

RAPID LITERATURE REVIEW

Psychological experiences of Hematopoietic stem cell donors: an update on International Evidence

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Keywords: Hematopoietic stem cell, Donor, Psychological experience, Nursing

ABSTRACT

Background: Hematopoietic stem cell (HSC) transplantation using bone marrow and peripheral blood stem cells is a lifesaving treatment for patients with leukemia or other blood disorders. Hematopoietic stem cell donors are afraid of harming themselves by donating and are also under pressure from other relatives. Therefore, it is easy to produce negative emotions such as tension, anxiety, panic, depression and so on during the donation period. Although major physical complications of hematopoietic stem cell donors are uncommon, their psychosocial impact remains relatively unknown.

Methods: The authors undertook a Rapid Literature Review focusing on articles published from 2020 to 2022 thus offering the readers access to most up-to-date evidence concerning the topic. This article, therefore, adopts a narrative review methodology.

Results: A total of 7 articles were identified and scrutinized. Hematopoietic stem cell donors generally suffered from physical and mental discomfort. Factors influencing psychological experiences included donation stage, gender, kinship, and transplant results.

Main Contribution to Evidence-Based Practice: The purpose of this rapid literature review is to identify the most recent evidence and knowledge concerning psychological experiences of hematopoietic stem cell donors, in-depth analysis of the real psychological feelings of hematopoietic stem cell donors, in order to further improve the quality of nursing services, relieve the doubts of hematopoietic stem cell donors and mobilize the motivation of hematopoietic stem cell donors provides a reference.

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What do we already know about this topic?

We already know that hematopoietic stem cell transplantation using bone marrow and peripheral blood stem cells is a lifesaving treatment for patients with blood disorders. Hematopoietic stem cell donors are afraid of harming themselves by donating and are also under pressure from other relatives. Therefore, it is easy to produce negative emotions such as tension, anxiety, panic, depression and so on during the donation period.

What is the main contribution to Evidence-Based Practice from this article?

This rapid literature review identified the most recent evidence and knowledge concerning psychological experiences of hematopoietic stem cell donors, in-depth analysis of the real psychological feelings of hematopoietic stem cell donors.

What are your research's implications towards theory, practice, or policy?

The results of this study show recent studies seem to focus on the psychological experience of relative donors, and fewer studies focus on unrelated donors. Future research could focus on the psychological experience of unrelated donors in the process of donating hematopoietic stem cells.

Authors' Contributions Statement:

Min Tian, Xiangmin Li and Hong Ji were responsible for the conception and design of the study. Fengjuan Zhou and Yafei Wang worked on the literature search and analysis. Qing Wang and Ning Pan were responsible for the acquisition of data and interpretation of data. Min Tian drafted the manuscript, Xiangmin Li revised it critically and Hong Ji reviewed it thoroughly.

Hematopoietic stem cell (HSC) transplantation using bone marrow and peripheral blood stem cells is a lifesaving treatment for patients with leukemia or other blood disorders. Hematopoietic stem cell transplantation is divided into autologous transplantation and allogeneic transplantation. Donation of hematopoietic stem cells from donors is a prerequisite for allogeneic transplantation, but relative donors are lacking. Donors are divided into relative donors and unrelated donors. When a suitable hematopoietic stem cell donor cannot be found among relatives, it is necessary to apply to the Bone Marrow Bank to find a suitable hematopoietic stem cell donor. Hematopoietic stem cell donors are afraid of harming themselves by donating and are also under pressure from other relatives. Therefore, it is easy to produce negative emotions such as tension, anxiety, panic, depression and so on

during the donation period. Although major physical complications of hematopoietic stem cell donors are uncommon, their psychosocial impact remains relatively unknown. Qualitative research can provide rich narrative data and insights into donor experiences and perspectives.

The purpose of this rapid literature review is to identify the most recent evidence and knowledge concerning psychological experiences of Hematopoietic stem cell donors, in-depth analysis of the real psychological feelings of hematopoietic stem cell donors, to further improve the quality of nursing services, relieve the doubts of hematopoietic stem cell donors, and mobilize the motivation of hematopoietic stem cell donors provides a reference.

Methods

The authors undertook a Rapid Literature Review focusing on articles published from 2020 to 2022 thus offering the readers access to most up-to-date evidence concerning the topic. This article, therefore, adopts a narrative review methodology.

We did our search on the following databases: MEDLINE, EMBASE and Cochrane database. These were searched for English-language articles with search terms as described as Supplementary data.

DATABASES SEARCHED: Medline

SEARCH STRATEGIES

Hematopoietic stem cell Donor Psychological experience AND (2020/01/01[PDAT]: 2022/12/31[PDAT]) 5 articles

("Hematopoietic Stem Cell Transplantation/psychology"[Mesh] AND Donors AND (2019/01/01[PDAT]: 2022/12/31[PDAT])) 4 articles

"Hematopoietic stem cells"[MeSH Terms] OR Hematopoietic stem cell [Text Word] AND Psychology* AND Donor* AND ((2019/01/01[PDAT] : 2022/12/31[PDAT])) 35 articles

DATABASES SEARCHED: Embase

('hematopoietic stem cell donor psychological experience' OR (hematopoietic AND ('stem'/exp OR stem) AND ('cell'/exp OR cell) AND ('donor'/exp OR donor) AND (psychological) AND ('experience'/exp OR experience))) AND [2020-2022] 7 articles

DATABASES SEARCHED: Cochrane database.

SEARCH STRATEGIES

1 Cochrane Review matching hematopoietic stem cell in All Text AND donor in All Text AND Psychological experience in All Text - with Cochrane Library publication date Between Jan 2020 and May 2022 (Word variations have been searched)

Articles Selection:

Articles met any of the following criteria to be included every study with reference to "Psychological experiences of Hematopoietic stem cell donors" that also:

- Were published after Jan/2020
- reported outcomes data on psychological experiences of hematopoietic stem cell donors
- Editorials, case reports, reviews, letters were excluded after screening for relevant references.

Results:

We have included 7 articles relevant for the purpose of this article.

In the first related article, a prospective study was conducted before, during and after the donation of hematopoietic stem cells. The results showed that the donors generally had physical and psychological discomfort. However, the research report found that the preparation stage of hematopoietic stem cell donors is the key period most prone to psychological discomfort, and the discomfort symptoms of female donors are the strongest. This article provides reference and suggestions for providing comprehensive psychological support before the follow-up donation process, especially paying attention to the psychological changes of female donors and taking care measures for the whole process of hematopoietic stem cell donation, so as to reduce the negative impact of hematopoietic stem cell donation experience on the donors' own health and mental health.

The second related article used the method of prospective investigation to explore the psychological changes of blood related hematopoietic stem cell donors and unrelated hematopoietic stem cell donors before and 1 month and 1 year after donation. The results showed that compared with unrelated donors, blood related donors had more obvious social

psychological advantages, more positive attitude towards donation, and better recovery of psychological and physical symptoms. This paper suggests that the existing management measures for blood related donors can be enough to prepare them for the psychological aspects of hematopoietic stem cell donation. Our next research focus should be on how to do a good job in the psychological problems and solutions of unrelated hematopoietic stem cell donors.

The third related article used a mixed study method of prospective design and qualitative methods to explore the information and supportive care needs of family hematopoietic stem cell donors. The study emphasized that there was a gap in information and support care for family hematopoietic stem cell donors, and a donation agreement should be specially designed to help this group to increase their understanding of the experience of family hematopoietic stem cell donors.

The fourth related article is a retrospective qualitative analysis to explore the views of parental donors of hematopoietic stem cells. It highlights the unique experience of parents' donors from the expected stage to the completion of hematopoietic stem cell transplantation for their children. In addition, the article highlighted the need to assess the emotional function of parents' donors, provide timely supportive care after donation, and conduct bereavement follow-up. In the process of hematopoietic stem cell transplantation, early involvement of mental health service providers in the nursing work before and after donation can help to increase the emotional support of parents and reduce the emotional experience of pain. This article provides a reference for the follow-up study of hematopoietic stem cell donors' need for supportive care information.

The fifth related article is a qualitative study based on the form of gene map to explore the

experiences and feelings of seven parents in the decision-making process of children receiving hematopoietic stem cell transplantation. The gene map shows the hidden potential resources and conflicts of each family, and helps nurses better understand the parents' experience and the decision-making difficulties of children with hematological diseases who receive hematopoietic stem cell transplantation. However, the article did not conduct in-depth analysis on the need for treatment related information in the whole process of receiving hematopoietic stem cell donation. Therefore, the follow-up study should focus on the involvement of medical personnel in family centered systematic intervention to help transplant families deal with ethical dilemmas and emotional distress related to transplant decision-making.

The sixth related article was a retrospective survey to investigate the psychological status of children receiving parental donors or matched hematopoietic stem cell donations. As a hematopoietic stem cell donor, parents' psychological status presents a double-sided effect, and their psychological response is mainly affected by the results of transplantation. Parents as hematopoietic stem cell donors are a double-edged sword. They act as a protective factor in the successful outcome of hematopoietic stem cell transplantation, but as a significant risk factor when children cannot survive. This article provides a reference for the follow-up evaluation of the transplant results of children and the corresponding psychological preventive measures for the parents of children.

The seventh related article used prospective observation methods before, during and after hematopoietic stem cell donation, and found that hematopoietic stem cell donors experienced common moral dilemmas and anxiety symptoms, focusing on the relationship between moral dilemmas and anxiety. At the

same time, it also advocates that comprehensive psychological support should be provided before the donation process to ensure respect for the autonomy of donors, so as to reduce the negative impact of the donation experience.

Discussion

This rapid review identified six key ideas to keep in mind when undertaking further research on the topic.

1. It is very common for hematopoietic stem cell donors to experience moral dilemmas and anxiety symptoms, and physical and psychological discomfort is common.
2. Female donors have the strongest symptoms of discomfort, so pay attention to the psychological changes of female donors.
3. The preparation stage of hematopoietic stem cell donors is the most prone to psychological discomfort. Comprehensive psychological support should be provided before the donation process to ensure respect for the donor's autonomy to reduce the negative impact of the donation experience.
4. Compared with unrelated donors, blood-related donors have more obvious social and psychological advantages, more positive attitude towards donation, and better recovery of psychological and physical symptoms. The next research focus should be on how to deal with the psychological problems and solutions of unrelated hematopoietic stem cell donors.
5. Parents' psychological reactions are mainly affected by the results of their children's transplantation. Parental use as hematopoietic stem cell donors is a double-edged sword, acting as a protective factor in successful hematopoietic stem cell transplantation outcomes but a significant risk factor when the child does not survive. Post-donation supportive care and bereavement follow-up should be provided.
6. Full-process hematopoietic stem cell

donation care measures should be provided, and information and supportive care should be provided for hematopoietic stem cell donors. In the process of hematopoietic stem cell transplantation, mental health service providers should be involved in the nursing work before and after donation as early as possible, so as to help transplant families deal with ethical dilemmas and emotional distress related to transplantation decision-making, reduce painful emotional experience, and reduce the impact of hematopoietic stem cell donation experience. Negative effects of donors' own health and mental health.

Conclusion

Published studies indicate the importance and necessity of psychological care for hematopoietic stem cell donors. This review also suggests that nurses should pay more attention to female or unrelated hematopoietic stem cell donors. The issue may not be receiving the best required attention in what should be a priority of healthcare management and concern with impacts on the quality of life.

Table 1 Articles relevant for the purpose of this article

NO.	Article Title	Country	Author	Publish Time	Key Words
1	Moral Distress: Its Manifestations in Healthy Donors during Peripheral Blood Hematopoietic Stem Cell Harvesting	Mexico	Cesar H. Gutierrez-Aguirre, Jose C. Jaime-Perez, Fernando de la Garza-Salaza, Geraldina Guerrero-Gonzalez, Abel Guzman-Lopez, Guillermo J. Ruiz-Arguelles €, David Gomez-Almaguer, Olga G. Cantu-Rodríguez	2021	Moral distress Related donor Hematopoietic stem cell donation
2	Health-Related Quality-of-Life Comparison of Adult Related and Unrelated HSC Donors: An RDSafe Study	USA	Galen E. Switzer, Jessica G. Bruce, Deidre M. Kiefer, Hati Kobusingye, Kaleab Z. Abebe, Rebecca Drexler, RaeAnne M. Besser, Dennis L. Confer, Mary M. Horowitz, Roberta J. King, Bronwen E. Shaw, Marcie Riches, Brandon Hayes-Lattin, Michael Linenberger, Brian Bolwell, Scott D. Rowley, Mark R. Litzow, Michael A. Pulsipher	2020	HSC donation Related versus unrelated donation HSC donor HRQoL
3	Experiences and unmet needs of family members requested to donate hematopoietic stem cells to an ill relative: findings from a prospective multi-center study	Australia	Nienke Zomerdijs & Jane Turner & Geoffrey R. Hill & David Gottlieb	2020	Family donors. Hematopoietic stem cell transplant. Information. Supportive care. Psycho-oncology
4	"Giving the gift of life twice": Understanding the lived experiences of parent donors and nondonors in pediatric haploidentical hematopoietic cell transplantation	USA	Megan R. Schaefer Vanessa Aguilera Kendra Parris Alanna Long Brandon Triplett Sean Phipps	2021	adjustment, bereavement, bone marrow transplantation, coping, pediatric oncology, psychosocial functioning

Table 1 (cont.)

5	Exploring parents' experience in the decision-making process for children with haematological diseases receiving haematopoietic stem cell transplantation in China based on genograms.	China	Yan Shi,Xudong Zhao,Yanbo Wang	2021	Genogram; Haematopoietic stem cell transplant; Parents' decision-making process; Qualitative study.
6	Psychosocial outcomes of parents in pediatric haploidentical transplant: parental hematopoietic cell donation as a double-edged sword.	USA	Vanessa Aguilera,Megan R Schaefer,Kendra Parris,Alanna Long,Brandon Triplett,Sean Phipps	2022	
7	Physical and Psychological Discomfort Experienced by Hematopoietic Stem-Cell Donors.	Korea	Miok Kim,Tai-Gyu Kim,Su-Hee Beom	2020	hematopoietic stem cells; peripheral blood stem cell; unrelated donors.

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References

- Aguilera, V., Schaefer, M. R., Parris, K., Long, A., Triplett, B., & Phipps, S. (2022). Psychosocial outcomes of parents in pediatric haploidentical transplant: parental hematopoietic cell donation as a double-edged sword. *Bone marrow transplantation*, 57(3), 377–383. <https://doi.org/10.1038/s41409-021-01547-9>
- Chen, Y., Wu, Y., Wang, Q., & Ji, H. (2022). On difficulties faced by patients following orthopedic day surgery: an update on International Evidence . *International Healthcare Review* (online). <https://doi.org/10.56226/ihr.v1i2.35>
- Chen, S., & Qin, Y. (2023). On Ethics, Biomedical Education and Health Promotion: International and Chinese Perspectives. *International Healthcare Review* (online). <https://doi.org/10.56226/46>
- Gutiérrez-Aguirre, C. H., Jaime-Pérez, J. C., de la Garza-Salazar, F., Guerrero-González, G., Guzmán-López, A., Ruiz-Argüelles, G. J., Gómez-Almaguer, D., & Cantú-Rodríguez, O. G. (2021). Moral Distress: Its Manifestations in Healthy Donors during Peripheral Blood Hematopoietic Stem Cell Harvesting. *Transplantation and cellular therapy*, 27(10), 853–858. <https://doi.org/10.1016/j.jtct.2021.06.005>
- Kim, M., Kim, T. G., & Beom, S. H. (2020). Physical and Psychological Discomfort Experienced by Hematopoietic Stem-Cell Donors. *International journal of environmental research and public health*, 17(7), 2316. <https://doi.org/10.3390/ijerph17072316>
- Li, N., GUO, M., YOU, S., & JI, H. (2022). On Patient Readiness for Hospital Discharge: an update on recent Evidence. *International Healthcare Review* (online). <https://doi.org/10.56226/ihr.v1i2.30>
- Lloyd Williams, D. (2022). On Healthcare Research Priorities in the USA : From Long COVID to Precision Health, what else is new?. *International Healthcare Review* (online), 1(1). <https://doi.org/10.56226/ihr.v1i1.14>
- Moreira, P. (2022). On New Clinical Research Methods and Technologies: From decentralised designs to Artificial Intelligence. *International Healthcare Review* (online), 1(1). <https://doi.org/10.56226/ihr.v1i1.11>
- Schaefer, M. R., Aguilera, V., Parris, K., Long, A., Triplett, B., & Phipps, S. (2022). "Giving the gift of life twice": Understanding the lived experiences of parent donors and nondonors in pediatric haploidentical hematopoietic cell transplantation. *Pediatric blood & cancer*, 69(2), e29480. <https://doi.org/10.1002/pbc.29480>
- Shi, Y., Zhao, X., & Wang, Y. (2022). Exploring parents' experience in the decision-making process for children with haematological diseases receiving haematopoietic stem cell transplantation in China based on genograms. *Journal of pediatric nursing*, 63, e18–e26. <https://doi.org/10.1016/j.pedn.2021.11.005>
- Switzer, G. E., Bruce, J. G., Kiefer, D. M., Kobusingye, H., Abebe, K. Z., Drexler, R., Besser, R. M., Confer, D. L., Horowitz, M. M., King, R. J., Shaw, B. E., Riches, M., Hayes-Lattin, B., Linenberger, M., Bolwell, B., Rowley, S. D., Litzow, M. R., & Pulsipher, M. A. (2020). Health-Related Quality-of-Life Comparison of Adult Related and Unrelated HSC Donors: An RDSafe Study. *Biology of blood and marrow transplantation : journal of the American Society for Blood and Marrow Transplantation*, 26(12), 2365–2371. <https://doi.org/10.1016/j.bbmt.2020.08.016>
- Zomerdiijk, N., Turner, J., Hill, G. R., & Gottlieb, D. (2021). Experiences and unmet needs of family members requested to donate haematopoietic stem cells to an ill relative: findings from a prospective multi-centre study. *Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer*, 29(2), 635–644. <https://doi.org/10.1007/s00520-020-05520-y>