (1 point):

1. Instruct the patient to monitor blood glucose level
2. Increase sodium intake
3. Follow a low salt/ low sugar diet
4. Perform skin care to keep it hydrated

Learning Objective:

Outline all interventions that help promote self-care at home using Orem's self-care empowering principles.

4. When educating a patient on sun exposure, the nurse should instruct the patient to (1 point): (more data about the patient)

1. Use SPF 15
2. **Wear long sleeves and pants**
3. Be protected against sunlight especially between 2 pm am and 7 pm
4. Wearing a hat (with or without holes)

Learning Objective:

Outline all interventions that help promote self-care at home using Orem's self-care empowering principles.

5. Which of the below situations reflect time appropriateness to deliver an educational session to a patient (1 point)?

1. Miss Lama is in abdominal pain, day 5 post bone marrow transplant, and is requesting pain medication.
2. **Miss Dina is sitting in her bed watching TV, currently day 7 post-transplant, she expresses some concerns regarding eating habits after discharge.**

3. Miss Maya is planned for stem cell infusion in a couple of hours and verbalizes being stressed about the procedure
4. Miss Samia, day 57 post bone marrow transplant, admitted to the unit for management of pneumonia. She is anxiously in her room waiting for the medical team to inform her about the CT chest result.

2.

Learning Objective:

Assess the learning needs of the post bone marrow transplant patients and caregivers upon planning for their discharge instruction.

6. **Miss Aya is 22-year-old female with diffused large B cell lymphoma, day 21 post autologous BMT. She received education on infection prevention.**

Which of the following statements indicates that Miss Aya has a clear understanding about self-care (1 point)?

1. “It is enough for me to brush my teeth twice daily with a hard brush.”
2. “I will let my brother take care of my cat until the doctor says that it is okay for me to bring her back home.”
3. “Sitting in open air next to wood fire will not increase my risk for infection.”
4. “I can share food with my husband as long as he is not expressing any signs of infection”

Learning Objective:

Assess the learning needs of the post bone marrow transplant patients and caregivers upon planning for their discharge instruction.

7. The main signs of veno-occlusive disease include all except (1 point):

1. Jaundice
2. Hepatomegaly
3. Splenomegaly
4. Bilateral lower extremity edema

Learning Objective:

Outline potential complications and risk behaviors that may jeopardize the health of patients following bone marrow transplant.

8. Management of severe oral mucositis include all except (1 point):

1. Increase pain medication following patient need
2. Increase nutritional support
3. Increase oral rinses and care with alcohol-based solution

4. Rinse mouth with bicarbonate solution

Learning objective:

Describe the appropriate medical management for the BMT complications using latest evidence.

9. Mr GY is a 56-year-old male patient with multiple myeloma, day 17 post BMT. Which intervention will let him improve in nutritional intake? (1 point)

1. Eat small and frequent meals
2. Add sauces to food
3. Eat refrigerated raw meet
4. Adding spices to food

Learning objective:

Describe the appropriate medical management for the BMT complications using latest evidence.

10. Mr EF is a 44-year-old male patient with AML, day 19 post autologous BMT. Which of the following sentences indicates the need to initiate patient education (1point)?

1. “When I go back home, I will suck on ice chips, popsicles, sugarless gum for management of dry mouth.”

2. “When I go back home, the first think I will do is sit and play with my dog as I miss him so much.”

3. “I will wear my facemask whenever I am I public, avoid crowded places and restrict visitors up until my immunity kicks back and I am cleared by my doctor.”

4. “Once I am home, I will avoid eating in restaurants until I am cleared by my doctor”

Learning Objective:

Assess the learning needs of the post bone marrow transplant patients and caregivers upon planning for their discharge instruction

Situations (20 points)

1. **Miss Nayla is a 45-year-old female with Hodgkin Lymphoma is admitted for autologous bone marrow transplant. While taking her vitals, she verbalized feeling nauseous and bad about herself as she is not able to eat,**

and has lost 7 kg ever since she was first diagnosed. She is afraid that this nausea will stay and she will not be able to eat when she goes back home (8 Points):

1. Assess the learning needs of the patient and justify your answer using her verbalization. (2 points)
2. Using Orem's self-care model, list 4 interventions that the patient can do at home to help manage this symptom and justify your answer (3 points for each intervention and 3 points for each proper justification).

Learning Objective:

Assess the learning needs of the post bone marrow transplant patients and caregivers upon planning for their discharge instruction List interventions to promote self-care at home.

Outline all interventions that help promote self-care at home using Orem's self-care empowering principles.

2. **Mr. Joseph, a 37-year-old male patient with Acute Myeloid Leukemia, is admitted for Allogenic bone marrow transplant. Currently, he is day 15 post BMT. While doing the 5 pm medication distribution round, the nurse asks the patient to take a gargle solution. Mr. Joseph asks, "Why it is so important to gargle 4 times daily?" (6 Points).**
1. What should the nurse's answer be to Mr. Joseph's question? (2 points)

2. What are the 2 other interventions that the patient can do for proper oral hygiene while both in hospital and at home. (2 points for each intervention)
3. Mr. Joseph asks the nurse about mentioning oral hygiene at home this early, as he is still currently admitted. What will the nurse's answer be regarding the importance of early education in discharge planning? (2 points)

Learning Objective:

Describe the role of the nurse in preparing patients for discharge after BMT.

Outline all interventions that help promote self-care at home using Orem's self-care empowering principles.

3. **Mr. Hassan is a 29-year-old male patient with Myelodysplastic Syndrome day 13 post Allogenic Bone Marrow Transplant. Mr. Hassan is a non-compliant patient, he refuses to shower daily and to gargle or brush his teeth regularly. You have walked in multiple times on him while he and his visitors were not wearing facemasks and you caught him once eating delivery food. (6 Points)**
 1. What 4 risk factors may put Mr. Hassan at a risk for acquiring an infection. (1 point each)
 2. What is the importance of early intervention for changing behavior? (2 points)

3. What is an appropriate way to carry out an educational activity with this patient? (2 points)

Learning Objective

Identify risky behaviors of patients that increases harm risk for patient post bone marrow transplant discharge Outline potential complications and risk behaviors that may jeopardize the health of patients following bone marrow transplant.

Design an educational activity to promote self-care management of the post bone marrow transplant patient.

Outline all interventions that help promote self-care at home using Orem's self-care empowering principles.

Outline potential complications and risk behaviors that may jeopardize the health of patients following bone marrow transplant.

APPENDIX III

POSTER



Figure 1 POSTER

Reference:

Aubmc logo . (n.d.). Retrieved July 15, 2022, from
https://en.wikipedia.org/wiki/American_University_of_Beirut.

APPENDIX IV

PROMIS TOOL

PROMIS Item Bank v1.0 - Self-Efficacy for Managing Chronic Conditions - Managing Symptoms

Self-Efficacy for Managing Chronic Conditions - Managing Symptoms

Please respond to each question or statement by marking one box per row.

CURRENT level of confidence...		I am not at all confident	I am a little confident	I am somewhat confident	I am quite confident	I am very confident
SEMSX001	I can make a moderate reduction in my symptoms	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX002	I can reduce my symptoms to my satisfaction.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX003	I can control my symptoms by taking my medications.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX004	I can control my symptoms by using methods other than taking medication (for example: relaxation exercises, distraction).....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX005	I can do something to reduce my symptoms when they worsen	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX006	I can do something to prevent my symptoms from worsening	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX007	I can manage unexpected or new symptoms	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX008	I can manage my symptoms when I am at home	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX009	I can manage my symptoms in a public place	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX010	I can manage my symptoms during my daily activities	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX011	I can work with my doctor to manage my symptoms	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX012	I can manage my symptoms as well as other people with symptoms like mine	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX013	I can keep my symptoms from interfering with my sleep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX014	I can keep my symptoms from interfering with relationships with friends and family.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

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Figure 2 PROMIS TOOL

CURRENT level of confidence...		I am not at all confident	I am a little confident	I am somewhat confident	I am quite confident	I am very confident
SEMSX015	I can keep my symptoms from interfering with the work I need to do.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX016	I can keep my symptoms from interfering with my recreational activities	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX017	I can keep my symptoms from interfering with my personal care	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX018	I can enjoy things, despite my symptoms ..	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX019	I can still accomplish most of my goals in life, despite my symptoms.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX020	I can live a normal life, despite my symptoms	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX021	I can be physically active, despite my symptoms	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX022	I can maintain my sense of humor, despite my symptoms	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX023	I can recognize when my symptoms change.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX024	I know what to do when my symptoms worsen	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX025	I can rely on my judgment to manage my symptoms, even when others disagree with me.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX026	I can manage my symptoms when I am in an unfamiliar place	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX027	I can find the information I need to manage my symptoms	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SEMSX028	I can manage my symptoms when I am tired.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

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Figure 3 PROMIS TOOL

Adapted from Promis. (n.d.). Retrieved June 9, 2022, from <https://www.healthmeasures.net/explore-measurement-systems/promis>

APPENDIX V

FACT BMT

FACT-BMT (Version 4)

Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

<u>PHYSICAL WELL-BEING</u>		Not at all	A little bit	Some- what	Quite a bit	Very much
GP1	I have a lack of energy	0	1	2	3	4
GP2	I have nausea	0	1	2	3	4
GP3	Because of my physical condition, I have trouble meeting the needs of my family	0	1	2	3	4
GP4	I have pain	0	1	2	3	4
GP5	I am bothered by side effects of treatment	0	1	2	3	4
GP6	I feel ill	0	1	2	3	4
GP7	I am forced to spend time in bed	0	1	2	3	4
<u>SOCIAL/FAMILY WELL-BEING</u>		Not at all	A little bit	Some- what	Quite a bit	Very much
GS1	I feel close to my friends	0	1	2	3	4
GS2	I get emotional support from my family	0	1	2	3	4
GS3	I get support from my friends	0	1	2	3	4
GS4	My family has accepted my illness	0	1	2	3	4
GS5	I am satisfied with family communication about my illness	0	1	2	3	4
GS6	I feel close to my partner (or the person who is my main support)	0	1	2	3	4
Q1	<i>Regardless of your current level of sexual activity, please answer the following question. If you prefer not to answer it, please mark this box <input type="checkbox"/> and go to the next section.</i>					
GS7	I am satisfied with my sex life	0	1	2	3	4

Figure 4 FACT BMT

FACT-BMT (Version 4)

Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

EMOTIONAL WELL-BEING

		Not at all	A little bit	Some- what	Quite a bit	Very much
GE1	I feel sad	0	1	2	3	4
GE2	I am satisfied with how I am coping with my illness.....	0	1	2	3	4
GE3	I am losing hope in the fight against my illness	0	1	2	3	4
GE4	I feel nervous	0	1	2	3	4
GE5	I worry about dying	0	1	2	3	4
GE6	I worry that my condition will get worse	0	1	2	3	4

FUNCTIONAL WELL-BEING

		Not at all	A little bit	Some- what	Quite a bit	Very much
GF1	I am able to work (include work at home)	0	1	2	3	4
GF2	My work (include work at home) is fulfilling.....	0	1	2	3	4
GF3	I am able to enjoy life.....	0	1	2	3	4
GF4	I have accepted my illness.....	0	1	2	3	4
GF5	I am sleeping well	0	1	2	3	4
GF6	I am enjoying the things I usually do for fun	0	1	2	3	4
GF7	I am content with the quality of my life right now.....	0	1	2	3	4

Figure 5 FACT BMT

FACT-BMT (Version 4)

Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

<u>ADDITIONAL CONCERNS</u>		Not at all	A little bit	Some- what	Quite a bit	Very much
BMT1	I am concerned about keeping my job (include work at home).....	0	1	2	3	4
BMT2	I feel distant from other people	0	1	2	3	4
BMT3	I worry that the transplant will not work.....	0	1	2	3	4
BMT4	The side effects of treatment are worse than I had imagined.....	0	1	2	3	4
C6	I have a good appetite.....	0	1	2	3	4
C7	I like the appearance of my body	0	1	2	3	4
BMT5	I am able to get around by myself.....	0	1	2	3	4
BMT6	I get tired easily	0	1	2	3	4
BL4	I am interested in sex.....	0	1	2	3	4
BMT7	I have concerns about my ability to have children.....	0	1	2	3	4
BMT8	I have confidence in my nurse(s)	0	1	2	3	4
BMT9	I regret having the bone marrow transplant	0	1	2	3	4
BMT10	I can remember things	0	1	2	3	4
BL1	I am able to concentrate	0	1	2	3	4
BMT11	I have frequent colds/infections	0	1	2	3	4
BMT12	My eyesight is blurry.....	0	1	2	3	4
BMT13	I am bothered by a change in the way food tastes.....	0	1	2	3	4
BMT14	I have tremors.....	0	1	2	3	4
BL	I have been short of breath.....	0	1	2	3	4
BMT15	I am bothered by skin problems	0	1	2	3	4
BMT16	I have trouble with my bowels	0	1	2	3	4
BMT17	My illness is a personal hardship for my close family members	0	1	2	3	4
BMT18	The cost of my treatment is a burden on me or my family	0	1	2	3	4

Figure 6 FACT BMT

Adapted from Fact-Bmt (Version 4). (n.d.). Retrieved June 1, 2022, from <https://www.facit.org/measure-english-downloads/fact-bmt-english-downloads>.

APPENDIX VI

PROGRAM EVALUATION FORM

COURSE AND INSTRUCTOR EVALUATION FORM

YOUR HONEST AND SINCERE EVALUATION OF THIS COURSE HELPS INSURE THAT OUR PROGRAMS ARE OF THE HIGHEST CALIBER AND THAT THEY MEET OR EXCEED YOUR TRAINING NEEDS. THANKS!

COURSE:	DATE(S):						
INSTRUCTOR(S):							
RATING SCALE: 5- Outstanding 4- More than satisfactory 3- Satisfactory 2- Less than satisfactory 1- Poor							
Materials:	1. Printed materials were well organized.	5	4	3	2	1	NA
	2. Printed materials were complete	5	4	3	2	1	NA
	3. Were readable (printed well).	5	4	3	2	1	NA
	4. Visual materials were related to course.	5	4	3	2	1	NA
	5. Visual materials were in appropriate numbers.	5	4	3	2	1	NA
	6. Visual materials were of good quality.	5	4	3	2	1	NA
Course:	7. Covered subjects that you thought it would.	5	4	3	2	1	NA
	8. Was a reasonable length.	5	4	3	2	1	NA
	9. Contributed to your knowledge and skills.	5	4	3	2	1	NA
	10. Related to your needs.	5	4	3	2	1	NA
	11. Was worth recommending to others.	5	4	3	2	1	NA
Instructor(s):	12. Related course materials to class needs.	5	4	3	2	1	NA
	13. Knew subject thoroughly.	5	4	3	2	1	NA
	14. Encouraged class participation.	5	4	3	2	1	NA
	15. Made course requirements and objectives clear.	5	4	3	2	1	NA
	16. Stayed on subject.	5	4	3	2	1	NA
	17. Answered questions completely.	5	4	3	2	1	NA
	18. Tolerated differences of opinion.	5	4	3	2	1	NA
	19. Contained a minimum number of distractions.	5	4	3	2	1	NA
Materials:	20. Overall, the facility was acceptable.	5	4	3	2	1	NA

Figure 7 PROGRAM EVALUATION FORM

Reference:

Instructor Evaluation Form. (n.d.). Retrieved from <https://www.sampletemplates.com/business-templates/instructor-evaluation-form.html>.

APPENDIX VII

GAGNE'S 9 EVENTS OF INSTRUCTION

Gagne's 9 Events of Instruction and Examples of Implementation in Course

Gagne's Event of Instruction	Activity to Produce Event	Examples used in Class
Gain attention	Present introductory activity that engages learners	Tapping on the microphone queued students that lecture was to begin. Class then began with presentation of media such as comic strip or YouTube video that related to the lecture topic
Inform learners of objectives	Give learner objectives for the class	Students presented with the objectives and how they are relevant to overall course objectives, followed by example of real-world application of the knowledge to be gained
Stimulate recall of prior learning	Present an experience that stimulates memory of prior learning	Questions and images were incorporated that reviewed related material and facilitated connection to prerequisite learning
Present stimulus	Deliver content	New content was delivered every 10-15 minutes. Stories, images, videos, mnemonic devices, and examples used to teach complex concepts
Provide learner guidance	Give learner examples	Students played word games, received lecture recordings, used handouts and reviewed sample questions as examples of expected learning

Figure 8 GAGNE'S 9 EVENTS OF INSTRUCTION

Elicit performance Provide feedback	Give practice activities Feedback should be immediate, specific and corrective	Case studies, simulations, and pictures used in group activities In-class question and answer sessions used audience response systems or simple raise of hands to provide feedback to entire group. Students received both instructor and peer feedback through group discussions
Assess performance	Present learners with post-assessment items	Minimal point quizzes occurred after lecture sessions, which allowed students and faculty to assess learning during course. Tests used to assess overall learning
Enhance Retention and Transfer	Give resources that enhance retention and facilitate transfer of knowledge	Group retests were given after individual student examinations. Students randomly assigned to groups of 4 or 5, and each group discussed the test questions with one another, using peers as resource and providing their own rationales for answers. This was intended to enhance retention and transfer of knowledge; students could discuss rationale, reinforcing new learning

Figure 9 GAGNE'S 9 EVENTS OF INSTRUCTION

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