

# Nursing Care in Bone Marrow Transplantation in Pediatrics

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## Abstract

The study addresses bone marrow transplantation (BMT) in pediatric patients, such treatment is recommended for individuals affected by pathologies that impair the normal functioning of bone marrow, with the purpose of repairing quantitative or qualitative defects in the bone marrow. Object: To investigate the role of nurses in pediatric bone marrow transplantation. Objectives: To identify national scientific productions about nursing care in the face of bone marrow transplantation in pediatrics, and to analyze the role of nurses in this context of care. Method: It is a narrative review of the literature, being descriptive research with a qualitative approach. A survey of bibliographies was carried out between the years 2007 to 2021 that focus on nursing care aimed at BMT in pediatrics. The articles were identified in different databases, described in the methodology of this study. Results: The study showed the actions promoted by nurses in the bone marrow transplant sector in pediatrics, as well as their role as an educator, the link between the team and the clientele, as a support network for children and their families and the difficulties experienced in their assistance practice. Conclusion: This study collaborates for better assistance, encouraging professionals to reflect on the scientific evidence exposed and to manage care strategies that involve all the patient's needs.

**Keywords:** nursing care; kid; nursing; pediatrics; bone marrow transplant

## Introduction

Bone marrow transplantation (BMT) is a procedure that has been used in the treatment of diseases that impair the functioning of the bone marrow, which were previously considered incurable. This technique has been developed as an efficient therapeutic alternative when the usual interventions do not provide a good prognosis, with the purpose of repairing quantitative or qualitative failures in the spinal cord (Idemori; Martinez, 2016). BMT is a cell therapy where the transplanted organ is not compact, that is, it is not solid like other organs in the body. In this methodology, the patient receives the bone marrow through a transfusion, that is, the blood progenitor cells are collected from the donor, which can come from the bone marrow, the umbilical cord or peripheral blood, and placed in a blood bag and transfused to the recipient. These transfused cells circulate through the bloodstream, settling inside the bones, attached inside the patient's bone marrow (Marca, 2017). The phases that make up the transplant are: Pre-transplantation, which comprises the period in which the patient receives outpatient care, with the completion of several exams, until hospitalization. The transplant itself, called day zero, when the period of full hospitalization begins, and this moment is performed in an isolated place, with all objects sterilized. In this phase, the conditioning

regimen also takes place, where chemotherapy and/or radiotherapy, aspiration, processing and infusion of the bone marrow are performed, until hospital discharge. Post-transplantation begins after discharge, divided into post-immediate, up to 100 days after transplantation, and post-transplant, after that date (Idemori; Martinez, 2016). Regarding the origin of the donor, BMT can be classified as autologous, where the patient's own stem cells are removed from the interior of his bone marrow, and the donor is the donor, and allogeneic transplantation where the precursor cells are provided by another individual, according to the level of compatibility, which may or may not be related (Figueiredo; Mercy, 2017).

## Objectives

To identify national scientific productions about nursing care in the face of bone marrow transplantation in pediatrics, and to analyze the role of nurses in this context of care. The study is justified by the fact that the discussions arising from this research will enable the acquisition of indications of some deficits in the care provided to pediatric patients in the area of bone marrow transplantation, shown in the literature. In addition, it aims to observe the difficulties faced by nurses working in this area.

## Methodology

It is a narrative review of the literature on the care provided by the nursing team to pediatric patients undergoing BMT, aiming to expand the learning of these professionals and stimulate change in the current health scenario. It is descriptive research with a qualitative approach, which aimed to produce a contextualization for the problem, in order to explore the alternatives, present in the bibliographies consulted, developed from a mapping, that is, from a broad analysis of the literature. The inclusion criteria adopted for this narrative review were: articles available in full in the databases of the Latin American and Caribbean Health Sciences Literature (LILACS), Scientific Electronic Library Online (SCIELO), Nursing Databases (BDENF), Virtual Health Library (VHL) and National Registry of Voluntary Bone Marrow Donors (REDOME), in the Portuguese language, published between 2007 and 2021, which focused on nursing care for bone marrow transplantation in pediatrics. The exclusion criteria were: theses or dissertations and duplicate articles. Data collection took place between March and April 2021, where articles that fit the inclusion criteria were searched. After a thorough reading of the articles in full, 9 articles were selected for analysis. The chosen studies were grouped in descending order in an analytical table for a better visualization of the results. This instrument allowed the grouping of key

information from each selected study, building a rich database for the final stage of the research. The information extracted from the selected articles that included the table were: journal, year of publication, title, objectives, results, and conclusion. Thus, the analytical categories derived from the thematic content analysis were: The nurse educator in health in front of BMT in pediatrics, the nurse as a link between the team and clientele in front of BMT in pediatrics, the nurse as a link between the team and the clientele in BMT in pediatrics, the nurse nurses as a support network in the face of BMT in pediatrics and the difficulties faced by nurses in the care of pediatric BMT.

## Discussion and Results

The results of the analyses referring to the studies that constitute the narrative review will be presented below. The literature search identified 9 articles that emphasize the importance of nurses in terms of nursing care in bone marrow transplantation in pediatric patients. Chart 1 succinctly shows the studies explored in this narrative review, in descending order. Among the 9 selected articles, two are from 2020, two from 2019, two from 2017, two from 2016 and one from 2015.

**Chart 1:** Classification of the articles involved in this review, in descending order of publication, according to journal, year of publication, objective, result and conclusion. Cabo Frio-RJ, 2021.

N°	Periodical- Year of publication	Type of study	Objectives	Result	Conclusion
1	Research, Society and Development 2020	Visibility of the bone marrow transplant team in the ecosystem context. Quantitative approach, using Bardin's content analysis and descriptive statistical analysis of the results.	Analyze, in the ecosystem context, the professional visibility of the members of the Bone Marrow Transplantation, in the user's view.	The results of this study evidenced the visibility of health team professionals, health education practices, as essential work tools in the nurses' daily lives.	The professional visibility of Members of the HSCT team, in the user's view, are still strongly influenced by the biomedical model of health care, gradually evolving towards the identification of professional representativeness.
2	Electronic Journal Scientific Collection 2020	Influence of hematopoietic stem cell transplantation on the quality of life of pediatric patients. Narrative review.	How Bone Marrow Transplantation (BMT) can affect the quality of life of pediatric patients due to comorbidities arising from the procedure.	Addresses the improvements and advances acquired by the BMT, and consequent decrease in procedure-related mortality in pediatric clientele.	There is a need to investigate the possible harms developed by HSCT, which are observed not only physical complications in the transplanted patient, but also consequences related to the mental health of the patient. patient and their relatives.
3	Cogitare Nursing 2019	Clinical Profile of Children Undergoing Hematopoietic Stem Cell Transplantation. Quantitative, cross-sectional and retrospective.	Identify the clinical profile of post-transplant and post transplant children Cells-trunk hematopoietic as.	The main results were selected by categories, the mean age was 6.2 years, with a predominance of males 92 (66.7%), Diagnosis Fanconi Anemia 42 (30.4%) and Unrelated allogeneic transplants 71 (51,4%).	This study corroborates the knowledge of the post-transplant clinical evolution in children, but emphasizes the need for studies in pediatric populations, haploidentical HSCT and in patients requiring hospital readmission in the post-transplantation.

4	Revista de Enfermagem da UERJ 2019	Attitudes of nurses in the administration of chemotherapy drugs in pediatric oncology. This is a descriptive study with statistical analysis of the data.	OBJECTIVE: To analyze the attitudes of nurses about the administration of antineoplastic drugs in pediatric oncology.	Some participants were not specialists in oncology or pediatrics and found the activity complex and specific, with emphasis on the risk of extravasation and the lack of suitable devices for chemotherapy.	It is concluded that it is essential to invest in training in addition to conducting future research that addresses the educational needs of nurses regarding the administration of chemotherapy drugs to these patients.
5	Electronic Journal of Nursing 2017	Competencies of nurses in the critical care of children undergoing hematopoietic stem cell transplantation. This is a descriptive study, with qualitative data analysis.	To identify and analyze nurses' experiences about the competencies needed to care for children subjected to HSCT requiring critical care.	Intrinsic and extrinsic resources related to knowledge, skills and aptitudes are necessary, the Professionals must have the skills to Not only for care based on technical-scientific knowledge, but also for care that considers the child and the family, respecting their own emotional limits to deal with this public.	The educational intervention positively contributed to the theoretical knowledge of nursing professionals about cardiorespiratory arrest in the group studied. In the same way, it is necessary to understand the influence of educational interventions, not only on the theoretical knowledge of nursing professionals, but also on their work practices, when working in situations of HCP.
6	Federal University of Paraná 2017	Epidemiological profile of pediatric patients undergoing bone marrow transplantation in a public hospital in Curitiba. Descriptive and retrospective research.	Identify the profile The epidemiological study of pediatric patients undergoing bone marrow transplantation at HC/UFPR from 2011 to 2015.	Male children (0 and 11 years) were the ones who most performed this procedure, the prevalent diseases were Aplastic Anemia, Fanconi Anemia and Leukemias.	The BMT The predominant was allogeneic. Showing the importance of having OM donor banks, where patients with OM-related problems have a chance of cure and survival.
7	Universidade Federal de São Carlos - UFSCar. 2016	Therapy and the children's bone marrow transplant sector. Qualitative research, case study type.	Describe the practice of a therapist in the therapeutic process of a school-age child who experienced Bone Marrow Transplantation	The therapist assumes roles as a mediator between the hospital and the child's home environment and the relationships with the family, team and hospital class, always considering the child's needs and their experiences in the contexts of life (school, family, hospital).	Identified the occupational roles of children affected by BMT, developing a therapy plan Occupational, considering the child's individual needs (emotional, autonomous, intellectual, physical) at the time of a possible disruption of their occupational roles.
8	Gaucho Journal of Nursing - RGE 2016	Professional attitudes towards patient safety culture in a bone marrow transplant unit. Quantitative study, cross-sectional research.	To identify the attitudes of health professionals that show the culture of patient safety in a Bone Marrow Transplant unit.	Attitudes regarding the "job satisfaction" dimension were positive for the patient safety culture, and there was a significant difference among professionals in this dimension (p-value of 0.05). The other dimensions were not positively evaluated.	The attitudes of the professionals related to the job satisfaction dimension have contributed to patient safety in the BMT unit investigated. However, attitudes that contemplate the dimensions "safety climate", "teamwork", "working conditions", and "stress perception" require interventions that enhance them.
9	REUFMSM Revista de enfermagem da - UFSM 2015	Perceptions of nursing professionals in the care of children with cancer. This is a research with a qualitative, descriptive and exploratory approach.	OBJECTIVE: To analyze the experience of the nursing team in the care of children with cancer in a Pediatric Unit of a University Hospital in Southern Brazil.	It was observed that the professionals presented difficulties in the work performed with pediatric oncology due to their proximity to feelings of pain, death and suffering.	It was concluded that psychological support from the institution and training is necessary for better coexistence with the feelings resulting from the disease, as well as care for children and their families.

The careful reading of the selected articles presented in chart 1 allowed the themes to be grouped and specified in an organized way, providing a qualitative analysis of this research. Therefore, four thematic analytical categories emerged from this analysis.

### Category 1: Nurse health educators in the face of BMT in pediatrics

Nurses work in different scenarios, where they perform their professional practice, in health units, hospitals, outpatient clinics, schools, companies,

daycare centers and homes. This allows them to expose their learning in the various areas of knowledge, caring, managing and educating. Knowing that nursing is not restricted only to individuals in the context of the disease situation, educational practice has been evidenced as the main method to promote health (Souza; Wegner; Gorini, 2007). Nurses, being professionals qualified to develop strategies that enable adherence to the theme with the purpose of guiding and teaching the community, should adhere to educational practices aimed at maintaining health, good quality of life and consequently preventing diseases, taking into account the lifestyle and individual needs of each individual (Souza; Wegner; Gorini, 2007). With regard to BMT in pediatric clientele, it is essential that nurses work on the peculiarities of health promotion and prevention, through the evaluation of users' life activities, making home visits, when necessary, making it possible to detect complications before the development of severe symptoms in the child (Nunes et al., 2020).

### **Category 2: Nurses as a link between the team and the clientele in relation to BMT in pediatrics**

The introduction of the nursing team in the care of children submitted to BMT requires knowledge, competence and seriousness, knowing this, the nurse is able to develop strategies that improve the care offered to this clientele and their families, who are physically and psychologically fragile. In this sense, the nurse, being the main link between the team and the patient, has a great chance of providing care that improves the client's health situation, through the guidance given to the team in order to treat each child according to their particularities (Pereira; Bertoldi; Roese, 2015). It is essential that these professionals establish measures that enable the awareness of the multidisciplinary team, in order to elucidate the roles of each professional group and the team's commitments to the child, making it possible to resolve conflicts, facilitating the distribution of information, taking into account the individuality of each patient. The care provided in the health area is a participatory method that requires an exchange of experiences between the nurse and the patient and the family. The nurse, being the link between the child and the team in front of BMT, is able to set up strategies in order to provide care associating sensitivity with scientific knowledge, helping the child and family members in the construction of socio-

emotional issues committed to the hospital regime, such as losses, pain, distancing and restrictions, with the purpose of offering more humanized care with the multidisciplinary team (Idemori; Martinez, 2016).

### **Category 3: Nurses as a support network for BMT in pediatrics**

Therefore, dialoguing with family members and patients, when possible, about the scenario in which they are living, listening to their concerns, especially those related to the constant fear of the possibility of death, being close through attentive and caring listening, establishes a positive response regarding the treatment, making the clientele feel welcomed and safe regarding the care provided (Hayakawa et al., 2010). The nurse, providing psychological support to this clientele, can develop welcoming strategies to help the child and family inside and outside the hospital environment, promoting the continuity of the child's occupational life, in the formation of autonomy for an active life, and in the development of socio-emotional issues involved in the pre-transplant, hospitalization and post-transplant period (Idemori; Martinez, 2016).

### **Category 4: Difficulties faced by nurses in pediatric BMT care**

In addition to the relevant attributions of the nurse in relation to pediatric BMT care described in the previous categories, the nursing team that works in the care of children with hematological diseases, such as cancer, who require BMT, has as an obstacle the lack of emotional preparation to treat this specific clientele. This lack of preparation to deal with the emotions of the patient and the family causes emotional changes, influencing their care practice in the future (PEREIRA; Bertoldi; Roese, 2015). Another obstacle is linked to working conditions, since professionals who do not have all the data related to the patient, adequate equipment, logistical support, appropriate supervision, and still face a shortage of human resources, excessive workload and lack of qualification, have their assistance limited and impaired, which can lead to increased risks of incidents that can cause harm to the clinical condition of the transplanted patient (Fermo et al., 2016). It is essential that hospital institutions have the means for the continuous qualification of the team, in addition to promoting specific training and guidance, in order to overcome the deficiency of scientific theoretical knowledge aimed at the administration of drugs, management of adverse effects, and variations in the clinical status of the

child, according to their particularities (Ferreira et al., 2017).

## Conclusion

This study achieved the proposed objective, providing knowledge of the role of nurses in the BMT sector in pediatrics, as well as familiarizing themselves with the experience of these professionals in this area. Thus, it was possible to delineate and discuss the actions that nurses can take to improve the care provided to this clientele and their families. It is possible to conclude that the conducts developed by this professional contribute significantly to the prevention of diseases, promotion and maintenance of the health of children submitted to BMT. In addition, this research contributes to better care, encouraging nursing professionals to reflect on the scientific evidence presented here and to manage care strategies that meet the specific needs of each patient.

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