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Psychological & Psychosocial Deficits Among Pediatric Survivors of Hematological Neoplasms

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Background

Pediatric cancer patients are surviving cancer and living long, relatively healthy lives due to advances in pediatric cancer therapeutics. Even with modern medical research and technology, pediatric cancer is still the leading cause of death for children and adolescents in the United States. Based on statistics from the American Cancer Society (ACS), hematological cancers, such as leukemia and lymphoma, are the leading type of non-solid malignancies in children (ACS, 2016). For decades pediatric cancer survival rates have steadily increased with an overall cure rate of over 75%.

While it is great that the survivor rate has and is steadily increasing year after year, the intense curative therapy that is given to produce the high rates of survival can cause long-term effects on the body including psychological and psychosocial deficits. This integrative literature review (ILR) was aimed at describing the prevalence of late effect psychological and psychosocial deficits and their risk factors in pediatric survivors of hematological cancers.

Objectives

Identify the psychological or psychosocial deficits that are present in pediatric survivors of hematological cancers.

Synthesize the risk factors for developing late-effect psychological or psychosocial deficits among pediatric survivors of hematological cancers.

Keywords: psychological deficits, social deficits, pediatric cancer survivor, hematologic neoplasms, blood cancer, risk factors

Methods

DePaul WorldCat Local, PubMed, and CINAHL Complete databases search was performed. The following Medical Subject Heading (MeSH) terms and search details were used and the Boolean operator AND was utilized to get a highly relevant search yield: psychosocial adjustment AND hematologic neoplasms. CINAHL Complete search was completed using the following search terms: psychological AND survivor AND blood cancer. The search yielded 31 and 22 articles for PubMed and CINAHL Complete, respectively. DePaul WorldCat Local search was performed using the following search details: psychological deficit and cancer survivor and hematology. It yielded 179 articles. All abstracts were reviewed one by one independently by two researchers. Articles were included in the final analysis if they reported on psychological or social deficits and the patient population includes pediatrics, adolescents or young adults 21 years of age or below when diagnosed with a blood cancer. Year limit was between 1990 and 2016, and articles that focused on cognitive issues were excluded. Articles that reported psychological deficits in adults aged 21 years and older were also excluded. The final 34 articles used in this integrative literature review (ILR) were categorized by level of evidence according to Melnyk and Fineout-Overholt's hierarchy of evidence (2011) to appraise the strength of evidence for reported psychological and psychosocial deficits and their risk factors. Whittemore and Knafl (2005) updated ILR methodology was strictly followed during the conduct of this review.

Results

A total of 34 published papers with 17812 pediatric hematological cancer survivors who exhibits psychological and social deficits were incorporated in this ILR. The weighted median age at diagnosis for pediatric cancer survivors was 8.95 years. Of these 34 articles, 5 articles whose ages could not be used (due to being an open age range) and 2 literature reviews papers were also excluded for the median age calculation to avoid duplication. Data were analyzed using SPSS version 21.

The prevalence of depression (58.8%), anxiety (44.1%), mood problems (32.3%), poor psycho-social QOL domains (32.2%), social problems (26.4%), attention problems (20.5%), behavior problems (14.7%), post-traumatic stress syndrome (11.7%), conduct problems (11.7%), risky behaviors (8.7%) was higher among pediatric hematological cancer survivors than in the normal population or matched controls. A comprehensive list of these deficits can be found in Table 1.

The top risk factors found to be statistically correlated with psychological and social deficits among pediatric hematological cancer survivors include high intensity chemotherapy, total body radiation, (TBI) cranial radiation, being a female, being younger in age at diagnosis, dysfunctional family, and stem cell transplantation. Table 2 outlines all the risk factors that have been investigated as potential correlates of psychological and social deficits in pediatric survivors of hematological cancers.

The Beck Depression Inventory and SF-36 were the most common measures used to identify psychological and social deficits in this patient population.

The overall strength of evidence is strong for the reported psychological and social deficits using Melnyk and Fineout-Overholt's hierarchy of evidence criteria (2011). More than 50% (n=18 studies) of the research papers were conducted using RCT, matched case control, siblings as control or population control study design. The remaining 47% (N=16) have either utilized descriptive, cross-sectional or qualitative study design.

Psychological and Social Deficits	Frequency	Valid Percent	Cumulative Percent
Depression	20	58.8	58.8
Anxiety	15	44.1	102.9
Mood Problems	11	32.3	135.2
Poor quality of life - psychosocial domains	11	32.3	167.5
Social Problems	9	26.4	193.9
Attention Problems	7	20.5	214.4
Behavior Problems	5	14.7	229.1
Post Traumatic Stress Syndrome	4	11.7	240.8
Conduct Problems	4	11.7	252.5
Risky Behaviors	3	8.8	261.3
Valid Total		261.3	261.3

Note: Total valid percent exceeds 100% as there are more than one studies reporting the same deficits.

Results

Table 2. Risk Factors for Psychological and Social Deficits

	Frequency
Adolescents diagnosed with hematological cancers	1
ALL diagnosis	1
ALL relapsed	1
ALL survivors who had been irradiated	1
ALL who received radiation therapy and had a relapse	1
Anxiety and mood threshold diagnoses	1
Behavioral Intervention program improves psychological adjustment	1
Being an older woman	1
Being female	4
Being female receiving more therapy pre-transplant	1
Intensive therapy	2
Benefit finding is predictive of psychosocial adjustment	1
Cancer-related pain	2
Children from Spanish-speaking family	1
Cranial radiation therapy	1
Diagnosis of chronic graft versus host disease	1
Dysfunctional family	3
High negative impact of cancer score	1
High risks cluster group	1
History of cranial radiation	1
Low educational level	2
Long time from diagnosis	1
Low respiratory sinus arrhythmia	1
Low socioeconomic status	2
Maternal age and depression and family cohesion	1
Maternal distress, poor health, long time from diagnosis	1
More chronic conditions	1
None	2
Not Married	1
Older age	1
Overweight/Obesity	2
Pediatric stem cell transplantation	1
Perceived limit	1
Poor quality of life	1
Poor health	1
Poor peer relationships	1
Problems in verbal cognitive abilities and visual-motor integration	1
Response bias - higher mental health score associated with intensive therapy	1
School issues	1
Scleroderma	1
Self-report of poor physical functioning	1
Stem cells derived from peripheral blood	1
Survivors' cognitive frame	1
Younger age	1
>6 years from the time of diagnosis	1
Total	49

Table 3. Melnyk and Fineout-Overholt's (2011) Level of Evidence

	Frequency	Cumulative Percent
Level 2 - One or more Randomized Controlled Trials	1	2.9
Level 4 - Case-control or cohort study	15	47
Level 5 - Systematic reviews of descriptive and qualitative studies	2	52.88
Level 6 - Single descriptive or qualitative study	16	100.0
Total	34	100

Conclusion

In this ILR of 34 published papers with 17,812 patients, more than a quarter of pediatric survivors of hematological neoplasms have significant psychological and psychosocial deficits that include depression, anxiety, social problems, mood and attention problems.

Routine assessment and monitoring of psychological and social issues should be incorporated into the survivorship care plan for pediatric cancer survivors.

Clinicians should identify and closely monitor higher risk patients such as those with dysfunctional family and female survivors who received high intensity chemotherapy, TBI, cranial radiation, and stem cell transplantation. Appropriate referral to psychosocial service providers must be done in a timely manner.

This study underscores the need for effective interventions that can address the psychological and social deficits that these pediatric cancer survivors are experiencing as latent effects of their cancer diagnosis and treatments.

References

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