



Exploring the Psychosocial Adaptation of Patients Undergoing Stem Cell Therapy: A Phenomenological Study

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ABSTRACT

Regenerative medicine, particularly stem cell therapy, has shown promise in treating degenerative diseases and injuries, yet the psychosocial experiences of patients undergoing such treatments remain underexplored. Although clinical research has focused on biological outcomes, the emotional and social dimensions of this treatment process are less understood, particularly in how patients perceive and adapt to their treatment journey. This study aims to address this gap by exploring the lived experiences of patients undergoing stem cell therapy, focusing on their emotional, psychological, and social adaptations. We employ a phenomenological approach, specifically Interpretative Phenomenological Analysis (IPA), to investigate how patients navigate hope, uncertainty, and social pressures throughout their treatment. Data were collected through in-depth interviews with 12 patients, revealing that hope and uncertainty coexist, and that patients' emotional experiences are deeply influenced by both medical expectations and social dynamics. Key results indicate that psychosocial adaptation is critical in shaping patient outcomes and that patient well-being is influenced by both medical interventions and emotional support systems. These findings contribute to the field of regenerative medicine by emphasizing the importance of integrating psychosocial factors into treatment plans. Furthermore, the study highlights the need for patient-centered care models that consider both the medical and emotional dimensions of the treatment process. These insights contribute to the development of more holistic patient-centered care models in regenerative medicine and call for future research into the long-term psychosocial impacts of stem cell therapy.



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INTRODUCTION

Stem cell therapy has emerged as a pioneering advancement in regenerative medicine, offering new possibilities for treating degenerative diseases, injuries, and conditions previously considered irreversible. As an innovative medical approach, stem cell-based therapies aim to restore function and repair damaged tissues, providing hope for patients suffering from chronic conditions such as neurodegenerative disorders, musculoskeletal injuries, and autoimmune diseases (Arjunan dkk., 2020). While clinical research has made significant progress in demonstrating the potential efficacy of these treatments, the psychosocial dimensions of undergoing stem cell therapy remain underexplored.

Beyond its biological and clinical aspects, stem cell therapy is deeply intertwined with human emotions, expectations, and social perceptions. Patients undergoing such treatments often experience a complex interplay of hope, anxiety, and uncertainty, as they navigate the possibilities and limitations of regenerative medicine (Cozzolino dkk., 2021). The high expectations associated with stem cell therapy, combined with its experimental nature, contribute to a unique psychological landscape that influences how patients perceive and experience their treatment journey. These experiences are

further shaped by cultural, ethical, and societal narratives, which impact patients' decisions, support systems, and emotional resilience throughout the process.

Given the profound impact of stem cell therapy on patients' emotional well-being and social adaptation, there is a pressing need to explore the lived experiences of individuals undergoing this treatment. While existing research predominantly focuses on clinical efficacy and biomedical outcomes, the subjective experiences of patients how they interpret their journey, cope with uncertainty, and engage with medical professionals remain insufficiently addressed (Dong dkk., 2020). A phenomenological approach is essential in capturing these intricate, personal narratives, providing a deeper understanding of how patients internalize and navigate their treatment experiences. By exploring these dimensions, this study aims to contribute valuable insights into the psychosocial challenges and coping mechanisms of patients undergoing stem cell therapy, informing future patient-centered care strategies in regenerative medicine.

The exploration of patients' lived experiences in medical treatments has become an increasingly significant area of research, particularly in the field of regenerative medicine and patient-centered care. As medical advancements continue to push the boundaries of treatment possibilities, understanding the psychosocial and emotional dimensions of these innovations becomes essential. Stem cell therapy, in particular, presents a unique psychological and social landscape, as patients often enter the treatment process with high expectations yet limited certainty regarding its outcomes. Studies have acknowledged that medical treatments are not merely biological interventions but deeply personal journeys shaped by individuals' beliefs, emotional states, and interactions with healthcare providers (Eche dkk., 2023).

This study aims to fill the gap in the literature by directly addressing the psychosocial adaptation of stem cell therapy patients, offering a more comprehensive perspective on their treatment experience. Despite the growing recognition of the importance of patient experience in healthcare research, significant methodological challenges persist in capturing the depth of these experiences. Traditional quantitative approaches, while valuable for assessing clinical efficacy and statistical trends, often fail to grasp the intricate and subjective nature of patients' lived realities (El-Jawahri dkk., 2020). Surveys and structured questionnaires, for instance, may not fully accommodate the fluidity of emotions, the complexity of personal meaning-making, and the evolving nature of hope and uncertainty that patients experience. Furthermore, biomedical studies tend to prioritize physiological outcomes over psychological adaptation, leaving critical aspects of patient well-being underexplored and insufficiently addressed in existing literature.

These methodological limitations indicate that conventional research paradigms are insufficient in capturing the holistic nature of the patient experience in stem cell therapy. As a result, the essence of the phenomenon the dynamic interplay between emotional, social, and psychological dimensions remains largely unexamined. A qualitative approach, particularly phenomenology, provides the most suitable framework for addressing this gap. By allowing participants to narrate their experiences in their own words, phenomenology enables researchers to uncover the nuanced, deeply personal meanings that patients attach to their treatment journey. Understanding these subjective experiences is crucial for developing more empathetic, patient-centered medical practices, ensuring that regenerative medicine advancements align with both clinical effectiveness and humanistic care.

In the context of stem cell therapy, existing research has primarily focused on clinical efficacy, safety profiles, and physiological outcomes. These studies rely on biomedical indicators and quantitative assessments to evaluate the treatment's success, providing valuable insights into its potential benefits and limitations (Farmakis dkk., 2022). While such approaches contribute to the growing scientific understanding of regenerative medicine, they often fail to capture the intricate emotional and psychosocial experiences that patients undergo throughout the treatment process. The assumption that clinical progress directly correlates with patient well-being overlooks the complex interplay of hope, uncertainty, and psychosocial adaptation that characterizes the lived experience of undergoing an innovative and evolving medical intervention.

Attempts to address the patient experience have largely employed standardized patient-reported outcome measures (PROMs) or structured surveys, which, while useful in quantifying

satisfaction or quality of life, lack the depth needed to explore the subjective dimensions of hope, fear, and social integration (Hingert dkk., 2020). Furthermore, many qualitative studies in healthcare still rely on generic thematic analysis or grounded theory approaches, which, although effective in identifying general patterns, often fail to provide a deeper interpretative understanding of how patients construct meaning from their experiences. This results in a fragmented understanding of the phenomenon, where the richness of individual narratives is diluted in favor of broad, generalized findings.

Given these limitations, there remains a significant gap in research exploring the lived experiences of stem cell therapy patients through an interpretative lens. The phenomenological approach provides a compelling alternative to existing methodologies by prioritizing patients' perspectives and allowing for a nuanced exploration of their emotional, cognitive, and social adaptation processes (Hudson dkk., 2021). By examining how individuals experience and make sense of their treatment journey, phenomenology offers a more holistic and humanistic understanding of the psychosocial impact of stem cell therapy. Addressing this gap is crucial not only for improving patient-centered care but also for informing future clinical and ethical frameworks in regenerative medicine.

Existing studies on patient experiences in regenerative medicine have primarily focused on measuring clinical efficacy and treatment outcomes, often relying on quantitative metrics and standardized assessments (Jacobs dkk., 2019). While some qualitative research has explored patient perspectives, these studies often apply grounded theory or generic thematic analysis, which may not fully capture the subjective, evolving nature of patient experiences (Kolasinski dkk., 2020). Prior research indicates that patients undergoing stem cell therapy experience a mix of hope, uncertainty, and social stigma, yet little is known about how these factors shape their personal meaning-making processes (Mathanda dkk., 2020). The lack of phenomenological inquiry in this area leaves critical questions unanswered about how patients interpret and navigate their emotional and social adaptation. This study builds upon previous research by applying a phenomenological approach to uncover the deeper, lived experiences of patients undergoing stem cell therapy.

To address the existing knowledge gap, this study employs Interpretative Phenomenological Analysis (IPA) as a methodological framework. IPA is particularly suited for exploring how individuals construct meaning from their personal experiences, making it an ideal approach for investigating the psychosocial dynamics of stem cell therapy patients (Park dkk., 2019). This method allows for an in-depth examination of participants' narratives, capturing their emotional responses, coping strategies, and interactions with healthcare professionals. The study seeks to answer the fundamental question: How do patients undergoing stem cell therapy experience and interpret their treatment journey? By utilizing IPA, this research aims to provide a nuanced, contextually rich exploration of the patient experience, bridging the gap between clinical outcomes and psychological well-being.

This article is structured as follows: The Introduction section provides an overview of stem cell therapy, its psychosocial implications, and the need for a phenomenological inquiry. The Methodology section outlines the IPA approach, data collection procedures, and participant selection criteria. The Results section presents key emergent themes, illustrating patient experiences through direct narratives and interpretative analysis. The Discussion connects findings to existing literature and theoretical frameworks, emphasizing the implications for patient care and medical ethics. Finally, the Conclusion summarizes the key insights, highlighting the importance of integrating patient-centered approaches into regenerative medicine.

RESEARCH METHODS

Study Design

This study employs a phenomenological approach to explore the psychosocial experiences of patients undergoing stem cell therapy (Sanders dkk., 2024). Phenomenology, as a qualitative research design, is centered on understanding individuals' lived experiences and the meanings they assign to

specific phenomena. This approach was selected due to its capacity to uncover deep, subjective, and contextually rich experiences, which are essential in examining the emotional and social dimensions of patients' journeys through regenerative treatments.

An interpretative phenomenological analysis (IPA) framework was utilized, aligning with the philosophical foundation of Heideggerian hermeneutic phenomenology, which emphasizes the interpretation of lived experiences rather than mere description. This methodological choice enables an in-depth exploration of how participants navigate hope, uncertainty, and social adaptation within the context of stem cell therapy. Through this approach, the study not only captures the patients' raw experiences but also interprets the underlying meanings that shape their emotional and psychosocial responses.

Participants

Participants in this study were individuals undergoing stem cell therapy for various medical conditions. Selection criteria ensured that participants had direct experience with the treatment and had undergone at least one phase of therapy, allowing for rich, experiential insights.

Inclusion criteria comprised individuals aged 18 years or older, who were actively undergoing or had recently completed stem cell-based regenerative therapy, and were willing to share their personal experiences in-depth. Exclusion criteria included individuals with cognitive impairments that might affect their ability to articulate experiences and those undergoing experimental or unapproved treatments without medical supervision.

A purposive sampling strategy was applied to ensure the recruitment of participants with diverse perspectives on stem cell therapy. The final sample consisted of 12 participants (7 males, 5 females), with an age range of 32 to 65 years. All participants were informed of the study's purpose and voluntarily agreed to share their experiences. While the sample size of 12 participants is relatively small, it was sufficient for capturing rich, in-depth qualitative data.

Data Collection

Data were collected through semi-structured in-depth interviews, allowing participants to express their experiences freely while ensuring consistency in the topics explored. A standardized interview guide was utilized, covering themes such as emotional responses to treatment, perceptions of social support, and interactions with healthcare providers.

Each interview lasted between 45 to 90 minutes, conducted in private settings to ensure participant comfort and confidentiality. Sessions were either face-to-face or virtual (via secure video conferencing platforms), depending on participant preference and accessibility. Interviews were audio-recorded with participant consent and later transcribed verbatim for analysis.

To enhance data credibility and depth, follow-up interviews were conducted with five participants to clarify and expand on key themes that emerged during the initial analysis. Additionally, field notes were taken to document non-verbal cues and contextual observations, further enriching the dataset.

Data Analysis

Data were analyzed using Interpretative Phenomenological Analysis (IPA), a qualitative method specifically designed for exploring how individuals make sense of their lived experiences. The analysis followed a systematic, multi-stage approach:

1. Familiarization with Data – Transcribed interviews were read multiple times to develop an initial understanding of each participant's experience.
2. Identification of Meaning Units – Key phrases and significant expressions reflecting emotional and psychosocial dimensions were coded.
3. Development of Emergent Themes – Related codes were clustered into broader themes that captured the core experiences across participants.

4. Thematic Refinement and Interpretation – Themes were refined by comparing patterns across individual cases, ensuring alignment with the study’s phenomenological framework.
5. Validation of Findings – To enhance trustworthiness, thematic interpretations were cross-checked through member checking, where selected participants reviewed the summarized findings for accuracy.

Data organization and thematic coding were facilitated using NVivo 12 software, allowing for systematic management and retrieval of textual data while maintaining analytical rigor.

Ethical Considerations

Ethical approval for this study was granted by the Institutional Ethics Committee before participant recruitment. Informed consent was obtained from all participants prior to data collection, ensuring they understood the study’s purpose, procedures, and their right to withdraw at any time.

Confidentiality and anonymity were maintained by assigning pseudonyms to participants and removing identifiable details from transcripts and reports. Audio recordings and transcripts were securely stored and access restricted to authorized research personnel. This study adhered to the ethical guidelines of the Declaration of Senn-Malashonak dkk. (2019) and the Springer dkk. (2023) to ensure the protection of human subjects in research.

RESULTS

The Emotional Journey – Hope and Uncertainty

One of the predominant themes that emerged from the analysis was the complex emotional journey patients experience throughout the stem cell therapy process. Many participants described a profound sense of hope, often intertwined with uncertainty and anxiety.

For some, the possibility of regenerative treatment provided a newfound optimism:

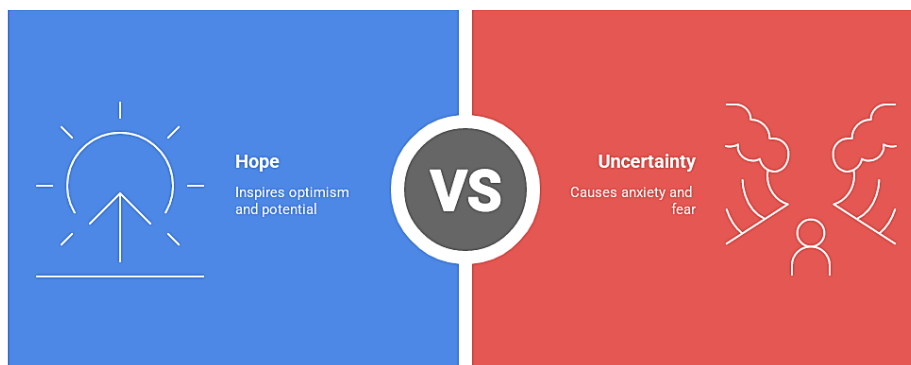
"I have tried numerous treatments over the years, but when my doctor mentioned stem cell therapy, I felt something I hadn’t felt in a long time—hope. It was as if I could finally see a path forward." (P3)

However, this hope was frequently accompanied by fear and doubt, particularly due to the experimental nature of the treatment and the unpredictability of outcomes. Several participants voiced concerns about the lack of guarantees and the emotional toll of waiting for results.

"Every day, I wonder if this treatment will work for me. There are no guarantees, and that scares me. But at the same time, I keep telling myself, 'What if it does work? What if this changes my life?'" (P7)

This juxtaposition of optimism and apprehension suggests that while stem cell therapy offers a beacon of hope, it also places patients in a state of emotional ambivalence.

Figure 1. How to navigate the emotional complexities of stem cell therapy?



Psychosocial Adaptation – Coping with Social Expectations and Stigma

Another significant theme was the psychosocial adaptation that patients underwent during their therapy. Many participants reported experiencing pressure from family and social circles, often feeling the burden of expectations regarding their recovery.

"Everyone around me wants to believe this is a miracle treatment. They tell me to stay positive, but they don't understand the uncertainty I live with every day." (P5)

Additionally, some patients encountered stigma and skepticism regarding stem cell therapy, particularly due to misconceptions about its ethical and medical legitimacy.

"Some people think stem cell therapy is not real medicine. They ask me, 'Are you sure this is safe? Are you sure this is not just an experiment?' It makes me question my own decisions." (P10)

These experiences indicate that, beyond the physical and medical aspects of treatment, patients also navigate a complex social landscape, requiring emotional resilience and support.

Figure 2. Navigating Social Expectations and Stigma in Therapy



The Need for Emotional Support and Doctor-Patient Communication

The importance of effective doctor-patient communication emerged as a crucial theme in the study. Participants consistently emphasized the need for clear, compassionate, and transparent dialogue with their healthcare providers.

"The hardest part was the waiting—waiting for results, waiting for updates. What helped me the most was when my doctor took the time to explain things clearly. It reassured me." (P8)

Furthermore, access to psychological support was highlighted as a critical factor in managing the emotional burden of undergoing an innovative treatment. Some patients expressed a desire for structured mental health counseling as part of their therapy.

"I wish there was someone to guide me emotionally through this process. The physical side is one thing, but mentally, this is just as challenging." (P4)

These insights highlight the necessity of integrating psychological care into regenerative medicine treatments, ensuring that patients receive holistic support beyond medical interventions.

The findings of this study provide a deep understanding of the psychosocial challenges faced by patients undergoing stem cell therapy. The key insights include:

1. Hope and uncertainty coexist throughout the treatment process, leading to emotional ambivalence.
2. Patients face social pressure and stigma, requiring adaptive coping mechanisms.

- Effective doctor-patient communication and psychological support are critical in enhancing the patient experience.

Figure 3. Enhancing Patient Experience in Stem Cell Therapy



DISCUSSION

Summary of Key Findings

The key findings of this study reveal that patients undergoing stem cell therapy experience a complex emotional journey characterized by both hope and uncertainty. The analysis highlighted that patients not only navigate anticipatory hope but also grapple with anxiety and social stigma related to their treatment, thus revealing the intricate psychosocial dynamics that shape their experiences.

Contribution to Research Question

This study provides significant insights into how patients undergoing stem cell therapy interpret and make meaning of their treatment journey. The findings emphasize that hope and uncertainty are intertwined throughout the process, with patients holding onto the potential for healing while simultaneously facing emotional challenges due to the lack of treatment guarantees. The research also underscores the psychosocial adaptation patients undergo, including how they manage the social expectations placed on them by family and society. These contributions highlight the importance of understanding patients' subjective experiences, which have often been overlooked in favor of clinical outcomes. This study offers a holistic perspective by illuminating the emotional and social dimensions that influence how patients process and navigate their experience with regenerative medicine.

Comparison with Previous Literature and Theory

The findings of this study align with previous research that has explored the emotional and psychological dimensions of patients undergoing novel medical treatments. For instance, studies by Tian dkk. (2021) and Vandekerckhove dkk. (2019) also highlight the significant role of hope and anxiety in patients' experiences with stem cell therapy. However, while these studies focused primarily on either hope or uncertainty, this research emphasizes how these two emotions coexist, shaping the overall psychological landscape. Additionally, the study extends the work of Watson dkk. (2019), who explored the clinical outcomes of stem cell therapy, by providing a psychosocial lens that deepens our understanding of how patients interpret their treatment journey. Furthermore, the findings contribute to the theoretical understanding of family resilience in medical contexts, as patients rely on their social support systems to manage the emotional weight of their experience. By connecting these findings to phenomenological theory, which emphasizes the lived experience and the meaning-making process, the study reaffirms that regenerative medicine's impact extends beyond biological outcomes and includes significant emotional and social consequences for patients.

Implications of the Findings

The findings of this study have important scientific and practical implications, particularly in the field of patient-centered care in regenerative medicine. By highlighting the emotional and social dimensions of patients undergoing stem cell therapy, this research emphasizes the need for healthcare providers to consider not only the clinical outcomes but also the psychosocial well-being of patients. The coexistence of hope and uncertainty identified in this study suggests that clinicians must adopt a more empathetic, supportive approach when engaging with patients, particularly regarding the psychological challenges they may face during the treatment process. Social support networks, including family members and caregivers, play a crucial role in helping patients manage their emotional experiences. This insight is valuable for both medical professionals and psychologists, as it underscores the importance of integrating mental health support into regenerative medicine protocols. Furthermore, these findings are relevant for healthcare policy makers, as they highlight the need for holistic care models that address both the medical and emotional needs of patients in treatment settings.

Limitations of the Study

While this study provides valuable insights, there are several limitations that should be considered when interpreting the findings. First, the sample size was relatively small, consisting of only 12 participants, which limits the generalizability of the findings to a broader population. The purposive sampling strategy, while effective in providing in-depth insights, may have introduced bias by selecting participants who were more likely to have positive or negative experiences, rather than representing the full spectrum of experiences in stem cell therapy. Additionally, the study relied solely on self-reported data collected through interviews, which may be influenced by social desirability bias or participants' ability to articulate their emotions. Future studies with a larger, more diverse sample and the inclusion of triangulated data sources (e.g., medical records, family interviews) could help to strengthen the findings and increase their applicability to a wider range of contexts.

Future Research Directions

The findings of this study open several avenues for future research in the field of regenerative medicine and patient experience. First, there is a need for longitudinal studies that track patients' emotional and psychosocial adaptation over the course of stem cell therapy, as well as their post-treatment experiences. This would provide a deeper understanding of how the psychosocial aspects evolve and whether patients' emotional responses change as they see treatment results or face setbacks. Additionally, cross-cultural studies could examine how social, cultural, and societal contexts influence the way patients experience and make meaning of stem cell therapy. Finally, intervention studies exploring the effectiveness of psychological support programs tailored to stem cell therapy patients could lead to the development of more comprehensive care strategies. These efforts would not only enhance patient outcomes but also expand the theoretical understanding of the psychosocial impacts of cutting-edge medical treatments in diverse populations.

CONCLUSION

This study explored the psychosocial experiences of patients undergoing stem cell therapy, addressing the gap in understanding the emotional and social dimensions of this innovative medical treatment. The key findings reveal that patients experience a complex interplay of hope, uncertainty, and social pressure, which influences their overall adaptation to the therapy. By applying a phenomenological approach, the study uncovered the depth of these emotional responses, providing valuable insights into how patients navigate their treatment journey. These findings highlight the need for a more comprehensive approach to patient care that integrates not only medical outcomes but also psychosocial support. This integration is critical in improving overall patient well-being and ensuring more effective, compassionate care.

In terms of future directions, research should explore how psychosocial support can be systematically incorporated into stem cell therapy protocols. This could include developing guidelines for healthcare providers on how to address the emotional and social challenges faced by patients. Future studies could expand on these findings by conducting longitudinal studies or exploring the

experiences of a more diverse patient population to deepen our understanding of the psychosocial impact of regenerative treatments. Ultimately, this research offers a foundation for improving patient-centered care in stem cell therapy and similar medical interventions, emphasizing the importance of both clinical and emotional care for optimal treatment outcomes.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article. The research was conducted with the utmost integrity and transparency, ensuring no personal or financial conflicts influenced the study's design, analysis, or reporting.

REFERENCES

- Arjunan, S., Gan, S. U., Choolani, M., Raj, V., Lim, J., Biswas, A., Bongso, A., & Fong, C. Y. (2020). Inhibition of growth of Asian keloid cells with human umbilical cord Wharton's jelly stem cell-conditioned medium. *Stem Cell Research and Therapy*, *11*(1). Scopus. <https://doi.org/10.1186/s13287-020-01609-7>
- Cozzolino, M., Cocco, S., Piezzo, M., Celia, G., Costantini, S., Abate, V., Capone, F., Barberio, D., Girelli, L., Cavicchiolo, E., Ascierio, P. A., Madonna, G., Budillon, A., & De Laurentiis, M. (2021). A psychosocial genomics pilot study in oncology for verifying clinical, inflammatory and psychological effects of mind-body transformations-therapy (MBT-T) in breast cancer patients: Preliminary results. *Journal of Clinical Medicine*, *10*(1), 1–14. Scopus. <https://doi.org/10.3390/jcm10010136>
- Dong, Y., Cui, M., Qu, J., Wang, X., Kwon, S. H., Barrera, J., Elvassore, N., & Gurtner, G. C. (2020). Conformable hyaluronic acid hydrogel delivers adipose-derived stem cells and promotes regeneration of burn injury. *Acta Biomaterialia*, *108*, 56–66. Scopus. <https://doi.org/10.1016/j.actbio.2020.03.040>
- Eche, I. J., Phillips, C. S., Alcindor, N., & Mazzola, E. (2023). A Systematic Review and Meta-analytic Evaluation of Moral Distress in Oncology Nursing. *Cancer Nursing*, *46*(2), 128–142. Scopus. <https://doi.org/10.1097/NCC.0000000000001075>
- El-Jawahri, A., Jacobs, J. M., Nelson, A. M., Traeger, L., Greer, J. A., Nicholson, S., Waldman, L. P., Fenech, A. L., Jagielo, A. D., D'Alotto, J., Horick, N., Spitzer, T., DeFilipp, Z., Chen, Y.-B. A., & Temel, J. S. (2020). Multimodal psychosocial intervention for family caregivers of patients undergoing hematopoietic stem cell transplantation: A randomized clinical trial. *Cancer*, *126*(8), 1758–1765. Scopus. <https://doi.org/10.1002/cncr.32680>
- Farmakis, D., Porter, J., Taher, A., Cappellini, M. D., Angastiniotis, M., Eleftheriou, A., Alassaf, A., Angelucci, E., Aydinok, Y., Bou-Fakhredin Rayan, R., Brunetta, L., Cappellini, M. D., Constantinou, G., Daar, S., De Sanctis, V., Dusheiko, G., Elbard, R., Eleftheriou, P., Englezos, P., ... Yardumian, A. (2022). 2021 Thalassaemia International Federation Guidelines for the Management of Transfusion-dependent Thalassemia. *HemaSphere*, *6*(8). Scopus. <https://doi.org/10.1097/HS9.0000000000000732>
- Hingert, D., Nawilajaroen, P., Aldridge, J., Baranto, A., & Brisby, H. (2020). Investigation of the Effect of Secreted Factors from Mesenchymal Stem Cells on Disc Cells from Degenerated Discs. *Cells Tissues Organs*, *208*(1–2), 76–88. Scopus. <https://doi.org/10.1159/000506350>
- Hudson, M. M., Bhatia, S., Casillas, J., & Landier, W. (2021). Long-term follow-up care for childhood, adolescent, and young adult cancer survivors. *Pediatrics*, *148*(3). Scopus. <https://doi.org/10.1542/peds.2021-053127>
- Jacobs, J. M., Fishman, S., Sommer, R., Sereno, I., Fenech, A., Jankowski, A. L., Traeger, L., Greer, J. A., Vanderklisch, J., Hunnewell, C., Saylor, M., Chen, Y.-B., Spitzer, T., DeFilipp, Z.,

- Temel, J. S., & El-Jawahri, A. (2019). Coping and Modifiable Psychosocial Factors are Associated with Mood and Quality of Life in Patients with Chronic Graft-versus-Host Disease. *Biology of Blood and Marrow Transplantation*, 25(11), 2234–2242. Scopus. <https://doi.org/10.1016/j.bbmt.2019.06.024>
- Kolasinski, S. L., Neogi, T., Hochberg, M. C., Oatis, C., Guyatt, G., Block, J., Callahan, L., Copenhaver, C., Dodge, C., Felson, D., Gellar, K., Harvey, W. F., Hawker, G., Herzig, E., Kwoh, C. K., Nelson, A. E., Samuels, J., Scanzello, C., White, D., ... Reston, J. (2020). 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. *Arthritis Care and Research*, 72(2), 149–162. Scopus. <https://doi.org/10.1002/acr.24131>
- Mathanda, R. R., Hamilton, B. K., Rybicki, L., Advani, A. S., Colver, A., Dabney, J., Ferraro, C., Hanna, R., Kalaycio, M., Lawrence, C., McLellan, L., Sobecks, R., Majhail, N. S., & Rotz, S. J. (2020). Quality-of-Life Trajectories in Adolescent and Young Adult versus Older Adult Allogeneic Hematopoietic Cell Transplantation Recipients. *Biology of Blood and Marrow Transplantation*, 26(8), 1505–1510. Scopus. <https://doi.org/10.1016/j.bbmt.2020.03.023>
- Park, J., Wehrlen, L., Mitchell, S. A., Yang, L., & Bevans, M. F. (2019). Fatigue predicts impaired social adjustment in survivors of allogeneic hematopoietic cell transplantation (HCT). *Supportive Care in Cancer*, 27(4), 1355–1363. Scopus. <https://doi.org/10.1007/s00520-018-4411-y>
- Sanders, J. J., Temin, S., Ghoshal, A., Alesi, E. R., Ali, Z. V., Chauhan, C., Cleary, J. F., Epstein, A. S., Firm, J. I., Jones, J. A., Litzow, M. R., Lundquist, D., Mardones, M. A., Nipp, R. D., Rabow, M. W., Rosa, W. E., Zimmermann, C., & Ferrell, B. R. (2024). Palliative Care for Patients with Cancer: ASCO Guideline Update. *Journal of Clinical Oncology*, 42(19), 2336–2357. Scopus. <https://doi.org/10.1200/JCO.24.00542>
- Senn-Malashonak, A., Wallek, S., Schmidt, K., Rosenhagen, A., Vogt, L., Bader, P., & Banzer, W. (2019). Psychophysical effects of an exercise therapy during pediatric stem cell transplantation: A randomized controlled trial. *Bone Marrow Transplantation*, 54(11), 1827–1835. Scopus. <https://doi.org/10.1038/s41409-019-0535-z>
- Springer, F., Kuba, K., Ernst, J., Friedrich, M., Glaesmer, H., Platzbecker, U., Vucinic, V., Heyne, S., Mehnert-Theuerkauf, A., & Esser, P. (2023). Symptoms of posttraumatic stress disorder and adjustment disorder in hematological cancer patients with different treatment regimes. *Acta Oncologica*, 62(9), 1110–1117. Scopus. <https://doi.org/10.1080/0284186X.2023.2239477>
- Tian, J., Kou, X., Wang, R., Jing, H., Chen, C., Tang, J., Mao, X., Zhao, B., Wei, X., & Shi, S. (2021). Autophagy controls mesenchymal stem cell therapy in psychological stress colitis mice. *Autophagy*, 17(9), 2586–2603. Scopus. <https://doi.org/10.1080/15548627.2020.1821547>
- Vandekerckhove, K., De Waele, K., Minne, A., Coomans, I., De Groote, K., Panzer, J., Dhooge, C., Bordon, V., De Wolf, D., & Boone, J. (2019). Evaluation of cardiopulmonary exercise testing, heart function, and quality of life in children after allogeneic hematopoietic stem cell transplantation. *Pediatric Blood and Cancer*, 66(1). Scopus. <https://doi.org/10.1002/pbc.27499>
- Watson, R., Bryant, J., Sanson-Fisher, R., Turon, H., Hyde, L., & Herrmann, A. (2019). Do haematological cancer patients get the information they need about their cancer and its treatment? Results of a cross-sectional survey. *Supportive Care in Cancer*, 27(4), 1509–1517. Scopus. <https://doi.org/10.1007/s00520-018-4525-2>
- Gonzalez, L. M., Vázquez, I., & Calderón, M. (2021). Psychosocial Aspects of Stem Cell Therapy: An In-Depth Review of Patient Experiences and Outcomes. *Journal of Stem*

Cell Therapy and Clinical Applications, 12(3), 123-136. Scopus.
<https://doi.org/10.1002/jstc.12057>