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# Complementary and alternative medicine use in infertility: A review of infertile women's needs

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## Abstract:

The use of complementary and alternative medicine (CAM) is common in infertile women in different countries. The purpose of the current study was to review the infertile women's needs in relation to CAM use. This narrative review was conducted through searching English databases including Scopus, PubMed, Embase, Web of Science, Cochrane library as well as Persian databases consisted of SID, and Magiran. The used keywords included "CAM/therapy, needs, and Infertility." All studies published in English peer-reviewed journals from conception to October 2020, which examined the infertile women's needs in the field of CAM use were included in the review. In the process of data extraction, two researchers screened the title, abstract, and full text of the articles. Out of the 2166 articles reviewed, 29 articles including six qualitative and mixed methods studies, four review, and 19 quantitative studies met the inclusion criteria. The results showed that infertile women have different needs in six domains consisted of educational and informational needs, the need for psychological counseling, supportive needs, the need for CAM use counseling, the need to treatment consistent with women's culture and demands, and the need to the integration of CAM with conventional medicine. Awareness of infertile women's needs toward CAM use can help health policymakers and planners in designing and implementing counseling services in accordance with the demands and culture of infertile couples. It also helps to develop a coherent program to integrate the use of CAM in the classical infertility treatment.

## Keywords:

Complementary and alternative medicine, infertility, need, women

## Introduction

Failure to conceive after 12 months for more despite unprotected sex is considered infertility.<sup>[1]</sup> Factors associated with infertility include genetic, environmental, and biological as well as lifestyle agents.<sup>[2,3]</sup> Globally, about 80–168 million person suffer from infertility.<sup>[4]</sup> In Iran, the prevalence of primary infertility rate was reported 20.2% in 2019.<sup>[5]</sup> Infertility affects all aspects of individuals' life and it can cause mental and emotional disorders and results in stress, depression, anxiety, low self-esteem, and marital dissatisfaction.<sup>[6]</sup>

Infertility specialists recommend various types of therapies such as medications, surgery, and assisted reproduction technologies.<sup>[7]</sup> Due to the failure and significant emotional and financial stress of *In vitro* fertilization (IVF), many women are looking for other treatments to reduce their stress levels and improve the success rate of infertility treatment.<sup>[8-10]</sup> It has been speculated that infertile women use complementary and alternative medicine (CAM), frequently, in addition to conventional therapy.<sup>[11]</sup>

According to the National Institutes of Health classification, CAM includes natural therapy, traditional medicine, herbal

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medicine (HM), acupuncture, homeopathy, body-mind balance and relaxation techniques, energy therapy, and physical interventions.<sup>[12]</sup> In recent years, the use of CAM has increased significantly.<sup>[13]</sup> Various studies have shown that CAM use is higher among women than men.<sup>[14,15]</sup> Furthermore, the results showed that during assisted reproductive treatments, women are more likely to experience psychological constraints than their spouses.<sup>[16]</sup>

The tendency to use CAM in infertility has been reported in different countries, and there is a large variety in different cultures.<sup>[17,18]</sup> The use of CAM in infertility was 63.5% in South Korea,<sup>[11]</sup> over 70% in Australia,<sup>[19]</sup> 96.17% in Taiwan,<sup>[20]</sup> 41% in the Lebanon,<sup>[21]</sup> and around 50% in Iran.<sup>[17]</sup> CAM can be one approach to recuperate fertility and should be assayed for women who are enthusiastic in this type of treatment.<sup>[12]</sup>

So far, various review studies have been published in relation to infertile couples using CAM. A review of the literature by Rayner *et al.* investigated women's use of CAM for fertility enhancement.<sup>[22]</sup> Another study by Bennington reviewed CAM use as a treatment option for infertility.<sup>[12]</sup> A review study by Weiss *et al.* (USA 2011) searched the evidence underlying the use of CAM for male and female infertility.<sup>[23]</sup> Another review in Japan by Xia *et al.* focused on Chinese medicine as complementary therapy for women's infertility.<sup>[24]</sup> The WHO has emphasized on the CAM needs in each country and claimed that feedback from each country is essential for future successful WHO support to members.<sup>[13]</sup> While these studies have mainly focused on the consequences of using CAM in infertility, to the best of our knowledge, no research has examined the needs of these women in this field, so far. Although some studies have paid attention to the needs of infertile women in general, less attention has been paid to their needs and preferences in the field of CAM use. However, there is often a gap between what women expect to receive from their infertility health-care team and the level of services provided by health-care professionals.<sup>[25,26]</sup>

Hence, due to the high frequency of CAM use in infertility, it seems that it is necessary to evaluate infertile women's needs in the field of CAM use. Such knowledge could be helpful for health policymakers and planners to recognize infertile women's needs and meet them in an appropriate way. Therefore, the aim of the current study was to review the evidence regarding infertile women's needs in the field of CAM use.

## Materials and Methods

### Search strategy and data source

This study was conducted based on the PRISMA systematic review framework recommendations.<sup>[27,28]</sup> To

conduct the review, a systematic search of international electronic databases including Scopus, PubMed, Embase, Web of Science, Cochrane library as well as Persian databases consisted of SID, and Magiran was carried out. MeSH terms including "Complementary Therapy OR Alternative Therapy OR Complementary Medicine OR Alternative Medicine OR traditional Medicine OR Acupuncture Therapy OR Cupping Therapy OR Spiritual Therapies OR Herbal Medicine OR Mind-Body Therapies OR Homeopathy OR Yoga OR Musculoskeletal Manipulations OR Aromatherapy OR Naturopathy OR Reflex therapy" AND "Need, requirement, demand, necessity, want, lack, wish, indigence, requisite" AND "infertility, fertility, sterility, pregnancy" were used to search the title, abstract, or keywords of articles.

### Eligibility criteria inclusion criteria

#### Inclusion criteria

The studies published in English from conception to October 2020, which reported infertile women's needs in relation to CAM use, included in this study.

#### Exclusion criteria

We excluded book chapters, doctoral theses or conference presentations, expert opinions, commentaries, editorials, magazine articles, newspaper articles, and newsletters.

### Study selection

All the retrieved studies checked and duplicate documents were excluded. Then, articles were assessed in terms of abstracts and full texts. This assessment was carried out by two independent reviewers, who screened the studies and scanned the relevant articles and selected them for inclusion in the review. Other related articles and systematic reviews were also searched manually to find additional relevant articles for this study. Out of the 2166 articles reviewed, 29 articles including six qualitative and mixed methods study, four reviews, and 19 quantitative studies met the inclusion criteria. The PRISMA flowchart was provided to illustrate the process of study selection [Figure 1].

### Data extraction and analysis

The data extraction was accomplished by two independent reviewers, using a self-structured data extraction form. Disagreements were resolved by consensus. The authors reviewed the title and the abstract of the articles for their eligibility. In addition, the full text of the selected articles was precisely reviewed for data needed to fill the data extraction form. A data extraction form was made based on the previous studies and the required information, which was validated by two reviewers who checked it as a pilot on three articles. Thereafter, two separate checklists were used to extract the information by the reviewers on the following variables: The title of the article, authors, year of publication, journal's title, focus

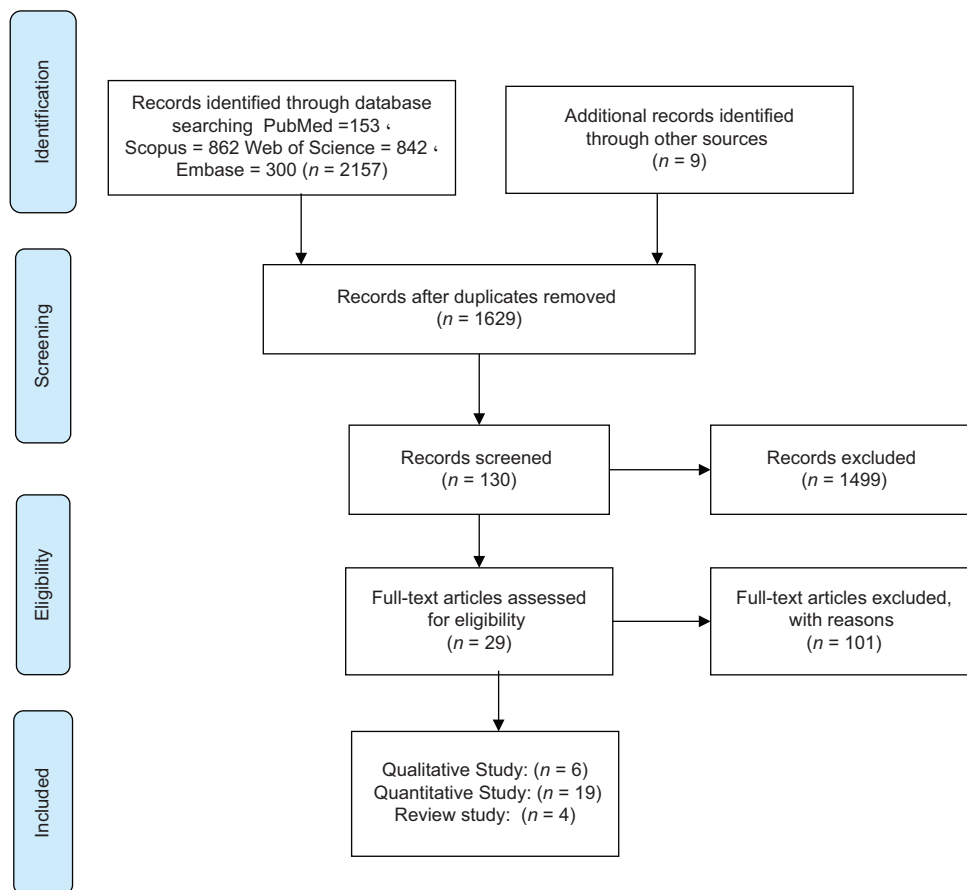


Figure 1: PRISMA flowchart of the study selection process

of the study, study setting, CAM modality, study design, perceived needs, and type of needs. Studies were eligible if data were reported on infertile women’s needs about CAM use [Table 1].

## Results

### Overview of selected studies

Out of 2166 articles reviewed, a total of 29 studies (19 quantitative, six qualitative and mix methods, and four review studies) were included in the study that reported the needs of infertile women through CAM use [Figure 1].

More than 50% of the studies were in countries with very high human development indices (Australia, Canada, USA, Taiwan, UK, Ireland, South Korea, Denmark, and Israel) and the rest were in developing countries (Jordan, Nigeria, Turkey, Lebanon, Iran, Sierra Leone, India, China, and Uganda). Nearly 50% of the articles were in the general field of CAM, and the remained were in more specialized areas of CAM use including HM, acupuncture, and traditional medicine. The studies included five qualitative and one mixed-method studies, four review studies, two case reports, and the remained studies were cross-sectional.

The results showed that infertile women’s needs were in six domains consisted of educational and informational needs, the need to psychological counseling, supportive needs, the need for CAM use counseling, the need to treatment consistent with women’s culture and demands and the need to the integration of CAM with conventional medicine.

### Educational and informational needs

In 23 (79.3%) articles, the demand for educational and informational needs was mentioned.<sup>[3,11,12,17,18,21,29-45]</sup> These demands included the need to educate patients about CAM use.<sup>[3,17,29,33,35,37,41,43]</sup> Some studies emphasized the need for patient education by CAM health-care providers.<sup>[29]</sup> In other studies, the requests for education have been emphasized referring to the hazards of using CAM<sup>[35,41,43]</sup> and their safe and healthy use.<sup>[3]</sup> The demand to train health-care providers,<sup>[3,21,34,36,39,44]</sup> medical physicians,<sup>[11,18,29,32,38,43]</sup> nurses,<sup>[12]</sup> and the CAM practitioners<sup>[31]</sup> about patient’s CAM use have also been highlighted [Table 1].

### The need to psychological counseling

The issue of the need for psychological counseling was addressed in three studies (10.34%).<sup>[3,35,41]</sup> A study

**Table 1: Characteristics of included studies (29 articles)**

References	Authors/ year	Focus of the study	Country	CAM modality	Study design	Perceived needs	Type of needs
Traditional Chinese medicine women's experiences in the treatment of infertility <sup>[29]</sup>	Alfred and Ried 2011	FI	Australia	TCM	Qualitative	Satisfaction of training by CAM providers Request better and early fertility education with minimal intervention to make informed decisions Demand for information and targeted treatments in the field of CAM by physicians Emphasis on providing training to physicians for personal support of clients in fertility treatment The need of cultural sensitivity in the treatment of patient-centered infertility Knowledge of fertility clinic staff about patient's use of CAM and understanding their reasons for using it	Educational and informational needs Treatment consistent with the culture and wishes of the patient Integration of CAM with conventional medicine Supportive needs
Complementary and Alternative Medicine Use in Infertility: Cultural and Religious Influences in a Multicultural Canadian Setting <sup>[44]</sup>	Read <i>et al.</i> , 2014	FI	Canada	CAM	Qualitative	Pay attention to women's views and experiences in providing reproductive services Develop strategies to strengthen the relationship between women, physicians, and CAM physicians Characteristics of CAM users, their motivations, efficient factors in their choices, and information sources in decision-making	Treatment consistent with the culture and wishes of the patient Integration of CAM with conventional medicine
Australian women's use of complementary and alternative medicines to enhance fertility: Exploring the experiences of women and practitioners <sup>[19]</sup>	Rayner <i>et al.</i> , 2009	FI	Australia	CAM	Focus groups	Encourage young people to learn the knowledge of traditional medicine Cultivation of useful medicinal plants by local people Increasing women's sense of self-reliance and control through education and continuing care with the TCM approach to infertility management and greater understanding and support at the community level	Educational and informational needs Treatment consistent with the culture and wishes of the patient
Ethnomedicinal survey of plants used in the treatment of female infertility in Chanchaga Local Government Area in Minna, Niger State, Nigeria <sup>[90]</sup>	MacDonald <i>et al.</i> , 2016	FI	Nigeria	HM	Ethnomedicinal survey	Understand the needs of infertile couples by increasing nursing information	Educational and informational needs Treatment consistent with the culture and wishes of the patient
Quality of life, coping strategies, and support needs of women seeking Traditional Chinese Medicine for infertility and viable pregnancy in Australia: A mixed methods approach <sup>[46]</sup>	Ried and Alfred 2013	FI	Australia	TCM	Mixed methods study	Need for proper evaluation and training of acupuncturists to integrate acupuncture in infertility treatment Integrating CAM and Western medicine in the treatment of infertility Integration of spiritual components into holistic care	Supportive needs
Can complementary/alternative medicine be used to treat infertility? <sup>[12]</sup>	Bennington 2010	CI	USA	CAM	Review	The need for physicians to be careful and aware of the prevalence of CAM to consider the risks	Educational and informational needs Treatment consistent with the culture and wishes of the patient
Role of acupuncture in the treatment of female infertility <sup>[31]</sup>	Chang <i>et al.</i> , 2002	FI	USA	Acupuncture	Review		Educational and informational needs Integration of CAM with conventional medicine
Traditional Chinese medicine and infertility <sup>[50]</sup>	Huang and Chen 2008	CI	Taiwan	TCM	Review		Integration of CAM with conventional medicine Treatment consistent with the culture and wishes of the patient
Looking at infertility through the lens of religion and spirituality: A review of the literature <sup>[45]</sup>	Latifnejad Roudsari <i>et al.</i> , 2007	CI	UK	Religion and spirituality	Review		Treatment consistent with the culture and wishes of the patient
Physician and patient use of and attitudes toward complementary and	Clark <i>et al.</i> , 2013	CI	USA	CAM	Survey		Educational and informational needs

Contd...

**Table 1: Characteristics of included studies (29 articles)**

References	Authors/ year	Focus of the study	Country	CAM modality	Study design	Perceived needs	Type of needs
alternative medicine in the treatment of infertility <sup>(32)</sup>						and benefits of integration in infertility treatment	
The use of complementary medicine and therapies by patients attending a reproductive medicine unit in South Australia: A prospective survey <sup>(33)</sup>	Stankiewicz <i>et al.</i> , 2007	CI	Australia	CM	Survey	Activities of physicians and fertility specialists in obtaining and documenting information on the use of various CAM methods The need to provide more information to patients about the use of CM and treatment methods Need for educating patients for closer collaboration between different physicians Do not disclose the use of complementary medicine to physicians and anesthesiologists Need for training of health-care providers and patients	Integration of CAM with conventional medicine Educational and informational needs
Usage of herbal medications in patients undergoing IVF treatment in an Irish infertility treatment unit <sup>(34)</sup>	Shannon <i>et al.</i> , 2010	IVF	Ireland	HM	Survey	Education of Women about the unhealthy effects of traditional methods used in the treatment of infertility Prevention of using unhealthy traditional methods by health-care professionals Emotional support to the couples with the infertility treatment	Integration of CAM with conventional medicine Educational and informational needs
Traditional Practices of Turkish Infertile Women: An example from a rural county <sup>(35)</sup>	Nazik <i>et al.</i> , 2015	FI	Turkey	TM	Descriptive study	Need of integrate CAM into the education of health professionals, and enhance infertile patients' awareness on the safe use of CAM products	Educational and informational needs Integration of CAM with conventional medicine Supportive needs Psychological counseling
Prevalence and determinants of complementary and alternative medicine use among infertile patients in Lebanon: A cross-sectional study <sup>(21)</sup>	Ghazeeri <i>et al.</i> , 2012	CI	Lebanon	CAM	Cross-sectional	Need for health providers to become more aware of CAM use among patients	Educational and informational needs
Complementary and alternative medicine utilization by a sample of infertile couples in Jordan for infertility treatment: Clinics-based survey <sup>(36)</sup>	Bardaweel, Sanaa K 2013	CI	Jordan	CAM	Qualitative	Advise physicians about update information on the use of complementary medicine along with common infertility treatments	Educational and informational needs Integration of CAM with conventional medicine
Complementary and alternative medicine use among infertile women attending infertility specialty clinics in South Korea: Does perceived severity matter? <sup>(11)</sup>	Hwang <i>et al.</i> , 2019	FI	South Korea	CAM	Cross-sectional	Incorporating CAM into the health-care education and promoting the awareness of infertile patients	Educational and informational needs
Complementary and alternative medicine usage and its determinant factors among Iranian infertile couples <sup>(17)</sup>	Dehghan <i>et al.</i> , 2018	CI	Iran	CAM	Cross-sectional	The training of health-care professionals The need of increasing the awareness of the safety of using CAM by infertile patients	Educational and informational needs Integration of CAM with conventional medicine
Complementary and alternative medicine methods used by Turkish infertile women and their effect on	Ataman <i>et al.</i> , 2019	FI	Turkey	CAM	Cross-sectional		

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**Table 1: Characteristics of included studies (29 articles)**

References	Authors/ year	Focus of the study	Country	CAM modality	Study design	Perceived needs	Type of needs
quality of life <sup>[3]</sup>						Presence of psychological support teams in infertility centers	The need to psychological counseling Supportive needs
Use of complementary and alternative medicines by a sample of Turkish women for infertility enhancement: A descriptive study <sup>[37]</sup>	Edirne <i>et al.</i> , 2010	FI	Turkey	CAM	Cross-sectional	Awareness needs of Infertile women about CAM The need to improve relations between physicians and patients and provide appropriate counseling in the field of complementary medicine	Educational and informational needs The need for CAM use counseling
Knowledge, Attitude and Practice of Herbal Remedies in A Group of Infertile Couples <sup>[38]</sup>	Kashani <i>et al.</i> , 2013	CI	Iran	HM	Cross-sectional	Need to inquire about the use of CAM from patients and provide them with appropriate information	Educational and informational needs
Use of complementary and alternative medicines associated with a 30% lower ongoing pregnancy/live birth rate during 12 months of fertility treatment <sup>[48]</sup>	Boivin and Schmidt 2009	FI	Denmark	CAM	Cross-sectional	Need better communication between patients and medical staff about concurrent CAM use during fertility treatment	The need for CAM use counseling
Use of complementary medical therapies by Israeli patients undergoing <i>in vitro</i> fertilization <sup>[39]</sup>	Porat-Katz <i>et al.</i> , 2015	CI	Israel	CAM	Cross-sectional	Risk of interfering with the effects of anesthetics and hormones with the effects of complementary medicine during infertility treatment The use of CMTs as a sign of distress and need of support	Integration of CAM with conventional medicine Supportive needs Educational and informational needs
Prevalence and Correlates of Herbal Medicine Use among Women Seeking Care for Infertility in Freetown, Sierra Leone <sup>[18]</sup>	James <i>et al.</i> , 2018	FI	Sierra Leone	HM	Cross-sectional	Need to improve the awareness of clinical staff to the widespread use of CAM among patients Provide medical services without pluralistic behaviors	Integration of CAM with conventional medicine Educational and informational needs
Complementary and Alternative Medicine Used by Infertile Women in Turkey <sup>[40]</sup>	Özkan <i>et al.</i> , 2018	FI	Turkey	TM	Cross-sectional	Knowledgeable about the common CAM used for infertility treatment and discuss with patients about their risks and benefits Need to communicate properly with patients and provide them with the necessary information	Integration of CAM with conventional medicine Educational and informational needs
Traditional practices used by infertile women in Turkey <sup>[41]</sup>	Ayaz and Efe 2010	FI	Turkey	CAM	Cross-sectional	Nurse's awareness of cultural factors causes infertile couples to be interested in traditional methods The need for culturally appropriate training programs and counseling services Patient's awareness of the dangers of traditional practices Development of counseling services in infertility clinics Emotional support for infertile couples	Educational and informational needs Treatment consistent with the culture and wishes of the patient Supportive needs The need to psychological counseling

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**Table 1: Characteristics of included studies (29 articles)**

References	Authors/ year	Focus of the study	Country	CAM modality	Study design	Perceived needs	Type of needs
Complementary and alternative medicine utilization in NHS and private clinic settings: A United Kingdom survey of 400 infertility patients <sup>[45]</sup>	Coulson and Jenkins 2005	CI	UK	CAM	Survey	The need for physicians to be aware of CAM and to consider it when providing services The need to familiarize patients with CAM and to consider the importance of evaluating its effectiveness	Educational and informational needs
Prevalence and factors associated with the use of herbal medicine among women attending an infertility clinic in Uganda <sup>[42]</sup>	Kaadaaga <i>et al.</i> , 2014	FI	Uganda	HM	Cross-sectional	Need to inquire about the use of CAM from patients Need the cooperation of health-care providers and CAM providers	Educational and informational needs Integration of CAM with conventional medicine
Lead poisoning as a result of infertility treatment using herbal remedies <sup>[43]</sup>	Geraldine <i>et al.</i> , 2007	CI	India	HM	Case report	Provide information to people about herbal medicines and its harms Physician's knowledge about the side effects of herbal medicines	Educational and informational needs
Positive effect of acupuncture and cupping in infertility treatment <sup>[47]</sup>	Wang <i>et al.</i> , 2018	FI	China	Acupuncture	Case reports	Encourage patients to continue the treatment process by complementary medicine providers The aim of a successful treatment is to increase patient consent	Supportive needs

FI=Female infertility, CI=Couple infertility, CM=Complementary medicine, TCM=Traditional Chinese Medicine, TM=Traditional medicine, ART=Assisted Reproductive Technologies, CHM=Chinese herbal medicine

reported that the use of CAM might be an evidence for infertile patients' distress or a need to increased psychological support. Due to the emotional burden of infertility, experts have acknowledged the importance of psychological support in infertility centers to increase the quality of life of these patients.<sup>[3]</sup> Thus, offering emotional support to the couples who use CAM during the treatment of infertility could be important<sup>[35,41]</sup> [Table 1].

### Supportive needs

Supportive needs were reported in seven articles (24.1%).<sup>[3,29,35,39,41,46,47]</sup> Alfred and Ried highlighted the role of physicians in providing education, personal support, and continuity of care for women who use traditional Chinese medicine referred to fertility treatment.<sup>[29]</sup> Ried and Alfred pointed out that although the approach to using CAM through education increases women's sense of authority and independence in treatment, there is still a need for a higher understanding of social support.<sup>[46]</sup> Furthermore, according to Nazik *et al.*, the use of CAM in infertile women should be done under the supervision of health-care providers.<sup>[35]</sup> Wang *et al.* commented that to get better results, acupuncture practitioners should encourage patients to be persistent in receiving treatment. This is some sort of trying to increase patient's compliance.<sup>[47]</sup> Ayaz and Efe argued that consulting services should be therefore developed in infertility clinics<sup>[41]</sup> [Table 1].

### The need for complementary and alternative medicine use counseling

The need for counseling about CAM use was reported in two articles (6.9%).<sup>[37,48]</sup> The findings showed that physicians need to approach fertility patients with sensitivity and should be able to provide counseling services for their patients about CAM, accordingly.<sup>[37]</sup> Furthermore, there is a need for better information exchange between patients and medical staff about concurrent CAM and conventional medicine use during fertility treatment<sup>[48]</sup> [Table 1].

### The need to a treatment consistent with women's culture and demands

Treatment consistent with the culture and demands of the infertile women has been reported in seven articles.<sup>[12,19,29-30,41,44,49]</sup> According to the findings of the current study, the need to pay attention to the culture and demands of women, who use CAM during infertility treatment is a key point. Latifnejad Roudsari *et al.* recommended incorporation of sociocultural beliefs into the routine care of infertile couples to give them ability for making pragmatic decisions with regard to their selected treatment options.<sup>[49]</sup> Similarly, Ayaz and Efe, 2018,<sup>[41]</sup> Alfred and Ried, 2011,<sup>[29]</sup> Read *et al.*,

2014,<sup>[44]</sup> Rayner *et al.*, 2009,<sup>[19]</sup> MacDonald *et al.*, 2016<sup>[30]</sup> and Bennington<sup>[12]</sup> suggested that it is important to pay attention to the desire and culture of using CAM in infertility [Table 1].

### The need to the integration of complementary and alternative medicine with conventional medicine

Fourteen articles (48.3) mentioned the need to the integration of CAM with conventional medicine.<sup>[3,11,18-19,21,29,31,33-35,39-40,42,50]</sup> Rayner *et al.* mentioned some suggestions for improving the proper connection between patients, CAM practitioners, and physicians. He believed that understanding the characteristics and motivations of infertile people to use complementary medicine to improve fertility and the effective factors and sources of information in their decisions is very important.<sup>[19]</sup> Furthermore, Huang and Chen in the treatment of infertility emphasized on the integration of TCM and Western medicine.<sup>[50]</sup> Stankiewicz *et al.* (2007) stated that physicians and fertility specialists need to be serious in the scientific use and reporting of CAM experience.<sup>[33]</sup> Chang *et al.* mentioned the need for appropriate training and accreditation by government agencies regarding the provision of CAM services.<sup>[31]</sup>

Shannon *et al.* stated that patients taking HMs have not talked to any anesthetist or fertility specialist about using these products.<sup>[34]</sup> Furthermore, Porat-Katz *et al.* emphasized the need to raise the awareness of clinical service providers about the use of CMT among patients using assisted reproductive techniques, benefiting from their experiences, and trying to meet the needs of these patients.<sup>[39]</sup>

So James *et al.* believed that health-care providers should be very cautious and disinterested in their behavior when providing reproductive services and care.<sup>[18]</sup> Hwang *et al.*, similarly, pointed out that physicians have to be updated their information on CAM, and the safety of various methods, especially when they use CAM alongside with common infertility treatments.<sup>[11]</sup> Ataman *et al.* argued the need for knowledge and training of health-care providers in the field of safe use of complementary medicine.<sup>[3]</sup> Hence, according to Coulson and Jenkins, it is important that patients understand the importance of CAM effectiveness and that physicians consider and be aware of the various CAM procedures in their work.<sup>[45]</sup> Kaadaaga *et al.* 2014 articulated that health professionals should ask their patients about the use of HM use. This may help to properly treat patients and make them aware of the potential risks associated with HM. However, the attention of health-care providers to this issue and their cooperation with herbalists helps the safe integration of HM in the common treatment of infertility<sup>[42]</sup> [Table 1].

## Discussion

People with infertility are increasingly use assisted reproductive technologies. However, the results of successful treatment in this population are far from expected.<sup>[9]</sup> Hence, many couples are looking for alternative ways to improve their chances of having a child, and CAM drugs seem to be a solution to this problem.<sup>[22,45,51]</sup>

The aim of this study was to review the infertile women's needs in the field of CAM use. There are no review studies focused on infertile women's needs who are using CAM to enhance their fertility or alleviating infertility. In the present study, the needs of infertile women in the field of CAM use were categorized in six domains including educational and informational needs, the need to psychological counseling, supportive needs, the need for CAM use counseling, the need to a treatment consistent with women's culture and demands, and the need to the integration of CAM with conventional medicine.

These findings were consistent with the extracted needs of infertile women in the study by Ebrahimzadeh Zagami *et al.* (2019a, 2019b).<sup>[25,26]</sup> The only difference between the needs found in the current study was the needs which was specific for the CAM consumption in infertile women including the needs to "integration of CAM with conventional medicine in treatment of infertility" and "the need for CAM use counseling". Educational and informational needs were also mentioned in previous studies. This training was necessary for the patients, which can be done through their health-care providers.<sup>[3,11,12,17,18,21,29-45]</sup> In a critical literature review about CAM use in pregnant women by Adams *et al.* (2009), two emerged themes were "self-reported evaluation" and "referral and information sources."<sup>[52]</sup> In a systematic review by Chou *et al.* (2018) about perceived needs about CAM use, patients had concerns about suitable techniques, dependency, and drug side effects. Furthermore, a paradoxical need for CAM use was identified by some patients, and a number of people questioned the legitimacy and duration of these treatments.<sup>[53]</sup> In a systematic review of qualitative studies by Willcox *et al.* focused on the views regarding the use of complementary therapies for acute respiratory infections, in all settings, treatment decisions were influenced by beliefs about the illness (cause, severity) as well as beliefs about the treatments (efficacy, safety).<sup>[54]</sup> Also, in a critical integrative review by Gray *et al.* (2019), four key issues and gaps have been reported regarding complementary medicine (CM); "CM education provision; the development of educational competencies to develop clinical skills and standards; the application of new educational theory, methods and technology



in CM; and future challenges facing CM education.<sup>[55]</sup> Psychologists believe that behavior is the result of decision-making and decision-making is based on awareness and attitude; in other words, it is accepted that a person, at first, knows or gathers information about things and then forms a tendency by the flow of emotional thinking that may lead to an act of favorite behavior.<sup>[4,56-59]</sup>

Consistent with the findings of the current study, the need for psychological counseling about infertile women is an important issue, which has been addressed in studies of Ebrahimzadeh Zagami *et al.* (2019a, 2019b),<sup>[25-26]</sup> Latifnejad Roudsari (2017),<sup>[59]</sup> Taghipour *et al.* (2020),<sup>[60]</sup> Hosseinpanahi *et al.* (2020).<sup>[61]</sup> This need leads to the need for supportive measures, which has been expressed both in the present study and studies by Ebrahimzadeh Zagami *et al.* (2019),<sup>[25]</sup> Ataman *et al.*,<sup>[3]</sup> and Ayaz and Efe.<sup>[41]</sup> On the other hand, the need for counseling in the field of CAM was another finding of the present study, which is in line with the emphasis of the other studies; Porat-Katz *et al.*<sup>[39]</sup> reported that the use of CAM may be a sign of distress or a need for increased support. Taghipour *et al.* in a qualitative study on male factor infertility argued that it is necessary to improve the mental status of women with supportive and preventive measures.<sup>[62]</sup> According to Edirne *et al.*, physicians need to communicate well with their patients so that they can advise their patients on the use of CAM.<sup>[37]</sup> Weeks *et al.* in a study about CAM users in women with breast cancer emphasized the need to provide information and support strategies to ensure women make informed and safe treatment decisions about CAM use.<sup>[63]</sup> Hence, because of the emotional problems of infertile patients, supportive groups should be available in infertility centers to increase the quality of life of these people.<sup>[4,41,46]</sup>

According to the findings of the current study, the need to pay attention to the culture and demands of women who use CAM during infertility treatment is a key point. Latifnejad Roudsari *et al.* recommended the incorporation of sociocultural beliefs into the routine care of infertile couples to give them ability for making pragmatic decisions with regard to their selected treatment options.<sup>[64]</sup> In the study by Willcox *et al.* focused on the use of CAM for pulmonary issues, the beliefs of people about disease influenced their treatment decisions.<sup>[54]</sup>

Integration of CAM with conventional medicine is an important need, which was identified in the current study as women's need. Smith *et al.* and Hassanzadeh Bashtian *et al.* stated that despite the absence of harmony in research and clinical resource of infertility and CAM, "a consensus among experts on key components of a best practice treatment protocol is possible."<sup>[65,66]</sup> Ghazeeri

*et al.* emphasized the need to improve the training of health professionals in the field of complementary medicine and also increase the awareness of infertile patients in the field of correct and safe use of CAM products.<sup>[21]</sup> Xia *et al.* reported that the correct use of CAM would be a possible way to promote a positive outcome in the treatment of infertility.<sup>[24]</sup> Empowerment of infertile women, especially in traditional societies where women are considered guilty of infertility and have to endure various psychological and social pressures, is important.<sup>[67]</sup>

The use of authoritative sources and journals to find articles was the strength of this study although there was a limitation of articles that specifically addressed the needs of infertile women in the field of CAM. The lack of access to studies with consistent methods and the unfeasibility of meta-analysis due to the small number of evidence were the weaknesses of the current study.<sup>[67]</sup> It is suggested that in the future, specific studies be conducted to investigate the needs of infertile women in using various types of alternative medicine with standard and consistent tools and reproducible methodology.

## Conclusion

Patients should be aware of the benefits and risks of CAM and then make decisions based on their knowledge and the information gain in consultation with their physicians. However, the need for psychological counseling and the use of CAM along with social and psychological support for infertile women is essential. Improving communication between physicians and infertile patients is also crucial, particularly when patients are using CAM simultaneously with classical treatment of infertility. In addition, infertility treatment according to the referral system, incorporation of CAM in classical treatment of infertility based on the cooperation and interaction of two groups of specialists, training of physicians to accept CAM as complementary modalities as well as encouraging infertile patients to disclose CAM use to their physicians, are important issues that should be taken into account. Health-care practitioners need to be knowledgeable about CAM practices and educate infertile couples based on their culture. Further research is needed to investigate infertile women's needs and preferences for CAM use in different cultural contexts.

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### Conflicts of interest

There are no conflicts of interest.

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