

Psychological Overview of Children with Cancer: Systematic Review

Lina Dewi Anggraeni^{1*}, Deni Lusiana²

¹STIK Sint Carolus, Jakarta 10440, Indonesia

²STIKes Panti Rapih, Yogyakarta, 55281 Indonesia

*Corresponding Author's Email: linadewiam@stik-sintcarolus.ac.id

ABSTRACT

Background: Children with cancer will experience changes in their lives that will have an impact on many aspects of their lives, one of which is psychological aspect. **Objectives:** To find out about the psychology of children with cancer. **Methods:** This systematic review search used Science Direct, PubMed, Clarivate, EBSCO, SpringerLink, Scopus, Sage, Wiley, and Cambridge Core database sources. **Results:** 15 articles that describe the psychology of children with cancer, both positively and negatively. **Conclusion:** Considering cancer impacts children's psychology, nurses should be able to recognize psychological changes in children.

Keywords: *Children; Cancer; Psychological*

INTRODUCTION

Cancer is a disease caused by the uncontrollable development of body cells that attack the local organs of these malignant cells and can spread to other organs (Setiawan, 2015). Cancer is expected to be diagnosed in 10,500 children (birth to 14 years) and 5090 teenagers (ages 15-19 years) by 2021. About 1190 children and 590 adolescents will die from the disease (Siegel *et al.*, 2021). Each year, around 11,000 cases of childhood cancer are reported in Indonesia, with approximately 650 cases reported in Jakarta (Kemenkes, 2015).

When a child is diagnosed with cancer, it is difficult for both the child and family to accept this situation. Children will experience changes in their lives that will have an impact on many aspects of their lives, both physically and psychologically. Loss of appetite, nausea, and vomiting are the most distressing physical effects on children (FKUI, 2015). Psychological changes such as feeling humiliated, constraining oneself, and losing self-confidence occur as a result of physical changes. Additionally, after experiencing those changes, emotional reactions such as anger, sadness, fear, and the notion of death also will emerge.

These changes will have an impact on the quality of

life of children with cancer. Several studies revealed that the quality of life of children with cancer was poor and they experienced a high level of stress when compared to healthy children (Compas *et al.*, 2014), even though several studies concluded that there was no significant difference between children with cancer and healthy children (Kersun *et al.*, 2014).

Nurses are health professionals who provide high-quality nursing care to children to improve their optimal health. As a result, nurses must understand the psychology of children with cancer to assist children in adjusting to, and even developing in facing the challenges caused by the disease from which they suffer.

METHODOLOGY

This systematic review search used Science Direct, PubMed, Clarivate, EBSCO, SpringerLink, Scopus, Sage, Wiley, and Cambridge Core database sources with the keywords "Psychology" and Cancer and Children. The inclusion criteria are (1) research articles having names and contents that correspond to the research objectives; (2) research subjects are children with cancer who have received the results of psychological research"; (3) in English; (4) published

Received 7 December 2021; Received in revised form 24 December 2021; Accepted 26 March 2022

in 2011-2021. Exclusion criteria: (1) the article does not have a complete structure; (2) in the form of article review.

The prism guidelines are used to execute a systematic review, which includes the following steps: (1) search for articles that include keywords that have been manually chosen and recorded; (2) The screening process is followed in accordance with established inclusion and exclusion criteria; (3) analyzing articles using the Joanna Briggs Institute's 2017 tools.

Based on the results of a literature search through nine online databases, 88,929 articles were obtained, which were then reduced by screening from the database selection to 57 articles, followed by analyzing titles, reading abstracts, background suitability, research objectives, research methods, and results to obtain 30 eligible articles. Then, 15 articles were removed by reading the whole text, yielding 15 articles for analysis.

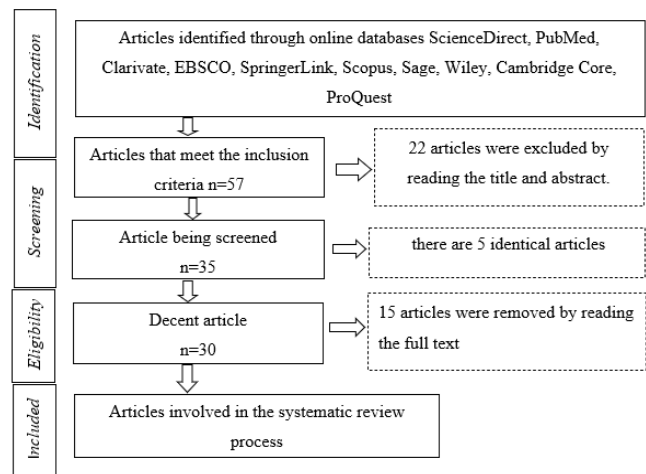


Figure 1: Literature Search Strategy

RESULTS

This writing examines examples of children with cancer with psychological problem that arises in children due to cancer. The studied literature is pure research, not a review, with the following components: author's name, study design, and numbers of respondents.

Table 1: Literature Search Results (n=15)

No.	Author	Design	Respondent/ Sample	Results
1.	Myers <i>et al.</i> , (2014)	Quantitative: Cohort study	The Pediatric Oncology Group protocol included 159 children (aged 2-9.99 years) with SR ALL (standard-risk acute lymphoblastic leukemia).	<ul style="list-style-type: none"> - Anxiety scores in children with cancer were clinically significantly higher than expected at one month (10.4 percent vs. 4 percent, $p=0.001$) and six months (8.7 percent vs. 4 percent, $p=0.013$) after diagnosis, but then decreased to the expected level after twelve months (4.5 percent vs. 4 percent, $p=0.448$). - During the first year of therapy, depression scores were clinically significantly higher than expected with one month (21.7 % vs. 15%, $p = 0.022$), six months (28.6 percent vs. 15%, $p=0.001$), and twelve months (21.1 % vs 15%, $p=0.038$).

2.	Shoshani, Mifano, & Czamanski-Cohen (2016)	Quantitative: RCT (randomized clinical trial)	A total of 66 children fulfilled the following criteria: (a) they were aged 3–14 years, (b) they were diagnosed with cancer early, (c) they got medical therapy, and (d) they did not have any pre-existing developmental disorders.	Children's disease and affective characteristics were found to be significantly associated with baseline levels of psychiatric symptoms ($R^2 = 0.69$, $R^2 = 0.48$, $F(10, 55) = 4.17$, $p=0.001$), indicating that approximately 48 percent of the variance in the level of The GSI (Global Severity Index) is described in a linear combination of predictors.
3	Barakat, Galtieri, Szalda, & Schwartz (2016)	Qualitative survey and analysis	A total of 111 respondents with AYA criteria (adolescent and young adults) with cancer aged 12 to 29 years who were treated at the Centre and had outpatient clinic visits for 6 months.	The resulting themes are (1) care and the physical changes, (2) hurdles to achieving academic/vocational aspirations, and social isolation.
4	Hermont <i>et al.</i> , (2015)	Quantitative: Cross-sectional	A total of 83 children/adolescents, including boys and girls, were diagnosed with cancer between the ages of 5 and 18 years old.	Comparison of three age groups, 5-7, 8-12, and 13-18 years, showing the propensity of children/adolescents to increase their feelings of worry as they get older. There are * Spearman correlation coefficient (2 tailed) namely anxiety 0.762, 0.091, 0.026 and worry 0.428, 0.412, 0.128.
5	Rabelais <i>et al.</i> , (2019)	Qualitative	Childhood brain tumor survivors aged 14-40 years who have been diagnosed for at least five years and have been discontinued their therapy for at least two years.	Consists of 3 themes; 1. Understanding brain tumours from a religious and non-religious perspective. 2. Positive outcomes of brain tumours include increased faith, positive psychological changes, lucky families, and deeper relationships. 3. Negative outcomes of brain tumours include fear of recurrence, shifting of life and expectations from normal to abnormal, poor social functioning, emotional or behavioural difficulties.

6	Bahryni, Bermas, & Tashvighi (2016)	Quantitative: Three questionnaires were utilized in the regression analysis: Schneider's hope questionnaire, the general self-efficacy questionnaire (Gse-10), and the Cønner Davidson resilience questionnaire (CD RISC).	A total of 120 children with cancer that have files at the Tehran Mahak Hospital or are currently being treated.	<ol style="list-style-type: none"> 1. In adolescents with cancer, a substantial life expectancy relationship resulted in an increase in self-efficacy (regression coefficient 0.371 significant with t-value 4.33 at level $p > 0.001$). 2. Resistance to self-efficacy has a regression coefficient of 0.579, which is significant with a t-value of 7.70 at the level of $p > 0.001$. This implies that the relationship between the two variables is numerically unidirectional and positive, namely that resilience has resulted in greater self efficacy in cancer adolescents.
7	Macartney <i>et al.</i> , (2014)	Qualitative	<p>- There are total of 12 children aged 9 to 12 years.</p> <p>- 35 children aged 8 to 18 years, at least three months following therapy completion. 14 participants were acquired using the purposive sampling technique. 12 of the 14 children invited to participate accepted, with two boys, ages 14 and 16, refusing.</p> <p>Exclusion criteria: the child was on active medication or unable to express himself verbally due to cognitive impairment.</p>	Children described the symptoms experienced as feeling tired, sick, having headaches, having emotional issues (emotional distress is defined as emotions of anger, stress, worry, anxiousness, sadness, and irritability). Some children experience frustration and sadness as a result of functional disorders such as unilateral limb weakness, difficulty thinking and remembering (difficulty thinking, remembering, focusing, doing schoolwork, or paying attention in class), sleeping difficulties, physical problems, and weight changes. These symptoms make it difficult to engage in physical activity, attend school, maintain one's appearance, and communicate.
8	Tsai <i>et al.</i> , (2013)	Quantitative	<p>A total of 89 children were separated into three age groups: those aged 6 to 12 years (group A), those aged 6 to 12 years (group B), and those aged >12 years (group C).</p> <p>Criteria: Children from preschool, primary, and secondary health clinics.</p> <p>Control group: Children who had persistent and congenital</p>	<p>Children with cancer had considerably more internalized behavioral issues and somatic complaints, especially those under the age of 12. In the first 6 months after commencing chemotherapy, there was a substantial decrease in caregiver stress and an increase in both caregiver and HrQoL in children.</p> <p>Parents also reported that their children had mood swings, more demanding, less supportive, less accepting, and less</p>

			abnormalities, chronic diseases such as diabetes mellitus or systemic lupus erythematosus, significant mental illness, or cancer that had already been diagnosed.	adaptive than typical children. In the research, the PSI outcome effect size ranged between 0.73 and 1.76.
9	Rhee <i>et al.</i> , (2014)	Quantitative: using the HRQoL Instrument	<p>Cancer survivors were selected from the long-term follow-up clinic (LTFU) between 2006 and 2008.</p> <p>The inclusion criteria are: (1) average physical health or greater, (2) absence of serious illness (excluding allergies, rhinitis, or colds) and no frequent medication intake other than health supplements, (3) hospitalization for less than a week for reasons other than colds or seasonal enteritis, and (4) there is no history of chronic disease.</p> <p>The control group consisted of healthy children and adolescents who did not have chronic disease or serious health problems, including childhood cancer.</p>	Viability, length of treatment, treatment modality, brain surgery, final effect severity, self-concept, and behavior all substantially impacted physical and mental health ($p=0.001$).
10	Liu <i>et al.</i> , (2015)	Quantitatively measuring anxiety and depression using pediatric PROMIS (C-Ped-PRO-MIS) measures	A total of 232 cancer-affected children and adolescents were recruited through hospital-based inpatient and outpatient clinics.	Children with cancer have considerably higher levels of anxiety and depression (feeling nervous, afraid, worried) with a P -value of 0.001.
11	Yardeni <i>et al.</i> , (2021)	Quantitative	<p>Between January 2017 and June 2019, 99 newly diagnosed or recurring cancer children aged 7-21 years were hospitalized to the Department of Paediatric Haematology, all of whom had a good level of understanding of the Hebrew language.</p> <p>Exclusion criteria: the child was unable to complete the self-assessment scale and respond to a semi-structured interview.</p>	During the follow-up period, 48% of the participating children had an anxiety disorder and/or depression. Using PROMIS, however, there was a substantial decrease in anxiety and depression levels in children and parents over time ($p=0.01$ to $p = 0.02$).

12	Mishra <i>et al.</i> , (2012)	Quantitative: post hoc analysis	97 children with cancer, 95 siblings, and 151 healthy controls.	Children with cancer had higher rates of alexithymia than their siblings and controls, according to Post-hoc t-tests ($p < 0.008$; and $p < 0.001$). Sibling scores were also higher than controls ($p < 0.000$; $M = 1.29$, $SD = 0.41$; $M = 1.17$, $SD = 0.24$; and $M = 0.90$, $SD = 0.50$). It was determined that children with cancer had the highest rates of alexithymia, followed by their siblings. The lowest rates of alexithymia were reported among healthy controls.
13	Arruda-Colli, Perina, & Santos (2015)	Qualitative	<p>There was a total of 8 participants. Inclusion criteria: children aged 5 to 12 years old who are undergoing cancer treatment and have motor skills.</p> <p>Exclusion criteria: disruptive understanding and/or communication difficulties.</p> <p>Caretakers, namely mothers, fathers, or legal guardians who are regarded as the primary caregivers for their children, were also interviewed.</p>	Children, regardless of age or way of communication concerning disease and prognosis, feel threatened and unsure. Given the diagnosis and prognosis of cancer recurrence, caregivers report feelings of frustration, threat, and loss of control, which heightens their fear of losing their children and impairs the meaning of the child's life. Couples had comparable experiences with reoccurring cancer problems and their initial treatment experiences, which brought new meaning to their lives.
14	Hyslop <i>et al.</i> , (2018)	Qualitative in the way children express through drawing.	<p>Total 30 children.</p> <p>Inclusion criteria: Children aged 4 to 7 years, as well as all children undergoing or having finished cancer treatment, including chemotherapy and/or hematopoietic stem cell transplantation.</p> <p>Exclusion criteria: Children with severe disease or cognitive disabilities that restrict children from participating, including responders who do not comprehend English.</p>	<p>1. Physical symptoms: 13 (72.2 percent) of the children who drew reported feeling "sick" ($n = 5$), "yucky" ($n = 2$), "stomach ache" ($n = 2$), "vomiting" ($n = 3$), "sore mouth or throat" ($n = 2$), "hungry" ($n = 1$), "tired and hot" ($n = 1$), IV needle pain (infusion needle) ($n = 1$), and "awful" taste ($n = 1$).</p> <p>2. Psychosocial: The sole emotion expressed was sadness, as represented by the sad face picture ($n = 5$). Three children drew smiles on their faces out of habit but swiftly changed them to frowns to show a sorrowful face, four depicted themselves in the hospital, and three of these children drew themselves in bed. At home, a child draws himself (with a sorrowful expression from a sore throat).</p>

15	Belpame <i>et al.</i> , (2019)	Qualitative through semi-structured interviews	<p>There were total of 21 cancer survivors</p> <p>Inclusion criteria: AYA survivors who were between the ages of 0 and 14 when they began their first cancer treatment, between the ages of 14 and 25 when they participated in the study, and who had stopped curative therapy for at least two years before inclusion in the study.</p> <p>Exclusion criteria: Participants who had a recurrence after the age of 14, those who did not have appropriate fluency in Dutch, and participants who did not have a contact number.</p>	<p>There are 5 categories:</p> <ol style="list-style-type: none"> 1. Feelings become different as they move toward normalcy in the relationship. 2. Living with Existential Uncertainty. 3. Aware of health protection 4. Attachment to parents who have cancer. 5. Experiences are Shared, and Desire to be Meaningful to Others.
----	--------------------------------	--	--	---

According to article analysis, out of 15 articles psychologically describe children with cancer in both negative and positive ways. On the negative side, the results in five articles demonstrate the same emotional condition, indicating that children with cancer suffer anxiety or worry. Two articles describe children's feelings of uncertainty in life, and two articles that describe children's feelings of sadness. According to one article, the child also had alexithymia. Furthermore, children with the help of parents, complained of somatic disorders and behavioral difficulties, demonstrating that children are moodier, demanding, less supportive, less accepting, and less adaptive than normal children. Children might also suffer from social isolation issues and academic difficulties.

On the positive side, one article showed that cancer increases children's/adolescents' resilience, allowing them to boost their self-efficacy. On the other side, it is disclosed in one article that cancer strengthens faith, causes beneficial psychological changes, and brings families closer together.

DISCUSSION

Cancer may strike anyone at any age and damage any part of the body. It begins with a genetic mutation in a single cell and develops into a mass (or tumor), infiltrating other parts of the body and causing harm and death if left untreated. Unlike adult malignancies, the majority of children's cancers have no recognized cause. Many kinds of research have been conducted in an

attempt to determine the causes of childhood cancer, however, relatively few malignancies in children are caused by environmental or lifestyle factors (WHO, 2020).

The diagnosis and treatment of childhood cancer is the most traumatic life event for the majority of families. According to Liptak, Zelter & Recklitis (2015), the treatment process is a highly painful experience with a variety of psychological repercussions. We must recognize that childhood cancer is an emotional illness as much as a physical one. During therapy, it should be a focus to assist the kid and family in coping with this stressful experience. In addition to advocating for cancer cures, we must also campaign for psychological support as the standard of treatment for children with cancer. Based on the evaluation of articles, two themes of psychological changes in children and adolescents with cancer were identified, namely positive and negative alterations.

Negative Psychological Changes

According to Marrusak (2018), children and adolescents with cancer can cope well with the sensation of pain psychologically, but many still suffer anxiety, depression, and even post-traumatic stress disorder. Furthermore, the findings revealed that signs of post-traumatic stress disorder might impact approximately 75% of adolescents during or after treatment. Several studies have found that perceived life threat or clinically relevant factors (e.g., duration of

hospital stay, recurrence, treatment intensity) are connected to more severe post-traumatic stress symptoms. Nightmares or flashbacks, a desire to avoid people, places, or things associated with the experience, difficulties feeling emotions, feeling helpless, aloof, or disconnected from others, and feeling anxious or easily surprised are all symptoms of post-traumatic stress disorder. Children, as well as their parents and siblings, may suffer these symptoms (Marusak, 2018). The majority of the articles analyzed found that children and adolescents with cancer experienced anxiety and depression. According to Yardeni *et al.* (2021), 48% of children experienced anxiety and/or depression at least once throughout the follow-up period. This is similar to Eldin *et al.*, (2019), who found that cancer children had more mood swings, anxiety disorders, panic attacks, and separation anxiety than the control group ($p = 0.001$).

Children and adolescents with cancer face uncertainty and threats in their everyday lives (Arruda-Colli, Perina, & Santos, 2015; Belpame *et al.*, 2019). Uncertainty in disease is described as a person's incapacity to make sense of an illness-related occurrence (Mishel, 1990) and is seen as a significant psychosocial stressor, particularly during and following childhood cancer treatment (Stewart, Lynn, & Mishel, 2010). According to Tackett *et al.* (2015), the presence of ambiguity in the disease will create global psychological distress (GPD). The Global Severity Index (GSI) is used to assess GPD, which consists of nine symptom dimensions: somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid thoughts, and psychoticism.

Children and adolescents with cancer frequently struggle with identifying and explaining their emotions. Alexithymia is the medical term for this condition (Mishra *et al.*, 2012). Alexithymia is highly linked to negative experiences such as hardship, trauma, and vulnerability (Smith, Kouros, & Meuret, 2014). Similarly, Luyten *et al.*, (2013) discovered a connection between alexithymia and a history of trauma and emotional neglect.

Positive Psychological Change

A life-threatening disease can have long-term effects for both the child and the family. Many researches have been conducted in the past few decades to investigate the positive effects of stressful

experiences. The start of chronic disease has been identified not only as a potentially traumatic experience for children, but also as the foundation for survival and even good change and growth (Phipps, Long, & Ogden, 2007).

Positive experiences for children and adolescents with cancer include having excellent resilience, which enhances self-efficacy, and a desire to be meaningful to others (Bahryni, Bermas, & Tashvighi, 2016; Barakat *et al.*, 2016; Belpame *et al.*, 2019). According to SickKids Staff (2018), having childhood leukemia can have a beneficial impact on children and adolescents. Many children with leukemia perceive themselves to be "different" from their peers. However, this distinction might be advantageous. As cancer patients, they may find more meaning in their daily activities and interactions. A survivor of childhood leukemia who has a strong sense of self-identity views their experience positively. The perception of the good outcomes of a potentially painful circumstance is referred to as benefit finding. Benefit finding describes positive changes or experiences that occur as a result of unpleasant life events.

Children with cancer who can adjust and not drown under heavy psychological pressure might get benefit from their experiences (Stuber & Strom, 2012). Furthermore, they form a strong social network of family and peers, which serves as a primary source of support for many childhood cancer survivors. This support network will allow children to share common experiences and resources (SickKids Staff, 2018). According to Duran (2013), positive psychological outcomes in childhood cancer survivors and their parents typically include meaning-making, life esteem, self-awareness, family closeness, increased psychological maturity, greater compassion and empathy, value and new priorities, strengths and improvements, and recognition of vulnerabilities and struggles.

CONCLUSION

Cancer patients' children and adolescents go through both positive and negative psychological changes. The majority of study findings emphasize negative psychological changes in children/adolescents, with anxiety and depression prevalent both at diagnosis and during treatments. Furthermore, cancer develops resilience in children and adolescents, allowing them to strengthen their self-efficacy. As a result, nurses must be

able to recognize the psychosocial changes that occur in children with cancer.

Conflict of Interests

The authors declare that they have no conflict of

interests.

ACKNOWLEDGEMENT

The authors are thankful to the institutional authority for completion of the work.

REFERENCES

- Arruda-Colli, M. N. F., Perina, E. M., & Santos, M. A. (2015). Experiences of Brazilian children and family caregivers facing the recurrence of cancer. *European Journal of Oncology Nursing*, *19*(5), 458–464. <https://doi.org/10.1016/j.ejon.2015.02.004>
- Bahryni, S., Bermas, H., & Tashvighi, M. (2016). The self-efficacy forecasting based on hope to life and resiliency in adolescents suffering from cancer. *Biomedical and Pharmacology Journal*, *9*(3), 1147–1156. <https://doi.org/10.13005/bpj/1062>
- Barakat, L. P., Galtieri, L. R., Szalda, D., & Schwartz, L. A. (2016). Assessing the psychosocial needs and program preferences of adolescents and young adults with cancer. *Supportive Care in Cancer*, *24*(2), 823–832. <https://doi.org/10.1007/s00520-015-2849-8>
- Belpame, N., Kars, M. C., Deslypere, E., Rober, P., Van Hecke, A., & Verhaeghe, S. (2019). Living as a cancer survivor: a qualitative study on the experiences of Belgian adolescents and young adults (AYAs) after childhood cancer. *Journal of Pediatric Nursing*, *49*, e29–e35.
- Compas, B. E., Desjardins, L., Vannatta, K., Young-Saleme, T., Rodriguez, E. M., Dunn, M., ... Gerhardt, C. A. (2014). Children and adolescents coping with cancer: Self - and parent reports of coping and anxiety/depression. *Health Psychology*, *33*(8), 853–861. <https://doi.org/10.1037/hea0000083>
- Duran, B. (2013). Posttraumatic Growth as Experienced by Childhood Cancer Survivors and Their Families. *Journal of Pediatric Oncology Nursing*; *30*(4):179-197. <https://doi.org/10.1177/1043454213487433>
- Eldin, I.S., Shahin, O.O., Makar, W.S., & Eldin, S.H. (2019). Psychological Impact of various Therapeutic Modalities in Childhood Malignancy. *Asian Pacific Journal of Cancer Care*, *4*(3), 95-100. <https://doi.org/10.31557/APJCC.2019.4.3.95>
- FKUI. (2015). Penuntun diet anak (Edisi Ke 3). Jakarta: Badan Penerbit FKUI.
- Hermont, A. P., Scarpelli, A. C., Paiva, S. M., Auad, S. M., & Pordeus, I. A. (2015). Anxiety and worry when coping with cancer treatment: Agreement between patient and proxy responses. *Quality of Life Research*, *24*(6), 1389–1396. <https://doi.org/10.1007/s11136-014-0869-3>
- Hyslop, S., Sung, L., Stein, E., Dupuis, L. L., Spiegler, B., Vettese, E., & Tomlinson, D. (2018). Identifying symptoms using the drawings of 4–7 year olds with cancer. *European Journal of Oncology Nursing*, *36*(December 2017), 56–61. <https://doi.org/10.1016/j.ejon.2018.08.004>
- Kemenkes. (2015). Data dan informasi kesehatan situasi penyakit kanker. In Kementrian Kesehatan Republik Indonesia. <https://doi.org/10.1007/s13398-014-0173-7.2>
- Kersun, L. S., Rourke, M. T., Mickley, M., & Kazak, A. E. (2009). Screening for depression and anxiety in adolescent cancer patients. *Journal of Pediatric Hematology/Oncology*, *31*(11), 835–839. <https://doi.org/10.1097/MPH.0b013e3181b8704c>
- Koutná, V. & Blatný, M. (2017). Positive and negative outcomes of childhood cancer: is there a connection between posttraumatic stress and growth in childhood cancer survivors?. *Medical Research Archives*, vol. 5, issue 12.

- Liptak C, Zelter L, Recklitis C. (2015). Psychosocial care of the child and family. In: Noathan O, editor. *Hematology and Oncology of Infancy and Childhood*. 8.
- Liu, Y., Wang, J., Hinds, P. S., Wang, J., Shen, N., Zhao, X., ... Yuan, C. (2015). The emotional distress of children with cancer in China: An item response analysis of C-Ped-PROMIS anxiety and depression short forms. *Quality of Life Research*, 24(6), 1491–1501. <https://doi.org/10.1007/s11136-014-0870-x>
- Luyten, P., Van Houdenhove, B., Lemma, A., Target, M., & Fonagy, P. (2013). Vulnerability for functional somatic disorders: A contemporary psychodynamic approach. *Journal of Psychotherapy Integration*, 23(3), 250-262. <https://doi.org/10.1037/a0032360>
- Macartney, G., Stacey, D., Harrison, M. B., & VanDenKerkhof, E. (2014). Symptoms, coping, and quality of life in pediatric brain tumor survivors: A qualitative study. *Oncology Nursing Forum*, 41(4), 390–398. <https://doi.org/10.1188/14.ONF.390-398>
- Marusak, H. (2018). Understanding the Psychological Effects of Childhood Cancer, We must do more to help. Scientific American. <https://www.scientificamerican.com/article/understanding-the-psychological-effects-of-childhood-cancer1/> Diunduh 29 September 2021.
- Mishel, M. H. (1990). Reconceptualization of the uncertainty in illness theory. *Journal of Nursing Scholarship*, 22, 256-262.
- Mishra, V. S., Maudgal, S., Theunissen, S. C. P. M., & Rieffe, C. (2012). Alexithymia in children with cancer and their siblings. *Journal of Psychosomatic Research*, 72(4), 266–268.
- Myers, R. M., Balsamo, L., Lu, X., Devidas, M., Hunger, S. P., Carrol, W. L., ... Kadan-Lottick, N. S. (2014). A Prospective study of anxiety, depression, and behavioral changes in the first year after diagnosis of childhood acute lymphoblastic leukemia: A report from the children's oncology group. *Institutes Health of National*, 23(1), 1–7. <https://doi.org/10.1002/cncr.28578>
- Phipps, S., Long, A. M., & Ogden, J. (2007). Benefit Finding Scale for Children: Preliminary Findings from a Childhood Cancer Population. *Journal of Pediatric Psychology*, 32(10), 1264–1271. <https://doi.org/10.1093/jpepsy/jsl052>
- Pinquart, M., & Shen, Y. (2011). Behavior problems in children and adolescents with chronic physical illness: A meta-analysis. *Journal of Pediatric Psychology*, 36(9), 1003–1016. <https://doi.org/10.1093/jpepsy/jsr042>
- Rabelais, E., Jones, N. L., Ulrich, C. M., & Deatricks, J. A. (2019). Meaning making and religious engagement among survivors of childhood brain tumors and their caregivers. *Oncology Nursing Forum*, 46(2), 170–184. <https://doi.org/10.1188/19.ONF.170-184>
- Rhee, M. A., Chung, K. M., Lee, Y., Choi, H. K., Han, J. W., Kim, H. S., ... Lyu, C. J. (2014). Impact of psychological and cancer-related factors on HRQoL for Korean childhood cancer survivors. *Quality of Life Research*, 23(9), 2603–2612. <https://doi.org/10.1007/s11136-014-0709-5>
- Setiawan, D. (2015). The effect of chemotherapy in cancer patient to anxiety. *Journal Majority*, 4(4), 94–99. <http://juke.kedokteran.unila.ac.id/index.php/majority/article/view/587>
- Shoshani, A., Mifano, K., & Czamanski-Cohen, O. (2016). The effects of the make a wish intervention on psychiatric symptoms and health-related quality of life of children with cancer: A randomised controlled trial. *Physiology & Behavior*, 176(3), 139–148. <https://doi.org/10.1007/s11136-015-1148-7>
- SickKids Staff. (2018). Social and emotional effects of having leukemia. <https://www.aboutkidshealth.ca/article?contentid=2876&language=english>. Diunduh 29 September 2021.
- Siegel, R. L., Miller, K. D., Fuchs, H. E., & Jemal, A. (2021). Cancer Statistics, 2021. CA: A Cancer Journal for

Clinicians, 71(1), 7–33. <https://doi.org/10.3322/caac.21654>

- Smith, N. B., Kouros, C. D., & Meuret, A. E. (2014). The role of trauma symptoms in nonsuicidal self-injury. *Trauma, Violence & Abuse*, 15(1), 41-56. <https://doi.org/10.1177/1524838013496332>
- Stewart, J. L., Lynn, M. R., & Mishel, M. H. (2010). Psychometric evaluation of a new instrument to measure uncertainty in children with cancer. *Nursing Research*, 59(2), 119-126.
- Stuber, M. & Strom, E. (2012). Pediatric psycho-oncology. In L. Glassi & M. Riba (Eds), *Clinical Psycho-Oncology: An International Perspective* (pp. 139–153). Oxford: Wiley Blackwell.
- Tackett, A. P., Cushing, C. C., Suorsa, K. I., Mullins, A. J., Gamwell, K. L., Mayes, S., & Mullins, L. L. (2016). Illness uncertainty, global psychological distress, and posttraumatic stress in pediatric cancer: A preliminary examination using a path analysis approach. *Journal of Pediatric Psychology*, 41(3), 309-318.
- Tsai, M. H., Hsu, J. F., Chou, W. J., Yang, C. P., Jaing, T. H., Hung, I. J., ... Huang, Y. S. (2013). Psychosocial and emotional adjustment for children with pediatric cancer and their primary caregivers and the impact on their health-related quality of life during the first 6 months. *Quality of Life Research*, 22(3), 625–634. <https://doi.org/10.1007/s11136-012-0176-9>
- World Health Organization. (2020). *Global Initiative for Childhood Cancer: An Overview*. Geneva: World Health Organization. https://www.who.int/docs/default-source/documents/health-topics/cancer/who-childhood-cancer-overview-booklet.pdf?sfvrsn=83cf4552_1&download=true. Diunduh 29 September 2021.
- Yardeni, M., Abebe Campino, G., Hasson-Ohayon, I., Basel, D., Hertz-Palmor, N., Bursztyn, S., & Gothelf, D. (2021). Trajectories and risk factors for anxiety and depression in children and adolescents with cancer: A 1-year follow-up. *Cancer Medicine*, 10(16), 5653–5660. <https://doi.org/10.1002/cam4.4100>