



The Use of Complementary and Alternative Medicine among Cancerous Children: A Survey at Ali Asghar Children's Hospital

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Abstract

Survival rates for pediatric cancer patients have undergone rapid growth due to advancements in anticancer treatments. Despite these developments, cancer survivors continue to experience a range of persistent symptoms, including pain, fatigue, anxiety, depression, insomnia, and nausea/vomiting. Consequently, the use of complementary therapies has increased among this population as a means of alleviating these symptoms. This cross-sectional study involved 124 parents of children diagnosed with cancer and referred to Aliasghar Children's Hospital in Tehran, selected via census sampling from January 2018 to January 2019. Data were collected using a validated and reliable questionnaire. Statistical analyses, including chi-square tests, Fisher's exact test, and independent samples t-tests, were conducted to explore relationships between variables. A p value of < 0.05 was considered statistically significant, and data analysis was performed using SPSS version 25. Cronbach's alpha coefficient of this questionnaire was 0.85. Prior to diagnosis, 51.6% of patients reported using complementary medicine, which increased significantly to 77.4% after diagnosis. Herbal medicine emerged as the most commonly used form of complementary therapy. The primary motivation for using therapies was to manage chemotherapy side effects, reported by 83.3% of patients. The predominant barrier to the use of complementary medicine was insufficient knowledge regarding its benefits and risks. Notably, only one-third of mothers disclosed their children's use of integrative medicine to their physicians. The high prevalence of complementary medicine use among pediatric oncology patients underscores the necessity for healthcare providers to routinely inquire about such practices and educate patients about potential drug interactions. Additionally, the tendency for patients to conceal their use of complementary therapies from their healthcare providers warrants further attention and proactive engagement from clinicians.

Keywords: Alternative medicine; Cancer; Children; Complementary medicine; Pediatric; Neoplasm

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Introduction

The World Health Organization (WHO) defines complementary and alternative medicine (CAM) as "a broad set of health care practices that are not part of the country's traditional health-care structure and are not integrated into the dominant health care system" [1]. In 2019, there were approximately 291.3 thousand new cases of pediatric cancer and 98.8 thousand related deaths worldwide [2]. Cancer treatment in children often induces a range of symptoms, including emotional distress, pain, nausea and vomiting, fatigue, mucositis and loss of appetite, presenting significant challenges for both the child and the parents [3]. To alleviate these adverse effects, 31-84% of parents choose CAM as a therapeutic intervention for their children, with usage varying by region [4]. The most commonly utilized types of CAM include herbal remedies, dietary modifications, and faith healing [5]. Additional modalities encompass massage therapy, Shiatsu massage, mineral therapies, acupuncture, relaxation techniques, and music therapy, among others. Furthermore, some studies recognize "prayer" as a legitimate form of CAM for cancer patients.

Although several surveys have identified interaction risks between pediatric oncology treatments and CAM [6-9], fewer than half of pediatric oncologists routinely inquire about CAM usage among their patients, according to one study. Nevertheless, 99% of these healthcare providers deemed it important to be aware of the specific CAM methods their patients practiced [10]. Conversely, the disclosure of CAM use by parents of pediatric oncology patients to their oncologists has been reported to range from 34% to 78% across various studies [11-14]. One reason for this non-disclosure is that parents do not perceive it as essential. Additionally, many fear potential negative reactions from their oncologists [15]. However, given the possibility of adverse interactions with conventional cancer treatment, it is imperative for pediatric oncologists to be informed about their patients' use of CAM [16]. Despite this necessity, it has been observed that parents of these patients frequently seek CAM-related information from family or friends rather than from their healthcare providers [12,13,17,18].

In Iran, while CAM has been utilized by patients to address a range of conditions—including diabetes mellitus, hyperlipidemia and obesity, obstetric indications, neuropsychological disorders, rheumatologic diseases, cutaneous lesions, and gastrointestinal symptoms [19], the availability and access to CAM research and its application within the pediatric oncology patient population remains limited. Studies underscore the importance of communication between parents and oncologists concerning CAM usage, as this dialogue is essential for discussing potential interaction risks.

Determining the prevalence of CAM use in children with cancer is crucial. When prevalence rates are high, it becomes essential for healthcare providers to be aware of this issue and to actively inquire about CAM usage. Moreover, in light of potential adverse effects, clinicians should consider the possibility of drug interactions. Furthermore, understanding the prevalence of CAM use can enable the healthcare system to better inform the general population about associated risks. Thus, the aim of the present cross-sectional study is to investigate CAM practices and the communication dynamics between parents and oncologists of pediatric and oncology patients at Ali Asghar Children's Hospital in Tehran, Iran.

Methods

Ethics approval and consent to participate

All procedures involving human participants were conducted in accordance with the ethical standards set forth by the Research Ethics Committee of Iran University of Medical Sciences (IR.IUMS.FMD.REC.1397.072) and adhered to the principles of the 1964 Helsinki Declaration and its subsequent amendments.

Study design

We conducted a retrospective quantitative cross-sectional survey of pediatric oncology patients at Ali Asghar Children's Hospital in Tehran. Parents of these patients were invited to complete a questionnaire. This questionnaire aimed to gather information regarding the reasons for CAM use among users and the reasons for reluctance toward CAM therapy among non-users.

Setting and respondents

The study included all patients aged 0–18 years at the time of cancer diagnosis who were being or had been treated at Ali Asghar Children's Hospital, between 2018 and 2019 (n=124). A total of 124 participants completed the questionnaire in person (face-to-face). In January 2018, parents received an invitation containing study information, a personal access code for the questionnaire, and an informed consent form to sign and return. For ethical reasons, parents of deceased patients were not contacted, as recalling a deceased child is a painful experience and was deemed inappropriate for this study.

Additionally, parents of patients who did not speak Persian and those living outside Iran were excluded to avoid biasing results on the resident population. Patients who were unwilling to complete the questionnaire for any reason were also excluded from the study. The response rate was 81.6% (124/152).

Variables

The survey included a questionnaire designed to assess

the use CAM among children diagnosed with cancer. The questions addressed the use of CAM before and after the cancer diagnosis, the sources of information regarding CAM, and the communication with parents and oncologists on this topic. The questionnaires were completed by the parents of the children, focusing on various types of complementary medicine, including herbal medicine, acupuncture, massage therapy, and homeopathy.

Moreover, the questionnaire collected demographic data for the patients, including age, age at diagnosis, gender, type of cancer, recurrence status, duration of treatment, and parents' educational background. We also inquired about the reasons for CAM use among users and the reasons for reluctance toward CAM therapy among non-users.

To ensure the validity of the study, the questionnaire was reviewed by ten hematologists and pediatric oncologists, whose feedback was incorporated into the final version. Furthermore, the questionnaire was initially administered to 20 patients, and any identified issues were addressed and corrected. The study adheres to ethical standards, and the questionnaire has received an appropriate code of ethics.

Data sources

Respondents were divided into two groups based on CAM use before and after the cancer diagnosis: "CAM users" and "CAM non-users." A respondent was classified as a CAM user if they indicated usage during at least one-time interval in response to the question, "For each CAM used, please indicate when your child used it."

Statistical analysis

Standard descriptive analyses were conducted to summarize socio-demographic variables, patient characteristics, and questionnaire responses. Frequencies and percentages were calculated for categorical variables and means and standard deviations for continuous variables. Comparisons between CAM users and non-users were performed using chi-square test or Fisher's exact for categorical variables and Student's t-test for continuous variables. A p value of less than 0.05 was considered statistically significant. Data analysis was carried out using Statistical Package for Social Science (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp).

Results

This study assessed children diagnosed with various types of cancer who were referred to a pediatric referral hospital from different cities. Among the 124 children, 48 (38.7%) were residents of Tehran; while the remaining children were referred from other cities,

including Ahvaz (9.7%), Kerman (6.7%), and Tabriz (6.5%). Of the participants, 76 (61.3%) were male and 48 (38.7%) were female. In terms of cancer distribution, 88 children (71.0%) suffered from leukemia; while 56 patients (29.0%) were diagnosed with other types of malignancies. Notably, 12 children (9.7%) experienced recurrence of their disease. The educational levels of the mothers were also examined: 36 (29.0%) held an academic degree, 56 (45.2%) had a diploma, and 32 (25.8%) were undergraduates.

Further analysis revealed that 51.6% of these children had used CAM prior to their cancer diagnosis, which significantly increased to 77.4% following disease progression ($p = 0.002$). Interestingly, all families reported using only traditional Persian Medicine (traditional Iranian medicine), with no instances of other integrative practices such as Chinese medicine, acupuncture, or homeopathy. The reasons for CAM use and non-use are summarized in table 1. The most frequently cited reason for using CAM was to alleviate the side effects of chemotherapy (83.3%); while the primary reason for not using CAM was a lack of knowledge regarding its benefits or disadvantages. Importantly, none of the mothers reported experiencing any side effects related to CAM. Furthermore, only 38 out of the 96 mothers (37.5%) who used CAM disclosed this information to their oncologists.

In this study, we aimed to identify the most significant sources of information regarding CAM among mothers of children undergoing chemotherapy. The study population comprised 52 mothers (56.5%), with family members, particularly their own mothers, identified as the primary source of information on complementary medicine. In 28 instances (30.4%), the parents of other patients in the same ward served as a key source of information. Additionally, in 16 cases (17.4%), mothers reported receiving information from physicians other than their oncologists.

The mean duration of chemotherapy among the study participants was 10.87 ± 8.17 months. We explored the relationship between chemotherapy duration and the propensity to utilize integrative medicine. Our results indicated that the average duration of chemotherapy for participants using alternative medicine (CAM) was 10.62 ± 6.28 months, compared to 11.71 ± 13.02 months, for those not using CAM, with no statistically significant difference observed ($p = 0.223$).

Furthermore, we assessed the correlation between maternal education levels and the likelihood of utilizing CAM. Our findings demonstrated a positive association, with higher maternal education correlating with an increased inclination to use CAM ($p = 0.009$). We further compared the CAM usage rates between families residing in Tehran and those in other cities. Notably, CAM usage was significantly higher among fam-

Table 1. Reasons for using or not using integrative medicine by mothers

Reasons for using integrative medicine	96 patients
Control of chemotherapy side effects	80 (83.3)
Previous positive response	60 (62.5)
Lower adverse effects of integrative medicine	52 (54.2)
Failure of current therapies	20 (20.8)
Reasons for not using integrative medicine	28 patients
Lack of information	24 (85.7)
Fear of drug interactions	16 (57.1)
Fear of adverse effects	12 (42.9)
Do not believe in this type of medicine	0 (0.0)

ilies living outside Tehran (89.5%) compared to those in the capital (58.3%), with a statistically significant difference ($p = 0.011$).

Moreover, we analyzed CAM usage among children who had undergone chemotherapy and experienced disease

recurrence versus those without recurrence. All 12 children who experienced disease recurrence reported using CAM; whereas 75.0% of children without recurrence utilized CAM, indicating a statistically significant difference between these two groups ($p = 0.032$) (Table 2).

Table 2. Characteristics based on the use or non-use of integrative medicine

Item	Percent of using integrative medicine (%)	P value
Maternal education level		
Undergraduate	16/32 (50.0)	0.009
Diploma	48/56 (85.7)	
Academic degree	32/36 (88.9)	0.011
Residency		
Tehran	28/48 (58.3)	0.032
Outside Tehran	62/70 (88.5)	
Disease recurrence		
Positive	12/12 (100)	
Negative	84/112 (75.0)	

Discussion

The utilization of CAM among pediatric oncology patients has been the subject of several studies, revealing varying prevalence rates. For instance, a study in Turkey reported that 73.3% of participants utilized CAM (11); while a similar figure of 80% was observed in Indonesia [20]. In Switzerland, 53% of parents indicated that they employed CAM for their children with cancer [13]. In the present study, the prevalence of CAM use was found to align closely with the rates observed in Turkey and Indonesia; while surpassing those reported in Switzerland. Conversely, our findings indicated a lower prevalence compared to a comparable study conducted among pediatric oncology patients in Yazd, Iran [21].

Approximately half of the respondents in our study reported using CAM prior to their child's cancer diagnosis. This observation is consistent with previous research that has explored CAM utilization during this pre-diagnosis period [11,22,23]. Notably, several studies have also documented that CAM is frequently employed by pediatric oncology patients before their formal diagnosis.

All patients who utilized CAM prior to their child's cancer diagnosis continued its use during oncology treatment. This finding mirrors results reported by the Luti study in Switzerland [22]. The sustained use of CAM during treatment may suggest that patients and their families perceive CAM as a complementary therapeutic option that can be integrated with conventional oncology treatments. It is crucial for health-care providers to remain informed about CAM usage among pediatric oncology patients, as this knowledge can significantly influence treatment planning and overall patient care.

In this study, we investigated the relationship between various factors and the utilization of CAM. Our findings revealed a significant association between maternal educational level and increased CAM use, which contrasts with results from other studies in the literature [24]. Additionally, maternal age emerged as a significant factor influencing CAM utilization; however, this correlation was not observed in other similar surveys. Another noteworthy variable affecting CAM was the relapse status of patients, with our study indicating that those who experienced a relapse

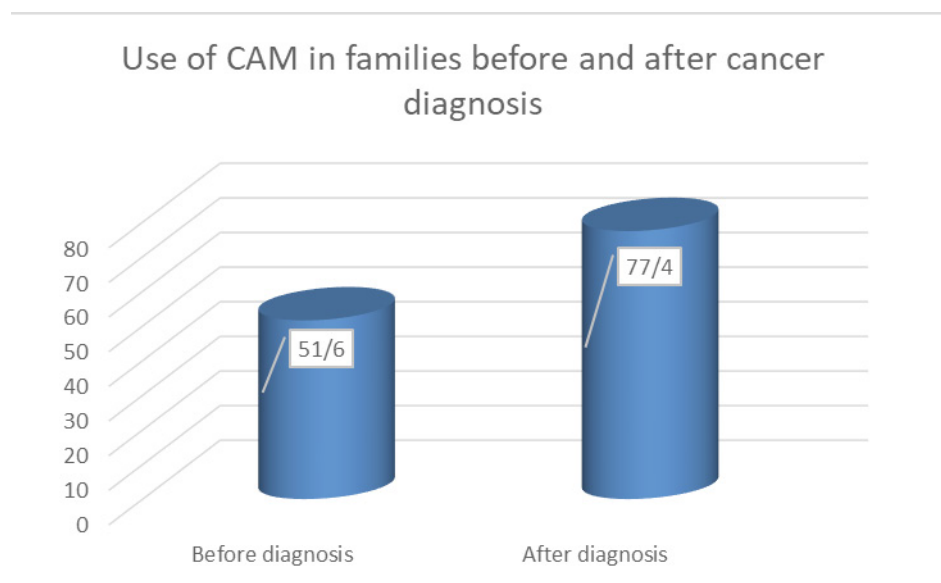


Figure 1. Percentage of complementary and alternative medicine usage in families before and after cancer diagnosis

were more likely to employ CAM practices. This aspect has not been previously assessed in other comparable studies.

Regarding the modalities of CAM, our study identified herbal medicine as the sole type utilized by patients. We did not report on other CAM modalities, such as traditional Chinese medicine, acupuncture, or homeopathy. This limitation may be attributed to the lower availability of these practices, particularly for children, as well as their relatively higher costs. Furthermore, these modalities are generally not covered by insurance in Iran.

An important consideration in the use of CAM for childhood cancer is the variety of reasons cited in the literature. According to a systematic review conducted by Myers et al., the most commonly reported motivations for using CAM include the desire to explore all available treatment options for their child, the need to manage cancer-related symptoms, and the intention to enhance the child's immune system [17]. Similarly, a survey conducted among children with cancer in Switzerland found that the primary reason for using CAM was to improve the patient's overall condition. Interestingly, a lack of information was the most frequently cited reason for not utilizing CAM [17].

Mao et al. identified a variety of reasons for using CAM. The most prevalent reason reported was for wellness (28.9%), followed by enhancing energy (11.3%), improving immune function (11.5%), addressing pain-related symptoms (6.7%), alleviating psychological distress (2.1%), and managing insomnia (1.1%) [19].

Considering the diverse motivations for using CAM in childhood cancer is crucial, as these factors can significantly influence treatment decisions and patient outcomes. Further research is needed to gain a deeper understanding of the underlying motivations and to evaluate the potential benefits or harms associated with CAM use in this population.

Additionally, Yeon found that religious beliefs were the most predominant reason for the use of integrative medicine, accounting for 68% of responses. Belief in the efficacy of integrative medicine ranked second. The study also highlighted that parents' personal experiences or knowledge of successful cases through acquaintances or mass media were other significant factors influencing the use of integrative medicine [25]. Friedman et al. reported similar results, indicating that roughly two-thirds of parents did not articulate reasons for using complementary medicine. Among those who did provide reasons, faith in the healing powers of prayer and belief in specific therapies as adjuncts to conventional medicine were the most frequently cited. Other parents expressed dissatisfaction with conventional medical approaches, citing concerns about high costs and perceived low effectiveness in treatment and relaxation. Additionally, parents recognized the supplemental value of integrative medicine in alleviating pain and enhancing the quality of life for their children, even in cases where religious and cultural beliefs were not the primary motivations. Furthermore, some parents disillusioned with the outcomes of standard treatments turned to alternative traditional medicine [26].

In a survey conducted from January 2018 to January 2019 in the oncology section of Shahid Sadooghi Hospital, Yazd, Iran, 150 mothers of children with cancer participated, with 86.66% reporting the use of herbal products. The primary reason for employing CAM methods was to enhance their child's chances of recovery [21].

The most frequently consulted sources of information regarding CAM were friends and family, which aligns with findings from previous research [21,23,24]. This trend suggests that parents may be hesitant to discuss CAM options with pediatric oncologists, potentially due to concerns about inquiring about CAM use or facing opposition from physicians regarding its application.

Around one-third of CAM users reported their usage to their pediatric oncologists. This disclosure rate aligns with findings from similar surveys [13,21,23]. A significant factor contributing to parents' reluctance to disclose CAM use is their perception that physicians are often skeptical about the efficacy of these treatments.

Oncologists play a vital role in safeguarding the health of patients who may be using CAM. To effectively identify potential interaction risks and highlight possible benefits, it is essential for these frontline healthcare providers to engage in open discussions regarding CAM usage with their patients [27]. In cases where oncologists lack expertise in CAM, it is advisable to refer patients to qualified integrative medicine practitioners, as recommended by Ben-Arye et al. [28].

Research involving pediatric oncologists has indicated that certain CAM modalities, such as meditation and acupuncture, can significantly improve patients' quality of life. Conversely, other modalities, including dietary supplements and herbal remedies, may pose potential risks. Despite these insights, a systematic review did not identify any CAM interventions that could be endorsed as a curative options [29].

This study was conducted as an initial and basic study in a small number of patients and only in one hospital, which can cause some biases. We suggest that the next studies be conducted with a larger sample size and in a multi-centered manner to obtain generalizable and applicable results

Conclusion

In conclusion, approximately two-thirds of mothers reported using CAM for their children undergoing cancer treatment. It is important to acknowledge that this survey was conducted in a single academic hospital, which may limit the generalizability of the findings to other healthcare settings. The primary motivation for using CAM was its perceived effectiveness in managing chemotherapy side effects, while the predominant barrier to its use was a lack of awareness regarding its

benefits and potential risks.

Notably, only one-third of mothers disclosed their use of integrative medicine to their healthcare providers, underscoring the critical need for public education to enhance understanding of integrative medicine. Given the high prevalence of CAM use among oncologic patients, it is essential for physicians to proactively inquire about their patients' use of complementary therapies and to provide information regarding potential drug interactions.

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Conflict of Interests

The authors declare that there are no competing interests to disclose.

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