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The Use of Complementary and Alternative Medicine in Children with Type 1 Diabetes Mellitus

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Abstract

The use of complementary and alternative medicine has been increasing in recent years. Complementary and alternative medicine in pediatrics are generally used in children with chronic illness/disabilities. Type 1 Diabetes Mellitus is also one of these chronic diseases. In this study, information on the use of complementary and alternative medicine in children with Type 1 Diabetes Mellitus was presented using scientific evidences. An literature search using the key words, "complementary", "alternative", "complementary and alternative medicine", "integrative medicine", "children with Type 1 Diabetes Mellitus" was performed by internet search in November-December, 2017 using Google Scholar, Pubmed, Cochrane Library, Science Direct, Web of Science. Researches between 2007-2017 have been included. Descriptive, cross-sectional, randomized controlled, double blind placebo controlled between 2007-2017; child and parent based studies have been examined and 13 studies have been included in the study. Although the studies on the use of complementary and alternative medicine in children with Type 1 Diabetes Mellitus are limited, their use varies between 18% and 56%, their use is affected by sociodemographic characteristics of the children and their parents. It is observed that the most used complementary and alternative medicine in children with Type 1 Diabetes Mellitus are herbal therapies, vitamins/minerals, nutritional/dietary supplements, prayer/spirutual practices, homeopathy and acupuncture. Studies have shown in children that these treatments are not particularly effective at HbA1c levels, that there is limited evidence of benefit-injury assessment, and that children with Type 1 Diabetes Mellitus require further evidence-based clinical trials.

Keywords: Alternative; Complementary; Complementary and alternative medicine; Integrative medicine; Children with type 1 diabetes mellitus

Introduction

Complementary and alternative medicine (CAM) is a broad group of health care practices that are not part of an individual's traditional or conventional medicine and can not be combined with widely used health care practices [1]. There are two subgroups: natural products (herbs, vitamins and minerals, probiotics, dietary supplements) or mind and body practices (such as yoga, massage therapy, chiropractic and osteopathic manipulation, acupuncture, meditation, relaxation techniques, healing touch, taichi, qigong, hypno therapy). It is often used instead of "integrative" medicine [1,2].

Integrative medicine is an individual-centered health care mentality that gives importance to the relationship between practitioner and patient. According to this understanding of care; practitioners use all therapies and lifestyle approaches, health professionals and disciplines to achieve optimal health and recovery in the context of evidence [2,3]. Regardless of the term used, CAM is used in the health care of both adults and children in many different societies, from developing countries to developed countries in the world. Organizations such as the World Health Organization, the American Academy of Pediatrics have started collecting and publishing information about which CAM's are used, particularly in some patient groups [1-7]. Type 1 Diabetes Mellitus (T1DM) is one of these diseases [1,7, 8].

T1DM insulin therapy, dieting, exercise and measuring blood glucose are difficult and complex disease that require treatment with hypo / hyperglycaemia [8]. The chronicity of the disease and the development of complications make it more difficult for children and their parents to deal with the disease. To overcome this complex and challenging process, families can prefer to use CAM [1,4,7,8]. When providing care for children with T1DM, knowing the characteristics of this group is important in planning the service and management treatment and care. In this context, the identification CAM which are used/ will be used by the children, providing education and consultancy to the children and their families about CAM benefits and harms by healthcare professionals working with the children with T1DM are important.

Material and Methods

The purpose of this review is to present an overview of the use of complementary and alternative therapies in children with T1DM. The review was based on a review of the available evidence in the literature. An literature search using the key words, "complementary", "alternative", "complementary and alternative medicine", "integrative medicine", "children with Type 1 Diabetes Mellitus" was performed by internet search in November-December 2017 using Google Scholar, Pubmed, Cochrane Library, Science Direct, Web of Science. Researches related use of CAM in children with T1DM between 2007-2017 have been included. The following issues were addressed in the articles: The frequency of CAM use, the methods they use, the factors related to the use of CAM, the sources of information about CAM treatment, the communication with health personnel about the use of CAM and the effect of the method used on disease management in children with T1DM.

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Results

In the study, 17 articles on complementary and alternative treatments in T1DM were reached. These, 13 were included in the study since 1 was in rats and 3 were in adults [9-21]. In one of the randomized controlled trials, the effect of camel milk on glycemic control and insulin requirements of patients was assessed. In the other case, the effect of cinnamon on HbA1c in adolescents with T1DM was examined. In the case report, the effect of traditional Chinese medicine treatment in a 4-year-old girl was discussed. The majority of descriptive and cross-sectional studies were conducted with children and parents in face-to-face interviews and questionnaires [9-21].

It is observed that CAM usage rates have changed between 18%-56% in studies [12,14,16,17,19]. It has been reported that the use of CAM within the first year after starting the diagnosis in children is started and the use of CAM is decreasing as the duration of diagnosis increases [14,17,19]. CAM in children with T1DM; It is being used to try everything with the hope of improving the general health of the child with the disappointment of diabetes management, dissatisfaction with medical treatment, natural, cheap, useful and less side effects according to medical treatment, culture / family tradition and advertisements. In addition, children prefer CAM for lowering blood sugar levels to normal, supporting medical treatment, improving insulin utilization, avoiding side effects of insulin, protecting against diabetes complications, minimizing complications, and improving psychological comfort [11-17,19,20]. The most commonly used methods are herbal therapies, vitamins / minerals, nutritional / dietary supplements, prayer / spirutual practices, homeopathy and acupuncture [11-17,19,20]. It has been reported that most of the methods used are mostly aloe vera, cinnamon, blackcumin, thyme, stinging nettle, morus alba (leaves), nopales, celery,

Articles	Type of research	Sample size	CAT method / methods used	Outcomes on T1DM management
Altschuler et al.(2007) [9]	Prospective, double-blind, placebo-controlled	• n=72	• Cinnamon	• No statistically significant difference in final HbA1c, change in HbA1c, number of hypoglycemic episodes or total daily insulin dose between the cinnamon and placebo groups.
Agrawal et al.(2011) [10]	Randomized, open clinical, parallel design single-center study	• Experimental group (n=12) • Control group (n=12)	• Camel milk	• In camel milk group, there was decrease in mean blood glucose, HbA1c levels and insulin doses.
Miler et al. (2008) [11]	Anonymous survey	• n = 86	• Faith healing • Herbs • Nutritional supplements	• Outcomes have not been reported.
Dannemann et al (2011) [12]	A self-completed anonymous questionnaire	• n = 228	• Homeopathy • Vitamins and minerals • Modified diet • Aloe vera • Cinnamon	• Outcomes have not been reported.
Miler et al. (2009) [13]	Semi-structured interview	• n =106	• Faith healing or prayer • Nutritional supplements • Herbal teas	• No statistically significant difference in HgbA1c, overall health, hospitalized in the last year for a DM-related problem, number of missed medication doses between CAM users and non-users • According to mean PedsQL treatment adherence score, children who tried CAM reported more problems adhering to their DM treatment plan.
Arıkan et al. (2009) [14]	Descriptive	• n=100	• Herbals • Prayer/spiritual practice • Natural water	• Outcomes have not been reported.
McCarty et al. (2010) [15]	Cross-sectional	• n=467	• Diet • Vitamins • Herbs • Supplements	• CAM diets were associated with increased quality of life in children with diabetes • Stress-reduction activities and supplement use were associated with decreased quality of life
Lemay et al. (2011) [16]	Cross-sectional	• n=195	• Vitamins and minerals • Herbal medicines • Dietary supplements	• Outcomes have not been reported.
Haliloğlu et al. (2011) [17]	Face-to-face interview	• n=195	• Herbal • Vitamins • Prayer	• Outcomes have not been reported.
Moravej et al. (2016) [18]	A pilot study	• n=8	• Walnut hydrosol	• The mean daily bloog sugar level and insulin dose decreased in seven cases. • Two cases developed generalized pruritic erythematous skin rash. • One case occured hypoglycemic coma.
Bayat et al. (2017) [19]	Cross-sectional	• n=200	• Herbs, • Mixtures • Praying	• No statistically significant difference in HgbA1c between CAM users and non-users
Machado et al. (2017) [20]	Cross-sectional	• n=70	• Medicinal plants • Acupuncture • Prayer	• Outcomes have not been reported.
Cheng et al. (2017) [21]	Case study	• n=1	• Traditional Chinese medicine	• Plasma glucose levels were more stable and HbA1c level 6.5%.

Table 1: Studies on the use of CAT in children with T1DM.

olive leaves, pomegranate flower, pata de vaca, vegetable insülin, passion flower [12-14,17,19,20]. It is also stated that they use methods such as chiroplasty, bioresonance, hypnosis, massage, yoga, therapeutic touch, traditional chinese medicine, reflexology aromatherapy as well as the usage rate is very low [11-17,19,20].

It is seen that children and their parents with T1DM learn about the use of CAM through friends, family members, the media, doctors, self-study [12,16,17,19,20]. CAM users (51.3%-51.8%) indicated that they would advise others on the methods they use and that they will use CAM in the future [14,17,19]. But, parents often didn't reported the CAM methods they use in their children to health care providers [12,14,16,17,19,20]. Reasons for not reporting; these methods are natural and harmless, and they have expressed as thinking that health personnel do not believe in these methods, that information is not, does not interest them, and that it is not necessary to tell them. In addition, reasons for notifying; to be ashamed to say to the healthcare provider, to think that the healthcare providers will not take them seriously, to be afraid of the anger of the health care providers, of their reprimand, of their children being untreated and of preventing the use of CAM [12,14,19,20].

Although CAM methods used in children with T1DM are mostly used with insulin therapy, Haliloğlu et al. was reported that the initiation of insulin therapy in 3.5% of children was delayed by the use of CAM [12,17,19]. In studies, parents think that CAM does not interact with insulin therapy and does not cause side effects, most of them do not know the side effects of CAM methods and do not report any side effects [12,17,19]. Moravej and colleagues have evaluated the effect of walnut hydrosphere on glycemic control in two cases and it is emphasized that it is reported that two cases of itchy erythematous skin rash and one case of hypoglycemic coma develop and further studies should be done [18]. According to the subjective findings in studies evaluating the effects of CAM on disease management and quality of life; ıt has been determined that CAM's are beneficial and effective, that children improve their welfare and improve their quality of life, develop metabolic control, improve glucose measurements, reduce the daily dose of insulin, and reduce the number of applications to healthcare facilities [12,16,19,20]. In a study by Cheng et al., 3-month-old traditional Chinese medicine application revealed that a 4-year-old girl had a more regular plasma blood glucose level and a 6.5% HbA1c level [21]. However, there was no statistically significant difference in health care beliefs, stress or quality of life, and HbA1c level, although there were changes in blood glucose levels and daily insulin doses between CAM users and non-CAM users, 68.3% of CAM users did not achieve the expected result [9,10,13,18,19]. When the use of CAM in children with T1DM is examined according to the characteristics of children and parents, ıt has been reported that the frequency of CAM use increases the age of children [15,16], and there is no statistical difference in the use of CAM according to sex [11,13,14,19,20]. However, in some studies it seems that there is more tendency to use CAM, especially in men [12,13,16,17].

It has been determined that children with T1DM use parental and sibling CAM and that CAM is more common when there are comorbidies diseases [15,17]. There was no statistically significant difference in CAM use according to mother, father age, father education level, number of children in the family and general health status of the child [11, 13,14,17,19]. Some studies have indicated a correlation between the rate of CAM use, averages of age, the duration of diabetes [15,16], high level of family income [12,14,17], and children living in urban areas [15], while other studies have contradicted these findings [11,13,14,19].

Nowadays, available information on the use of CAM in children with T1DM is limited, and studies are often descriptive. Given the quality and limitations of available data on the use of TAT in T1DM, there is a need for more powerful and better controlled randomized controlled trials (Table 1).

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