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Complementary and alternative treatments for managing chemotherapy-induced nausea and vomiting in pediatric cancer patients: A scoping review

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Abstract

Introduction: Chemotherapy-induced nausea and vomiting are a very common side effect of chemotherapy. To date, neither complete efficacy has been shown for any pharmacological interventions, especially for pediatric patients. Complementary and alternative medicine (CAM) therapy can potentially fill an important niche within the treatment and care continuum, serving as an adjunct to standard care usually provided.

Purpose: This article seeks to examine and identify complementary and alternative methods of nausea and vomiting management in pediatric patients with cancer who receive treatment with chemotherapy.

Methods: A scoping review was conducted with an emphasis on major alternative therapies, including acupressure, acupuncture, aromatherapy, and music therapy, from the PubMed and Scopus databases. Both qualitative and quantitative research from 2005 to 2025, either in Greek or English, was included within the review. An international outlook was considered for conducting the study. Article identification, selection, and presentation were done according to PRISMA-ScR guidelines and applied individually to each category before combining them. Inclusion criteria for the articles included cancer patients who were receiving chemotherapy and had symptoms of nausea and vomiting.

Results: There was a total of 15 articles included. Outcomes were beneficial, particularly regarding a lack of progression of chemotherapy-induced nausea and vomiting (CINV) due to the use of acupuncture techniques (auricular, classic, and electroacupuncture) along with music therapy. Although aromatherapy did not exhibit improvements of symptoms, it helped stabilize levels of CINV; however, acupressure with Sea-Bands or manual techniques, although easy to administer and quickly applied, were unable to reap statistically significant results from any study within these analyses.

Conclusions: The concurrent administration of complementary and standard therapies can potentially benefit from reducing antiemetic drug consumption, successfully controlling both acute and delayed CINV, and improving patients' quality of life. This study calls for more research and clinical trials aimed at assessing these methods for their efficacy and safety and integrating them into clinical practice. Scientific roles for nurses as researchers, caregivers, and teachers have been identified and appreciated throughout various studies.

Keywords: Alternative Therapies; Nausea; Vomiting; Acupuncture; Acupressure; Music Therapy; Aromatherapy

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1. Introduction

It is long established that cancer management is largely comprised of a selection of treatment modalities; however, these modalities are rarely utilized alone and are instead often given together with other forms of therapy. The main treatment strategies include radiotherapy, chemotherapeutic drugs, surgery, bone marrow or hematopoietic stem cell transplantation, immunotherapy, hormonal therapy, targeted therapy, and increasingly novel techniques such as phototherapy, hyperthermia, and tailored therapy based on biometric measurement [1] [2]. Chemotherapy is a cornerstone of cancer management, and it works by selectively destroying rapidly dividing cells—primarily cancer cells—aimed at their annihilation. However, rapidly dividing cells are not specific for neoplastic cells within the human body. Therefore, chemotherapeutic drugs also destroy normal rapidly dividing cells, resulting in harmful side effects. Examples of such normal cells are found within the scalp and gastrointestinal tract [21].

Currently, no standard protocols are available for treating both acute and delayed nausea and vomiting in pediatric patients, and so CINV is a vexing and only partially palliated side effect [3]. Side effects of chemotherapeutic agents are more widespread than for other modalities of treatment, tending to affect various physiological systems due to their effects being less localized. Among the most debilitating side effects of chemotherapeutic drugs are nausea and vomiting, due to these drugs' powerful emetogenic effect on medulla oblongata. It has been estimated that almost 70% of pediatric patients on chemotherapeutic treatment develop nausea and vomiting, and around 40% of these patients continue with it despite antiemetic treatment [3] [8].

Nausea is a subjective feeling usually accompanied by an urge to vomit. For cancer patients who develop nausea and vomiting due to chemotherapy, a classification system is applied based on certain criteria: (a) vomiting presence/absence, (b) oral food intake, and (c) vomiting frequency and intensity [4] [5]. Due to the limitations of medicinal therapy, more patients are seeking Complementary and Alternative Medicine (CAM) for nausea and vomiting relief. Some of the most commonly applied CAM therapies for nausea and vomiting among pediatric oncology patients are acupuncture [9] [12], acupressure [10] [11], hypnotherapy [13] [14], aromatherapy [15] [16], and creative arts or psychologic therapy [7] [17].

Today's holistic models of care prioritize improving "quality of life." This is particularly relevant for pediatric patients, whose day-to-day experiences become tainted and impacted by other health problems. Therefore, it is imperative to examine how complementary or alternate therapies can reduce these negative effects. It is essential to seek out and utilize research on approaches that go beyond standard drug therapy, which provides beneficial clinical outcomes [6] [7] [8] [2].

2. Methods

The search for primary studies was conducted in the PubMed database (which includes MEDLINE) and the SCOPUS database. The scoping review included both qualitative and quantitative studies. Articles were published either in Greek or English, within the past 20 years (2005–2025). Only studies involving humans were included. The review was conducted on an international level. The process of searching, selecting, and presenting articles followed the PRISMA-ScR methodology. The Inclusion criteria were a) children, adolescents, and young adults up to 21 years of age undergoing chemotherapy, b) children and adolescents who had undergone chemotherapy, regardless of the type of pediatric cancer (confirmed by histological examination) and regardless of the chemotherapeutic agent used and c) presence of symptoms of nausea or vomiting. On the other hand, the exclusion criteria were a) adults (persons over 21 years of age), c) reviews, meta-analyses, and case studies and d) duplicate articles.

Research into the database was focused on five specific classes of complementary and alternative therapies for nausea and vomiting. Keyword groupings applicable for each category of therapy were a) Acupressure: acupressure, acupressure bands; b) Acupuncture: acupuncture, laser acupuncture, auricular; c) Hypnotherapy: hypnosis, hypnotherapy, relax, relaxation; d) Aromatherapy: aromatherapy; and e) Music Therapy: music therapy, art therapy. Keywords for research purposes included chemo*, cancer, nausea, vomiting, and child*, and pediatric. These were searched individually and, when appropriate, combined with Boolean operators AND and OR.

Table 1 The research strategy and the articles retrieved

Acupuncture: Search in *PubMed* using: (acupuncture OR "laser acupuncture" OR "auricular acupuncture") AND (chemo* OR cancer) AND (nausea OR vomiting) AND (child* OR pediatric) Total retrieved: 14 studies Rejected: 4 systematic reviews, 1 scoping review, 2 irrelevant studies, 1 study with an age range of 8–32 years, and 1 overlapping with the acupressure search. 1 article was rejected after the full text was read. Final included: 4 studies. *Scopus*: 30 studies retrieved Rejected: 7 considered relevant after screening 2 related to acupressure, 5 were duplicates from PubMed Final included: 0 additional, same 5 articles as in PubMed (one article was rejected after the full text read). Total: 4 studies	**Acupressure**: Search in *PubMed* using: (acupressure OR "acupressure bands") AND (chemo* OR cancer) AND (nausea OR vomiting) AND (child* OR pediatric) Total retrieved: 10 studies Rejected: 1 systematic review, 1 scoping review, 2 irrelevant studies, 1 with age range 8–32 years. 1 article could not be retrieved. Final included: 4 studies *Scopus*: 21 studies retrieved Rejected: 8 considered relevant after screening 1 protocol excluded. 1 article could not be retrieved. 5 duplicates with PubMed. Final included: 1 additional article Total: 5 studies
Aromatherapy: Search in *PubMed* using: aromatherapy AND (chemo* OR cancer) AND (nausea OR vomiting) AND (child* OR pediatric) Total retrieved: 4 studies Rejected: 2 systematic reviews Final included: 2 studies *Scopus*: 12 studies retrieved Rejected: 3 systematic reviews, 5 irrelevant studies, 1 adult-focused Final included: 3 articles, of which 2 were duplicates with PubMed Total: 3 studies	**Music Therapy**: Search in *PubMed* using: "music therapy" AND (chemo* OR cancer) AND (nausea OR vomiting) AND (child* OR pediatric) Total retrieved: 5 studies Rejected: 1 adult-focused, 2 irrelevant studies Final included: 2 studies *Scopus*: 9 studies retrieved Rejected: 4 irrelevant studies, 1 guideline, 1 adult-focused Final included: 3 articles, of which 2 were duplicates with PubMed

	Total: 3 studies
Hypnotherapy: Search in *PubMed* using: (hypno* OR relax*) AND (chemo* OR cancer) AND (nausea OR vomiting) AND (child* OR pediatric) Total retrieved: 23 studies All rejected based on title and abstract evaluation *Scopus*: Similar issue, with only systematic reviews or articles from 1975–1997 available. A supplementary search using: hypnosis AND (nausea OR vomiting) AND cancer AND child* retrieved 7 studies All rejected based on title and abstract screening One relevant study by Jacknow et al. (1994) was identified but excluded due to being outside the inclusion date range Total: 0 studies	

3. Results

The results gleaned from the scoping review, along with research methodology utilized, are presented in Table 1. The Prisma-ScR flowchart is shown in Figure 1. Studies comparing efficacy of acupressure in treatment of chemotherapy-induced nausea and vomiting in pediatric oncology patients report similar results. The consensus among most of the studies is that acupressure fails to demonstrate statistically significant improvements in the severity of nausea and emesis. However, all the studies assert that acupressure is a non-pharmacological modality that can be performed through various techniques—including manual pressures using fingers, specialized appliances, or devices like wristbands—despite emphasizing its good tolerability and acceptability to patients. The adverse effects reported were minimum, and the most common concern observed among them is an unusually strong sensation of pressure felt during treatment administered to patients. The studies finally support further research through larger populations and more rigorous study schemes to prove these initial results and gain an ample picture of efficacy of this adjunctive treatment [9] [10] [11] [18] [19].

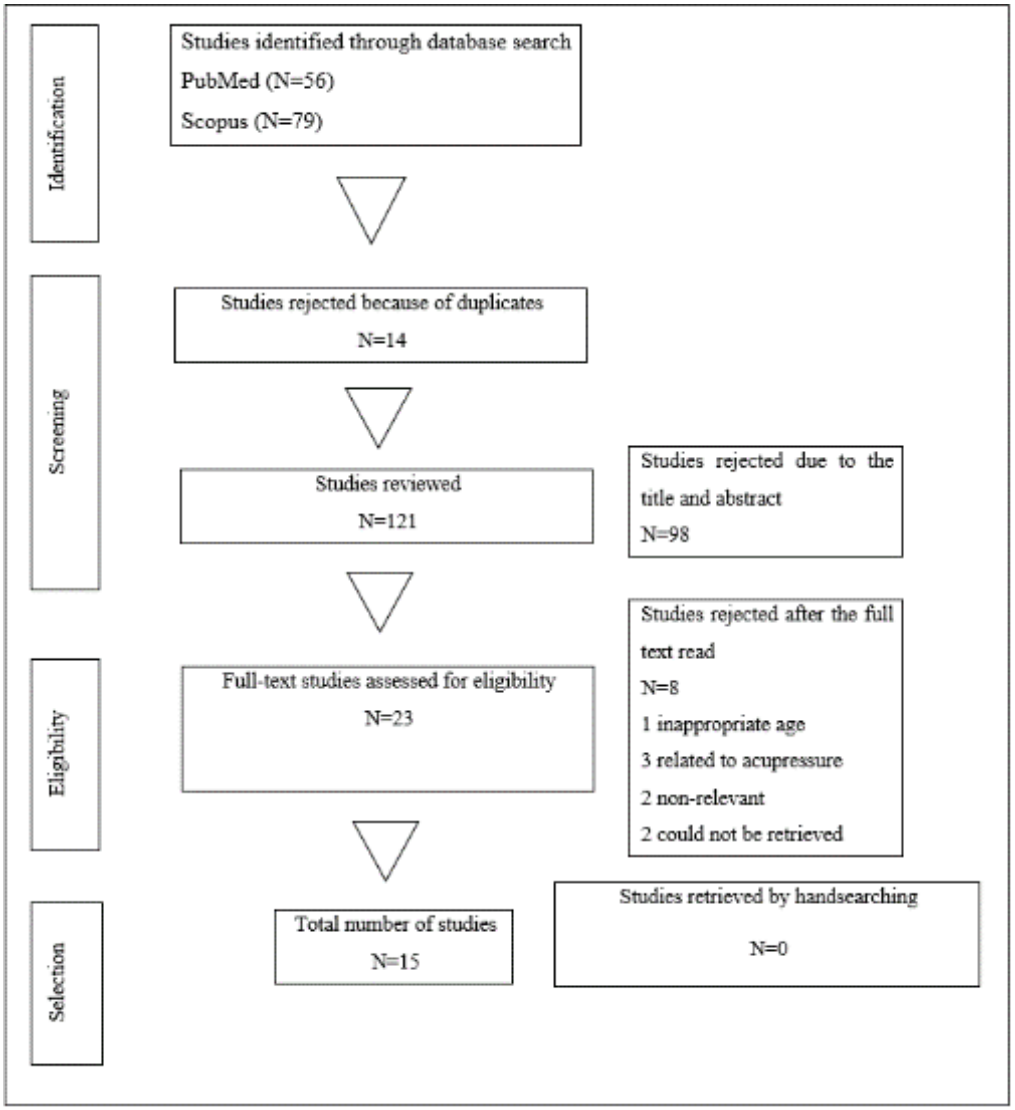


Figure 1 PRISMA-ScR flow chart for identifying relevant articles related to the role of complementary and alternative treatments for managing chemotherapy-induced nausea and vomiting in pediatric cancer patients

The results based on research focused on evaluating the effectiveness of acupuncture in reducing Chemotherapy-Induced Nausea and Vomiting (CINV) show a few common themes. First, all research pointed to these interventions being effective in reducing the frequency and severity of both nausea and vomiting compared to traditional care practices. Moreover, the adverse events noted were largely mild, and pain during needle insertion was most commonly reported.

Table 2 Characteristics of the studies fulfilled the insertion criteria of the scoping review

Authors-scientific journal	Population sample-tools	Objective-type of research study	Results	Conclusions
Reindl et.al, 2005, Supportive Care in Cancer [12]	Population Sample: Children aged 6–18 years (n=11) with solid tumors receiving highly emetogenic chemotherapy. Tools: Assessment through personal diaries and questionnaires.	Aim: Evaluation of the effectiveness and acceptance of acupuncture as a supportive antiemetic approach. Type of research study: Randomized multicenter crossover study	Patients experienced higher levels of alertness. It reduced the need for additional antiemetic medication during chemotherapy and decreased CINV in terms of the number of vomiting episodes.	Acupuncture was well accepted and considered safe, as only a few participants experienced mild pain at the needle insertion site. However, due to the small sample size, no reliable statistical conclusions can be drawn.
Jones et al., 2008, Journal of Society for Integration Oncology [11]	Population Sample: Participants aged 5–19 years (n=21), of whom n=18 completed the study, were diagnosed with cancer and were receiving at least three cycles of highly emetogenic chemotherapy. Tools: Marrow Questionnaire pre-and post-chemotherapy	Aim: To evaluate the feasibility, safety, and effectiveness of acupressure in the prevention of chemotherapy-induced nausea and vomiting (CINV). Type of research study: Prospective, randomized, crossover trial	There was no statistically significant difference between the three groups in terms of nausea severity and the number of vomiting episodes. No side effects related to the use of the patches were reported, and their use was deemed safe.	Although one-third of the patients reported better-than-expected nausea prevention following the acupressure session, there was no significant difference in nausea or vomiting among the three groups. Nevertheless, patients expressed a liking for the intervention, and many continued wearing the seeds even after the end of the study.
Gottschling et.al, 2008, Klinische Pädiatrie [23]	Population Sample: Children aged 6–18 years (n=23) with solid tumors receiving highly emetogenic chemotherapy. Tools: Assessment through patients' self-reports.	Aim: to examine if acupuncture can serve as a complementary or standalone therapy for the management of chemotherapy-induced nausea and vomiting (CINV), and how it may contribute to a reduction in the use of antiemetic medications. Type of research study: Randomized multicenter crossover pilot trial.	The use of antiemetics, as well as the incidence and number of vomiting episodes, was lower in the acupuncture group compared to the control group. Participant acceptance was high, and only four individuals reported mild pain at the acupuncture site.	Participant acceptance of acupuncture was high, and the need for antiemetic medication was significantly lower during sessions in which acupuncture was administered. Additionally, fewer episodes of vomiting were observed.

Ndao D. et al., 2012, Psycho-Oncology [16]	Population Sample: Children aged 5–17 years (n=37) undergoing bone marrow transplantation. Tools: VAS, STAI, STAIC, CBSS, EASI Scales	Aim: 1. To study the effect of bergamot essential oil inhalation on the anxiety of children and their parents. 2. To evaluate its effect on nausea and pain. 3. To investigate whether parental attitudes influence the child regarding points 1 and 2. Type of research study: Double blinded randomized trial	No statistically significant difference was found between the groups. Aromatherapy did not have a positive effect. On the contrary, nausea was more severe in the control group. Higher levels of anxiety and nausea were observed one hour after infusion compared to the control group.	The study indicates that further research with larger samples and more rigorous designs is needed to confirm these preliminary findings and fully understand the effectiveness or lack thereof of this complementary therapy.
Yeh et al., 2012, The journal of alternative and complementary medicine [9]	Population Sample: Children 5-18 years of age with diagnosis of cancer (n=10) who completed one chemotherapy circle (moderate or severe) at least Tools: Marrow Questionnaire and Assessment through patients' self-reports.	Aim: 1. Assessment of whether it is appropriate to conduct a larger-scale study on the effectiveness of auricular acupressure in CINV, 2.Evaluation of the feasibility of applying auricular acupressure. 3. Auricular acupressure or placebo. Type of research study: Crossover randomized design study	1. Regarding the feasibility assessment of the study based on the sample, only 10 participants remained from the initial 22. 2. The intervention was well tolerated by both the children and their parents. The seeds remained in place on the ear in 88% of the participants. 3. Group A reported more nausea than Group B and Group C; however, there was no statistically significant difference between the three groups.	The preliminary findings indicated that auricular acupressure was acceptable to both children and their parents for the prevention and treatment of CINV. The small number of participants may limit the statistical power of the results. Nevertheless, auricular acupressure appeared to be well accepted and showed a clinically relevant reduction in CINV.
Madden et al, 2015, Journal of pediatric Oncology Nursing [17]	Population Sample: Children aged 2–18 years with brain cancer (n=16), receiving moderate to high-intensity chemotherapy. Tools: PedsQL 4.0	Aim: The impact of creative arts on the quality of life of children undergoing chemotherapy. Type of research study: Mixed methods pilot study	A statistically significant improvement in nausea was observed in the children who received the intervention. Nausea decreased in the intervention group. Participation in creative activities may reduce pain and nausea, improve mood, and provide emotional support.	Creative Arts Therapy (CAT) appears to be a safe and effective approach for improving the quality of life of children with brain tumors undergoing chemotherapy. The response was very positive, with requests for longer sessions with the therapist, and even after the study ended, funding was provided to continue the intervention due to high demand.

Chokshi et al, 2017, Wiley Pediatric Blood Cancer [22]	Population Sample: Children 2-18 years old with pediatric cancer (n=90) (59% with leukemia or lymphoma) Tools: MSAS Assessment for a 6-month period	Aim: The acceptance of acupuncture by children and adolescents. Type of research study: Prospective non-randomized study.	A positive effect of acupuncture primarily on pain, followed by nausea and vomiting. No adverse events were observed, and it was deemed safe.	It appears to be a safe and acceptable complementary therapy for symptom management in children and adolescents with cancer. Its acceptance is influenced by factors such as age, ethnicity, background, and the presence of specific symptoms.
Dupuis et al., 2018, Cancer, American Cancer Society [10]	Population Sample: Children aged 4–18 years (n=187) with cancer, undergoing treatment with highly emetogenic chemotherapy. Tools: PeNAT Questionnaire	Aim: To evaluate the effectiveness of acupressure using Sea-Band elastic wristbands in the prevention and management of acute and delayed chemotherapy-induced nausea and vomiting (CINV). Type of research study: Multicenter, Single-blinded, randomized controlled trial	No apparent positive effect was observed in either Group A or Group B regarding acute and delayed CINV. The acupressure wristbands did not reduce the severity of nausea or vomiting in either the acute or the delayed phase.	The Sea-Band wristbands appeared to be safe and well tolerated, as no adverse effects were reported; however, they did not demonstrate statistically significant effects in reducing symptoms.
Evans et al., 2018, Journal of pediatric Oncology Nursing [15]	Population Sample: Children aged 8–21 years (n=49) with any type of cancer undergoing moderate-intensity chemotherapy. Tools: PeNAT pre- and post-chemotherapy.	Aim: Investigation of the efficacy of ginger inhalation before and after chemotherapy for the relief of chemotherapy-induced nausea and vomiting (CINV). Type of research study: Double blinded randomized study.	No statistically significant difference was observed among the three groups, although a clinical difference was noted. 67% reported improvement, 5% worsening, and 28% no change. Aromatherapy was well tolerated without side effects.	Inhalation of ginger aromatherapy was found to be safe and well tolerated but did not have a statistically significant effect on reducing CINV in children with cancer. Although patients reported subjective improvement, objective data do not support the effectiveness of ginger aromatherapy as a complementary therapy.
Cristiana da Silva Varejao, Do Espirito Santo, 2019, Journal of pediatric Oncology Nursing [20]	Population Sample: Children and adolescents aged 6–17 years (n=18) with solid tumors undergoing treatment with highly emetogenic chemotherapy.	Aim: Evaluation of the effectiveness of electroacupuncture for the relief of chemotherapy-induced nausea and vomiting (CINV).	A difference was observed between the two groups, as Group A showed reduced nausea and vomiting on days 2–3 after chemotherapy and significant relief from nausea within 5 days compared to Group B.	It appears to be safe and effective complementary therapy for reducing CINV.

	Tools: Assessment via diary by parents and patients.	Type of research study: Single-Blind Randomized Clinical Trial		
Yuliar et al., 2019, Jurnal Keperawatan Padjadjaran [19]	Population Sample: Children aged 6–12 years (n=30) with cancer (63.33% solid tumors) receiving highly emetogenic chemotherapy. Tools: PeNAT Questionnaire and 5 researchers	Aim: Investigation of the effect of acupressure at the P6 point on chemotherapy-induced nausea and vomiting (CINV). Type of research study: Single blinded experimental study	There was no significant difference in the mean nausea score. However, there was a tendency for increased nausea and vomiting in the control group, whereas the intervention group did not show an increase in nausea and vomiting scores. In contrast, the intervention appeared to prolong the symptom-free intervals.	Although there was no statistically significant difference, a clinically meaningful improvement in CINV was observed in the intervention group.
Essawy et al., 2021, Elsevier, Complementary therapies in Medicine [18]	Population Sample: Children 7-15 years of age (n=90) with Acute Lymphoblastic Leukemia under chemotherapy Tools: Two questionnaires created from the researchers and the VAS scale.	Aim: Determination of the effect of acupressure versus ginger use on CINV in children with leukemia. Type of research study: Quasi-experimental study.	Acupressure provided better relief from nausea in the 13–15-year-old age group. Sixty-nine percent of children aged 7–12 years did not experience nausea compared to 50% of children aged 13–15 years. Both acupressure and ginger had a greater effect on relieving nausea in girls than in boys. Ginger was more effective overall, although acupressure appeared to have some positive effect, especially in adolescents, without causing any side effects.	The inability of acupressure to exert a significant positive effect compared to ginger aromatherapy was demonstrated. No statistically significant result was found.
Fedhila et al., 2023, Children [25]	Population Sample: Children 2-14 years old (n=20) with cancer of childhood. Tools: PedsQL Module Cancer French version 3.0 completed from parents or patients.	Aim: To evaluate the effect of music therapy on the quality of life of pediatric cancer patients and to identify its impact on the cardiopulmonary system. Type of research study: Experimental study.	Improvement in nausea was observed. The median value of the total questionnaire score increased from 57 to 72 ($p < 0.001$) noting a significant reduction in pain ($p = 0.02$), nausea ($p = 0.009$), and anxiety related to medical procedures ($p = 0.009$) and worry about the future ($p = 0.005$). A significant improvement was noted	The study showed a positive impact of Music Therapy (MT) on quality of life in children affected by cancer. It also reduced anxiety and stress symptoms by lowering the heart and respiratory rates. These results suggest the importance of integrating music therapy into daily practice in pediatric oncology.

			in the total scores for both sexes. Additionally, patients with metastatic cancer also showed an important reduction.	
Yagmur Sanci et al., 2023, Elsevier, Journal of Pediatric Nursing [24]	Population Sample: Children 2-12 years old (n=90) who received at least one chemotherapy Tools: PedsQL 3.0	Aim: Investigation of the potential effectiveness of peppermint and lemon aromatherapy in managing chemotherapy-induced nausea and vomiting (CINV). Type of research study: Single-blind randomized trial.	Both the quality of life related to nausea and vomiting and the use of antiemetics were better in the intervention group compared to the placebo group, which received standard antiemetic treatment.	Aromatherapy was found to affect heart rate and respiratory rate by reducing both, thereby improving patients' quality of life. The use of aromatherapy may potentially allow for a reduction in antiemetic medication dosages.
Giordano et al., 2024, Journal of pain and symptom Management [26]	Population Sample: Adolescents 12-14 years of age (n=10) under chemotherapy Tools: PedsQL.	Aim: 1. To examine the feasibility of music therapy in addressing the gap in managing nausea and vomiting. 2. To investigate the effects of music therapy on patients' quality of life. Type of research study: Mixed methods study	A reduction in nausea, vomiting, and anxiety was observed, along with an increase in quality of life based on questionnaire reports.	Music therapy proved to be effective in reducing chemotherapy-related symptoms such as nausea, vomiting, and anxiety, as well as in improving quality of life and cardiopulmonary function in adolescents. The intervention was well tolerated and accepted by participants, indicating its potential for integration into clinical practice to support adolescents undergoing chemotherapy.

Moreover, these interventions were met with considerable acceptability among pediatric subjects and guardians, depicting a high degree of tolerance for treatment. Nevertheless, more research using larger populations and more stringent methodological techniques is needed to warrant these findings and to achieve a balanced picture regarding the efficacy of acupuncture [12] [20] [22] [23].

The results of research into aromatherapy reveal that there is no significant enhancement in scores relating to nausea and vomiting. Nevertheless, aromatherapy appears to play a role in the stabilization of CINV levels [15] [16] [24].

Finally, the overall findings from studies on music therapy and its impact on CINV are considered within a broader framework of patient quality of life, taking into account factors such as anxiety, stress, respiratory and cardiovascular function. Results showed that the intervention was well accepted by parents, children, and healthcare staff, and that it had a positive impact on patients—mainly due to the feelings of calmness, peace, and relaxation it generated [17] [25] [26].

Table 2. Summarizes the results of that scoping review

4. Discussion

This scoping review assesses the effectiveness of different treatment methods for reducing nausea and vomiting in oncology patients being given chemotherapy. According to the findings, interventions like acupuncture can effectively reduce the severity of such symptoms [9] [10] [11] [18] [19]. Out of various considerably more encouraging alternative therapies, aromatherapy is shown to have considerable levels of acceptability [15] [17] like music therapy [15] [16] [24]. These findings highlight the need for appropriate intervention and proper implementation.

The use of progressively larger and heterogenous samples can produce more reliable conclusions about the efficiency of these interventions on different populations of children and youth. Further, it is essential to improve our understanding of mechanisms by which alternative therapeutics exert their function so that we can gain a better perception of their effects and create more specific interventions. It is also essential to include longitudinal follow-up studies on patients to assess both maintenance of treatment effects and risk for side effects. Combining alternative therapies with standard antiemetic regimens has the potential to exhibit marked efficacy. This serves to support the need for study of how various therapeutic modalities can act synergistically with each other to enhance outcome [27] [28].

Evaluating combined therapies requires the implementation of innovative research methods and study designs. Clinical trials could examine the integration of CAM therapies with standard interventions within a comprehensive treatment plan. This approach could provide evidence on the effectiveness of alternative therapies and build healthcare professionals' trust in their use. Integrating alternative therapies into treatment protocols is a new perspective that may lead to better patient management. Collaboration between oncologists and alternative therapy practitioners could result in a more holistic treatment plan that considers the individual needs of each child. Effective communication and cooperation will allow the incorporation of these alternative approaches into routine care [27]. Research into the safety and efficacy of these interventions could enhance their clinical application and acceptance. In-depth study of safety and potential interactions between alternative and conventional therapies is critical [29].

Assessment of the cost-effectiveness of these alternate therapies is also essential for understanding their economic viability and accessibility. Studies aimed at conducting an economic evaluation of new interventions can give valuable insights for health planners and decision-makers. Providing appropriate measures for both costs and results, appropriate strategies can be developed to make alternate therapies economically sustainable and worthwhile, making them increasingly relevant and beneficial for patients and relatives [30].

Limitations of the study

The inherent clinical heterogeneity within studies covered within this overview—across chemotherapeutic regimens and treatment protocols, malignancy type, demographic subgroups, cohorts by age, and other factors—could diminish the strength of findings from this analysis. In addition, other limitations inherent to the current overview include the methods applied for study identification, together with other limitations regarding publication and language, potentially affecting applicability of findings.

5. Conclusion

This study examined the applications of complementary therapies for reducing nausea and vomiting in pediatric patients with cancer who were undergoing chemotherapy. An extensive overview of these multifaceted approaches, including acupuncture, acupressure, aromatherapy, and music therapy, provided a rich understanding of means of helping these young patients cope with the hardships of cancer chemotherapy. The findings point to complementary therapies having great potential for control of nausea and vomiting brought on by chemotherapy and as inspiring alternative interventions. Their integration with conventional antiemetic drugs has the potential to yield significant benefits. An improved appraisal of these therapies requires giving due importance to innovative study methods and conducting clinical trials. Utilization of study findings within clinical environments, creation of new treatment models, and education of health professionals on how to employ these complementary therapies are essential for enhancing pediatric oncology patient care. Further studies are needed for investigating combined therapy efficacy and developing novel tools and protocols unifying technology and complementary practices. Financing research studies and investment in ongoing education of health care professionals on complementary therapies are essential for optimizing alternative therapy options for pediatric oncology.

Additionally, it is crucial to conduct more targeted studies with larger sample sizes, specifically tailored to different types of cancer and the potential impact of CAM therapies. Research groups should adopt more focused and detailed designs to ensure greater validity and reliability of results. Finally, the importance of a holistic approach in the care of children with cancer was highlighted through the recognition of the significance of the patients' psychological, social, and emotional well-being. Alternative therapies, such as art and creative therapies, can provide children with a valuable outlet for expressing their emotions and enhance their sense of participation in the healing process, thereby fostering resilience and hope.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

This review does not include any studies involving animals.

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