

THE USE OF COMPLEMENTARY THERAPIES IN CHILDREN AND ADOLESCENTS WITH CANCER : A LITERATURE REVIEW

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Abstract

Children and adolescents with cancer can experience unpleasant experiences, such as pain, anxiety, fatigue, sleep disturbances, balance disorders, and even mental, behavioral, and emotional disturbances. These negative experiences lead to decrease in quality of life. A recent research indicates that complement therapies can reduce the terrible effects of cancer. So this literature study aimed to identify the use of complementary therapies in children and adolescents with cancer. This study was a literature review that begins with a search for articles on digital databases, Science Direct and Google Scholar, using the keyword "complementary therapy AND cancer AND adolescents". The inclusion criteria in this study were articles published in 2010-2020, full text, research results, in English, and contained about the use of complementary therapies in children and adolescents (0 -18 years) with cancer. Total of 12 articles were analyzed in this literature study. The results of this study showed there are four groups of complementary therapies for children and adolescents with cancer. Complementary and alternative medicine in general, cutaneous stimulation (massage therapy and acupressure), art therapy (group art therapy and creative art therapy), as well as body and mind therapy (eurythmy therapy and yoga), have both physiological and psychological effects. These four therapeutic groups can elicit physiological and psychological responses in children and adolescents with cancer. Patients can feel a reduction in the discomfort. Based on the results of this literature review, nurses and patients' families are expected to provide complementary therapies in the care of children and adolescents with cancer.

Keyword: Adolescents, Cancer, Children, Complementary Therapy

Introduction

Cancer is a large group of diseases that can affect any part of the body and in anyone, including children and adolescents. One of the main characteristics of cancer is the rapid formation of abnormal cells that grow outside of normal boundaries, and then can attack adjacent parts of the body and spread to other organs, which is known as metastasis (WHO, 2018). The number of cancer incidents in children and adolescents occurs around 3% - 5% of the total cancer incidence in the world and is the second-largest cause of death in

children in the 5-14 year age range (P2PTM Kemenkes RI, 2018). Cancer in children and adolescents itself is cancer that affects children aged less than 18 years, including children who are still in the womb.

Cancer can be a very dire experience for children and adolescents, both from the prognosis of the disease itself and from the management that needs to be given to children with cancer. Children and adolescents with cancer may experience persistent symptoms, including fatigue, sleep disturbance, and balance impairment (Hooke et al., 2016). In

one of the treatments given to cancer patients, namely chemotherapy, children and adolescents with cancer can experience side effects in the form of nausea and vomiting (Abusaad & Ali, 2015). Moreover, children and adolescents with a posterior fossa brain tumor can experience extensive neurological, emotional, behavioral, and mental disorders (Kanitz et al., 2013). Besides, children and adolescents with cancer withdraw at home and school and from family and friends, find it difficult to engage in recreational activities and play, and experience devastating physical conditions (Abdulah & Abdulla, 2018). Moreover, children and adolescents with cancer in palliative care often experience pain and anxiety that is not properly managed (Genik et al., 2020). These conditions can have an impact on reducing the quality of life in children and adolescents with cancer (Abdulah & Abdulla, 2018; Genik et al., 2020; Madden et al., 2010).

Nowadays, it is known that there is increasing use of complementary therapies to reduce disease symptoms, treatment side effects, and improving the quality of life for cancer management that can be experienced by children and adolescents with cancer (Erdem et al., 2020; Gottschling et al., 2014). The use of Complementary and Alternative Medicine (CAM) in children and adolescents during

cancer treatment ranges from 6% -91% worldwide (Bishop et al., 2010). Complementary therapy approaches are a group of diverse medical and health care systems, practices, and products whose origins come from outside of conventional medicine (NCCIH, 2014).

This literature study aims to identify the use of complementary therapies in children and adolescents with cancer.

Method

The first step in preparing this literature study was searching for articles through an online digital database, namely Science Direct and Google Scholar. The keywords used in the search process were "complementary therapy AND cancer AND adolescents" and there were 4,401 articles in Science Direct and 91,900 articles in Google Scholar. The next step is sorting articles based on predetermined inclusion criteria, including (1) articles published in the period 2010-2020, (2) full text, (3) articles containing research results, (4) articles using English, and (5) The article contains the use of complementary therapies in children and adolescents (0-18 years) with cancer.

Sorting articles by year of publication resulted in 2,464 articles in Science Direct and 19,100 in Google Scholar. Furthermore,

sorting articles based on the availability of full text, type of article, the language in the article and article content, got 6 articles in Science Direct and 7 articles in Google Scholar. Of the 13 articles found, 2 articles were the same, namely 1 article in Science Direct and 1 article in Google Scholar. In the end, there were 12 articles analyzed in this literature study.

Result and Discussion

Tabel 1
Result for literature review

Author and Year	Research Design	Study Objectives	Sample	Results
(Erdem et al., 2020)	A descriptive and cross-sectional design.	To identify the use of CAM by mothers of children with cancer.	To identify the use of CAM by mothers of children with cancer. Mothers of children and adolescents (0-18 years) with cancer at a hematology-oncology clinic and an outpatient clinic of a tertiary hospital in Turkey (n = 110).	53.6% of respondents gave CAM to children with cancer, with 93.2% of them using the CAM method in the form of using natural products (containing carob, mulberry, and grape).
(Genik et al., 2020)	A pretest-posttest design.	To identify the acceptance of massage therapy by children with cancer and their parents and to know the effect of massage on pain, fear, and quality of life for children with cancer.	Children and adolescents (10-17 years) with cancer and their parents at a single tertiary care pediatric institution in Canada (n = 7).	4 respondents completed all massage therapy sessions, 2 respondents missed one massage therapy implementation, and 1 respondent did not complete the massage therapy implementation at all. The respondents stated that there was a significant reduction in pain after receiving two massage therapies and a significant decrease in fear after receiving one massage therapy. There were no significant changes in the signs and symptoms of pain and the quality of life of the respondents between baseline and follow-up.
(Abdulah & Abdulla, 2018)	An experimental randomized controlled trial.	To determine the effect of art therapy on quality of life in children with cancer.	Children and adolescents (7-16 years) with cancer in Duhok, Iraq (n = 60: a control group = 30 children, an intervention	Significantly, respondents in the intervention group were more physically active, energetic, and fit (p <0.001), and had lower levels of

			group = 30 children).	depressive mood and emotions and stressful feelings (p = 0.003). Significantly, respondents in the intervention group had more opportunities to organize and enjoy social and leisure time and participation in social activities (p = 0.016), create more social relationships (p = 0.047), and have better overall health (p <0.001). The quality of the respondents' interactions with other children, parents, and health service providers and the respondents' feelings towards their parents/health service providers did not differ significantly (p = 0.120). Respondents perceptions of cognitive capacity and satisfaction with school performance did not differ significantly (p = 0.161).
(Yen et al., 2017)	A retrospective survey.	To identify the use of Traditional Chinese Medicine (TCM) in children with cancer.	Children and adolescents (0-18 years) with cancer in Taiwan (n = 12,965).	62.4% of respondents are TCM users. Types of TCM commonly used by respondents are herbal remedies; manipulative therapy; acupuncture; manipulative therapy combined with herbal remedies; acupuncture combined with herbal remedies; manipulative therapy combined with acupuncture; acupuncture, manipulative therapy, and herbal remedies.
(Hooke et al., 2016)	A one-group repeated-measures design.	To evaluate the effects of yoga on children and adolescents with cancer.	Children and adolescents (10-18 years) with cancer at two pediatric cancer centers in Minnesota (n = 13).	Yoga significantly reduced cognitive fatigue (p = 0.05) and anxiety / sense of wellness (p = 0.04) in respondents after doing yoga for 6 weeks.
(Abusaad & Ali, 2015)	A quasi-experimental design, pre, and post-intervention.	To assess the effectiveness of acupressure in reducing nausea and vomiting induced by chemotherapy among cancer.	Children and adolescents (11-17 years) with cancer at Mansoura oncology center (n = 60: a control group = 30, an intervention group = 30).	There was a significant difference in decreasing nausea duration (p = 0.013), nausea frequency (p = 0.056) and retching frequency (p = 0.001) in the intervention group compared to the control group.
(Magi et al., 2015)	A retrospective survey.	To determine the prevalence of using	Parents of children and adolescents (0-18 years)	53% of respondents gave CAM to children with cancer, with

		CAM in children and adolescents with cancer.	with cancer at the division of pediatric hematology/oncology at the University Children's Hospital Bern, Switzerland (n = 133).	87% of them perceived positive effects from CAM. The most widely used type of CAM is homeopathy.
(Revuelta-Iniesta et al., 2014)	A retrospective survey.	To identify the prevalence of CAM use and spiritual practice in children and adolescents with cancer.	Families of children and adolescents (<18 years) with cancer at the Royal Hospital for Sick Children, United Kingdom (n = 74).	55% of respondents gave CAM and 57% of respondents gave spiritual remedies to children and adolescents with cancer.
(Ladas et al., 2014)	A cross-sectional survey.	To describe prevalence, usage patterns, and descriptive associations of the use of Traditional and Complementary / Alternative Medicine (TCAM) in children with cancer.	Parents of children and adolescents (<18 years) with cancer at a pediatric oncology center in Guatemala City, Guatemala (n = 100).	90% of respondents gave TCAM to children with cancer. 67% of respondents use TCAM as a complementary therapy, but 34% of respondents are known to also use TCAM as a curative therapy. The types of TCAM that are most commonly used are dietary changes, herbal supplements, prayer, juicing, touch therapies, oral nutritional supplements, ointments, bioenergetic treatments, and others.
(Kanitz et al., 2013)	A pilot study.	To assess the feasibility, medication adherence, and impact of eurythmy therapy in pediatric neurooncology.	Children and adolescents (6-17 years) with cancer in Germany (n = 7).	There were good adherence and improvement in cognitive and neuromotor function in all respondents. There was better visuomotor integration among 5/7 respondents after 6 months of eurythmy therapy. However, after the next 6 months without eurythmy therapy, neuromotor function, and visuomotor integration decreased to some extent.
(Karalı et al., 2012)	A long-term survival study.	To determine the type, frequency, reasons for using CAM, factors associated with CAM use, and effects of CAM use on long-term survival in children with cancer.	Families of children and adolescents (0-18 years) with cancer in Pediatric Oncology Department of Uludag University Hospital (n = 120).	73.3% of respondents gave CAM to children with cancer, with 95.5% of them using biologically based therapies (dietary supplements and herbal products). 43.2% of respondents used honey and 43.2% of respondents used stinging nettle as a dietary supplement or herbal product.

(Madden et al., 2010)	A 2-group, repeated measure randomized design.	To evaluate the effect of creative art therapy on quality of life in children with cancer.	Children and adolescents (2-18 years) with cancer in the outpatients oncology clinic at a tertiary care, university affiliated, pediatric hospital (n = 16).	There is no significant relationship between the use of CAM with socioeconomic factors, sociodemography, and other factors in respondents. Five-year survival rates for CAM users and nonusers were found as 81.5% and 86.5% respectively (p> 0.05).
				After being given CAT, there was an improvement in the hurt (p = 0.03) and nausea (p = 0.0061) experienced by the respondent.
				After being given CAT, there was a significant increase in the mood on the faces scale (p <0.01), and respondents were more excited (p <0.05), happier (p <0.02), and less nervous (p <0, 02).

Complementary and alternative medicine in general

Six of the twelve articles found revealed that children and adolescents with cancer use CAM in their treatment of themselves, 90% of children and adolescents with cancer in Guatemala (Ladas et al., 2014); 73.3% of children and adolescents with cancer in Turkey (Karalı et al., 2012); 62.4% of children and adolescents with cancer in Taiwan (Yen et al., 2017); 55% of children and adolescents with cancer in the UK (Revuelta-Iniesta et al., 2014); 53.6% of children and adolescents with cancer in Turkey (Erdem et al., 2020); and 53% of children and adolescents with cancer in Switzerland (Magi et al., 2015).

In the six studies, the most widely used types of CAM were natural products (93.2%)

(Erdem et al., 2020); Chinese herbal remedies (Yen et al., 2017); classical homeopathy (53%) (Magi et al., 2015); vitamins and minerals (53%) (Revuelta-Iniesta et al., 2014); dietary changes (55%) and herbal supplements (55%) (Ladas et al., 2014); and biologically based therapies (95.5%) (Karalı et al., 2012).

In the study of (Karalı et al., 2012), it was found that the proportion of children and adolescents with cancer who used two types of CAM simultaneously was higher than the proportion of children and adolescents with cancer who used one type of CAM. This is in line with the study results of (Magi et al., 2015; and Revuelta-Iniesta et al., 2014) that found children and adolescents with cancer use more than one type of CAM (76% and 55%, respectively). Meanwhile, in the study of

(Ladas et al., 2014), it was found that the proportion of using one type of TCAM by children and adolescents with cancer was higher than the proportion of using 2 types of TCAM simultaneously. Besides, this literature study also shows that the use of CAM in girls and boys is higher than in boys and girls (Erdem et al., 2020; Ladas et al., 2014).

All articles have examined extensively whether CAM is used to replace or complement medical treatment in cancer patients. Two articles stated that 100% of children and adolescents with cancer use CAM as a complement to medical treatment (Karalı et al., 2012; Revuelta-Iniesta et al., 2014). 78.4% of them shared with the CAM-related physicians they used (Karalı et al., 2012). While four other articles mention 99.95% (Yen et al., 2017), 96.8% (Erdem et al., 2020), 67% (Ladas et al., 2014), and 63.89% (Magi et al., 2015) who use CAM as a complement to medical treatment, and the rest use CAM as a curative therapy in cancer treatment.

Some of the main reasons found for the use of CAM by children and adolescents with cancer are to improve the general condition of the patient (Karalı et al., 2012; Magi et al., 2015); improve the immune system (Magi et al., 2015); obtaining better blood values (Karalı et al., 2012); increasing strength, increasing well-being, and reducing symptoms

of the disease (Ladas et al., 2014); reduce treatment side effects (Erdem et al., 2020; Magi et al., 2015; Revuelta-Iniesta et al., 2014); it even reduces stress and improves the quality of life (Revuelta-Iniesta et al., 2014); and ease the pressure from relatives (Karalı et al., 2012). Meanwhile, it is also known that the reasons for children and adolescents with cancer who do not use CAM are not having enough information about CAM, do not believe in the effectiveness of CAM, and prevent children and adolescents with cancer from experiencing additional stress (Magi et al., 2015).

Cutaneous stimulation (massage therapy and acupressure)

Two of the twelve articles obtained have identified the use of cutaneous stimulation in the form of massage therapy and acupressure in children and adolescents with cancer. The study results of (Genik et al., 2020) showed that there was a significant reduction in pain and worry in children and adolescents who had been given massage twice ($p = 0.03$ and $p = 0.03$, respectively). This shows that massage therapy can be well received by children and adolescents with cancer and in line with research of (Jacobs et al., 2016) that massage therapy can improve sleep quality and reduce fatigue in children with cancer.

The study results of (Abusaad & Ali, 2015) showed that there was a significant decrease in vomiting frequency and retching frequency in the first week ($p = 0.001$ and $p = 0.002$, respectively); on vomiting frequency, nausea duration, nausea frequency, retching experience, and retching experience in the second week ($p = 0.001$; $p = 0.009$; $p = 0.002$; $p = 0.031$; $p = 0.042$; respectively); on vomiting frequency, vomiting distress, nausea severity, and retching frequency in the third week ($p = 0.024$; $p = 0.047$; $p = 0,000$; $p = 0,000$; respectively); and vomiting distress, nausea frequency, and retching frequency in the fourth week ($p = 0.010$; $p = 0.012$; $p = 0.049$; respectively). This shows that the acupressure given to the intervention group was quite effective in reducing chemotherapy side effects in the form of nausea and vomiting in adolescents with cancer.

Art therapy (painting- and handcrafting-based art therapy and creative art therapy)

Two of the twelve articles found evaluated the benefits of art therapy in children and adolescents with cancer. The study results of (Abdulah & Abdulla, 2018) showed that there are significant differences in children and adolescents who do group art therapy, namely being more physically active, energetic, and fit ($p < 0.001$), and having a lower level of

depressive mood and emotions and stressful feelings ($p = 0.003$). Additionally, they had more opportunities to structure and enjoy their social and leisure time, and participation in social activities ($P = 0.016$), created more social relationships ($P = 0.047$) and had better overall health ($P < 0.001$). However, the quality of children's interaction with other children, parents, and health care providers, and the children's feelings toward their parents/health care providers were not significantly different ($P = 0.120$) and no significant difference was found in the child's / adolescent's perception of his / her cognitive capacity and satisfaction with school performance ($P = 0.161$).

Study analysis of (Madden et al., 2010) found improvements in certain areas such as pain, nausea, and emotional reactions in children and adolescents in the intervention group who did creative art therapy compared to the control group. The results of this study reflect that the bad symptoms experienced by children and adolescents with cancer can be reduced by creative art therapy. The results of the study also reported an increase in the quality of life experienced by children and adolescents with cancer in the intervention group. Besides, positive responses from children and adolescents with cancer, families, and providers to creative art therapy interventions are also illustrated in this study.

Body and mind therapy (eurythmy therapy and yoga)

Two of the twelve articles found revealed that children and adolescents with cancer have benefited from body and mind therapy. The research of (Hooke et al., 2016) showed that children and adolescents with cancer feel enjoy doing yoga. In this study, yoga can significantly reduce anxiety in children aged 6-12 years and shows a trend of decreasing anxiety in adolescents aged 13-17 years. This is in line with the research results of (Thygeson et al., 2010) which showed that yoga can reduce anxiety and increase a sense of well-being in adolescents.

The study results of (Kanitz et al., 2013) found that there are good adherence and improvements in cognitive and neuromotor functioning and better visual integration in children and adolescents with cancer. The results of the pilot study showed that eurythmy therapy is a promising therapy in addition to conventional treatment in the aftercare of children and adolescents with tumors of the posterior fossa.

Conclusion

Complementary therapies are well received by children and adolescents with cancer worldwide. Complementary therapy

affects the bodies of children and adolescents with cancer through physiological and psychological mechanisms to improve and maintain health and well-being. The results of this literature study recommend that complementary therapies be used as complementary therapies to medical treatment in cancer patients, which can be done independently by children and adolescents with cancer or given by parents/families, nurses, or providers.

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