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Applications of Dry and Wet Cupping Therapy in Obstetrics and Gynecology: A Narrative Review of Clinical Trials

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ABSTRACT

Background & aim: Cupping therapy is a long-standing traditional therapy that its application has re-emerged, recently. Due to the lack of a review on the applications of this method specifically in obstetrics and gynecology, the present study was performed to evaluate and summarize data from clinical trials on dry and wet cupping applications in obstetrics and gynecology.

Methods: In this narrative review, Web of Science, PubMed, Scopus, Science Direct, ProQuest, databases and Google Scholar search engine, as well as Persian databases including SID, Magiran, and Iranmedex were searched without time limit until the end of November 2022. Keywords included cupping, women, pregnancy, obstetrics, gynecology, treatment, dry and wet cupping, clinical trial and their persian equivalents. All clinical trials that examined the effect of different cupping therapy applications for obstetric and gynecological conditions were evaluated by two independent reviewers using the Jadad scale and studies with the scores of 3 or more were included in the review. Nine eligible clinical trials were included in this review.

Results: Cupping therapy was identified as an effective method for improving primary dysmenorrhea, chronic pelvic pain, hypercholesterolemia in menopausal women, oligomenorrhea, idiopathic menorrhagia, low back pain due to pregnancy and delivery, perineal pain due to the childbirth and postpartum anxiety.

Conclusion: The widespread use of cupping in obstetrics and gynecology has had a positive effect on mitigating a wide range of conditions. Knowledge of the various applications of this method could help specialists to employ this branch of complementary medicine along with other conventional medicine methods of treatment.

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Introduction

Cupping has been a long-standing therapy to prevent and treat a wide range of problems in different cultures and societies (1-2). Documentations of this method can be found in "Ubi Plethora Ibi Evacua'', the ancient papyrus, a book attributed to Hippocrates, the ancient Greek carvings and Persian- Islamic medical references, all of them date back to 7000 years ago (3-5).

Cupping has been a long-standing therapy to prevent and treat a wide range of problems in different cultures and societies (1-2). Documentations of this method can be found in "Ubi Plethora Ibi Evacua'', the ancient papyrus, a book attributed to Hippocrates, the ancient Greek carvings and Persian- Islamic medical references, all of them date back to 7000 years ago (3-5).

There are different types of cupping, dry and wet cupping as main divisions (6). There is no skin scratching in dry cupping, and it is also divided into two thermal and cold types based on the factors which produce negative pressure. In the cold procedure, suction pumps or inspiration suction power are used, and in the thermal procedure, a flame is used to create a negative pressure.

In wet cupping, the procedure is associated with

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making skin scrapings and pulling out blood and other fluids into the cup (7-8).

Cupping has been used to promote health and prevent and treat diseases (9). Useful effects of this method has been reported in treatment of various conditions and diseases including back pain (10), headache and migraine (11), knee, neck and shoulder pains (12-13), carpal tunnel syndrome (14), facial paralysis (15), asthma (16), rheumatoid arthritis (17), diabetes (18), hypertension (19), acne (20), cellulite (21) and urticaria (20). Despite the frequency of theories explaining cupping works, details of its mechanism have not been clarified (9).

In the study of Farhadi et al. (2016), the use of dry cupping at the P6 point on 206 women who underwent laparoscopic celocystectomy significantly decreased the incidence of nausea and vomiting after the operation compared to the control group ($P<0.001$) (22). In the study of Aleyeidi et al. (2015), three sessions of wet cupping therapy every other day, in addition to the conventional treatment of high blood pressure caused a decrease in the mean systolic blood pressure by 8.4 mmHg after 4 weeks of follow-up ($P = 0.046$)(23).

The research of Akram and colleagues (2021) which was conducted on 60 women with type 2 diabetes found that cupping therapy once a month for 3 months, along with aerobic training, significantly decreased the hemoglobin A1C level compared to control group ($p=0.01$) (24).

The Immunemodulation Theory of Guo et al. proposes that the microenvironmental changes due to skin irritation in cupping procedure are converted to biological signals that activate the neuro-immunological system and endocrine glands. This theory supports the idea that cupping and acupuncture have the same mechanism of action (25).

A related genetic theory has also been proposed by Shaban and Rarvalia. This theory suggests that the mechanical stress applied on skin following negative pressure as well as localized anaerobic metabolism after a brief oxygen deprivation can trigger physiological or mechanical signals that activate or inhibit special gene expressions. In wet cupping, superficial skin incisions can activate wound healing mechanisms and gene expression mechanisms(26). Some researchers have also suggested that placing a cupping device on acupuncture selected skin areas with its associated therapeutic effects produces congestion and homeostasis (27). Pain Gating, Reaction Zone, Nitric Oxide Diffusion, and Blood Detoxification are among other proposed theories of action for cupping therapy(28).

Other suggested implications of cupping include peripheral blood circulation augmentation and improvement in cutaneous blood flow (29), increase in pain threshold (30), reduction in inflammations (31), alterations in skin biomechanical characteristics (32), local anaerobic metabolism improvement (30) and cellular immune system modulations (33). The placebo effect as the only mechanism of action for this method is controversial (11). Although most of the studies have reported the positive effect of cupping therapy to improve and treat a wide range of diseases, some studies have suggested that cupping therapy can only relieve pain and even this is doubtful (34). No single theory has been able to explain the full implications of this method (35); cupping may produce several effects through a host of mechanisms (36).

The use of adjunctive therapy is increasing worldwide (37). Cupping is also considered as an adjunctive therapy that is widely used and practiced (38), and it has been recently paid attention (39). More than 80% of the populations in developing countries prefer to use traditional and complementary medicine due to lower cost and easier access to treat diseases. The World Health Organization (WHO) also recommends the use of traditional medicine in its programs because the use of these methods is relatively safe compared to some modern medicine (40). Reducing the side effects of drugs is also one of the concerns of researchers and physicians. Some people believe that medicine has lost its holistic perspective, and as a result, many people seek help from alternative medicine to treat their problems (41).

With respect to considerable scope of this method which has been used for a long time and since there are numerous and different opinions about its effectiveness, as well as lack of a review study on application of dry and wet cupping for midwifery and obstetrics conditions,

the present narrative review study was conducted aim to evaluate and summarize data from clinical studies on the use of dry and wet cupping therapy in the field gynecology and obstetrics.

Materials and Methods

In this narrative review, electronic search was conducted in English databases of Web of Science, PubMed, Science Direct, ProQuest, Scopus as well as Google Scholar search engine, and Persian databases of SID, Magiran and Iranmedex.

Keywords included in this search were as follows: "Clinical trial, treatment, Dry and Wet cupping, Hijama, Pregnancy, Midwifery, Obstetrics, gynecology, Cupping therapy, Women" as single or combined forms using AND/OR boolean functions without time limit until the end of November 2022.

First, a list of titles and abstracts of existing articles was extracted and the abstracts of articles were reviewed in terms of thematic relevance, and further search was performed for articles, which met the inclusion criteria.

Inclusion criteria were: 1- All human clinical trials that examined the effects of different cupping therapy applications for gynecological and midwifery conditions, 2– The authentic research supported by reliable references and full text availability.

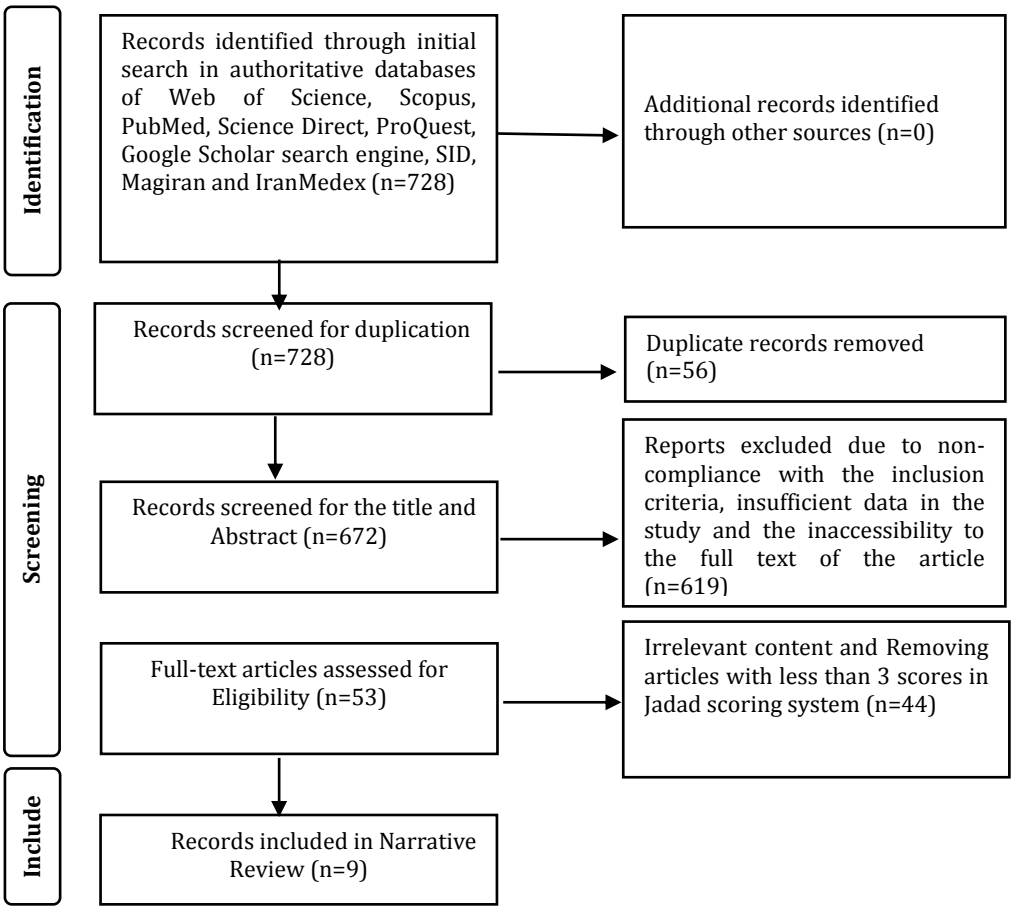

Figure1. Flowchart describing the study selection process based on PRISMA 2020

Irrelevant and repetitive articles, conferences abstracts, animal studies, editorials, case studies and newsletters were excluded from the study. The procedure for selecting and submitting articles for the review are presented step by step in Figure 1.

All articles were evaluated independently by two separate researchers to prevent bias. Any discrepancies were discussed with the third researcher. The data were reported by a pre-prepared checklist for each study (Table 1). Jadad scale was used to evaluate the quality of articles. This scale was designed by Jadad et al. in 1996 to evaluate the quality of clinical trials and includes three general items - randomization and its process, blinding and its method and subject loss reporting. These parameters are directly related to control bias in the studies. The scoring system for each item includes zero / one binary scores, and the total maximum score in this scale for the sum of above-mentioned items is 5. A Jadad score equal to 3 or more indicates acceptable quality of the study (42). All ethical considerations have been observed in the study.

Results

A total of 9 clinical trials were included in this narrative review. These studies were related to applications of cupping therapy in conditions including: primary dysmenorrhea (n=1), chronic pelvic pain (n=1), hypercholesterolemia in menopausal women (n=1), oligomenorrhea in women with polycystic ovary syndrome (n=1), idiopathic menorrhagia (n=1), back pain related to pregnancy/delivery (n=2), postpartum anxiety (n=1), and postpartum perineal pain (n=1) (Table 1).

Since the cupping therapy is by nature evident for subjects, the blinding was impossible in these clinical trials.

Cupping therapy and Dysmenorrhea

In the study of Khodaverdian and colleagues, the use of cupping therapy with leeches, 6 times during a two-month period (each month 3 weeks after the end of menstrual bleeding), significantly decreased pain intensity in the second and third months after the intervention compared to the group using LD pills (using from the first day of menstruation for two periods with a 7-day interval between periods). Warm cupping therapy was performed by placing 10 cups around the spine and 6 cups under the navel for 7 minutes. Besides that, leech was placed on the ankle (first week), waist (second week) and uterus (third week). The intensity of pain in the second and third month after the intervention in the group of cupping therapy with leech was equal to 0.81 and 0.75, respectively, while in the group using LD tablets, this scores remained unchanged and was equal to 1.64 in these two months (43).

The strengths of their study include the complete mention of inclusion and exclusion criteria, how to determine the sample size, and how to randomly allocate the samples. On the other hand, the method of scoring dysmenorrhea and receiving a score of one by women to enter the study has not been clearly defined. Moreover, the first intervention group received cupping therapy along with leeches, so it is not possible to exclusively report the effect of cupping therapy on the improvement of dysmenorrhea. Therefore, their study is different from the studies in which the effect of cupping therapy has been investigated as a single intervention and deserves consideration. In addition, the use of modern treatment methods (hormonal drug therapy) in contrast to complementary medicine treatment methods (cupping therapy) is one of the strengths of their research.

Cupping therapy and Chronic pelvic pain

In a research conducted on 30 women suffering from chronic pelvic pain due to recurrent pelvic inflammatory disease (PID), a dry cupping therapy using a cup and a suction pump in the neurological points of acupuncture caused a significant decrease in the level of C-reactive protein and chronic pelvic pain in the intervention group compared to the control group ($p<0.05$). To perform dry cupping therapy, after disinfecting the patient's skin at the neurological points using alcohol, large cups were placed at acupuncture points BL23 and CV6 and small cups at SP6 points SP9, KI6 and GB34 for 20 minutes to perform ventilation therapy using a negative pressure suction pump. In both intervention and control groups, lifestyle modification tips include following a correct diet consisting of 50% carbohydrates, 30% fat and 20% protein, avoiding coffee, spicy foods and

Table 1. Characteristics of the studies included in the review

No.	Senior Author	Year	Site	Study design	Sample population	Methodology	Findings	Complications	Jadad Score
1	Khodaverdian (43)	2022	Iran	Clinical trial Two groups No blinding	40 women with primary dysmenorrhea	The first intervention group of leech and warm cupping therapy for 6 times during 2 months/ The second intervention group used LD pills for two periods from the first day of menstruation with a seven-day interval between periods	Significant reduction in pain intensity in the second and third month after the intervention in the cupping therapy group with leech compared to the LD pill group	not mentioned	**3**
2	Abdulaziz (44)	2021	Egypt	Clinical trial Two groups No blinding	30 women with chronic pelvic pain following recurrent pelvic inflammatory disease	Intervention group: 8 weeks of dry cupping therapy on point BL23 along with lifestyle modification recommendations/ Control group: recipient of lifestyle modification recommendations	significant decrease in the level of C-reactive protein and chronic pelvic pain in the intervention group compared to the control group	not mentioned	**3**
3	EL-Ghaffaar (45)	2020	Egypt	Clinical trial Two groups No blinding	40 postmenopausal women with hypercholesterolemia	Wet cupping therapy once a month for three months in treatment group / no special measure in control group	Significant decrease in total cholesterol and LDL levels and significant increase in HDL levels in the treatment group compared to the control group	not mentioned	3
4	Mokaberinejad (46)	2018	Iran	Clinical trial Two groups No blinding	61 women with oligomenorrhea and	5 g fennel tea after lunch with dry cupping for 15 to 20 minutes in	Significant reduction in days between two	not mentioned	3

					polycystic ovary syndrome	treatment group / metformin tablets 500 mg in control group	menstrual cycles for both cupping therapy and metformin groups at the end of the intervention / Significant reduction of dysmenorrhea in fennel plus balloon therapy group		
5	Azizkhani (47)	2018	Iran	Clinical trial Two groups No blinding	162 women with idiopathic menorrhagia	3 sessions of dry and intermittent cuppings for 10 minutes for treatment group / one medroxyprogesterone acetate tablet 10 mg during luteal phase of the menstrual cycle for control group	Significant decrease in bleeding volume mean, number of menstrual days and pads use in the cupping therapy group compared to medroxyprogesterone acetate group	not mentioned	3
6	Ghaemmaghami (37)	2012	Iran	Clinical trial Three groups No blinding	150 primiparous women with lower back pain in the postpartum stage	dry cupping therapy at BL23 point / acupressure for 20 minutes according to the rotational model (clockwise and counterclockwise) with thumb at BL23 point in two treatment groups / no measure control group	Reduction in pain intensity in both intervention groups / Significant reduction in pain intensity based on Visual analog scale in cupping therapy group	not mentioned	**3**
7	Yazdanpanahi (48)	2017	Iran	Clinical trial three groups No blinding	150 postpartum women with low back pain	dry cupping therapy at BL23 point / applying pressure according to rotational model by	Reduction in pain intensity in both intervention groups based on	not mentioned	3

					due to pregnancy and delivery	thumb at BL23 point in two treatment groups / no measure in control group	McGill Questionnaire compared to the control group / Significant reduction in pain intensity in the cupping therapy group compared to other groups		
8	Akbarzade (49)	2015	Iran	Clinical trial Three groups No blinding	150 women to measure the severity of perineal pain after childbirth	Dry cupping therapy at BL23 point / applying rotational pressure at BL23 point with thumb in acupressure group / no measure in control group	Reduction in the pain intensity in both intervention groups / Significant reduction in pain intensity in the cupping therapy group in all studied time points	not mentioned	3
9	Akbarzade (50)	2013	Iran	Clinical trial Three groups No blinding	150 primiparous women in the postpartum period to measure postpartum anxiety	Dry cupping therapy at BL23 point / applying rotational pressure at BL23 point / no measure in control group	Reduction in anxiety severity in both intervention groups / significant reduction in anxiety severity in cupping therapy group compared to acupressure group	not mentioned	3

alcoholic beverages and consuming more natural fibers, vegetables and fruits were recommended. In addition, night sleep about 8 hours and 40 minutes of walking 3 times a week were recommended (44). The use of laboratory diagnosis criteria along with clinical criteria and also having a control group are among the strengths of their research. Failure to state the limitations of the study is considered as a weakness.

Cupping therapy and Hypercholesterolemia in menopausal women:

In a study, which was performed to assess the effect of wet cupping (Hijama) on postmenopausal hypercholesterolemia, total LDL and HDL cholesterol, were measured by fasting blood tests in pre-intervention and 24 hours after last cupping. At the end of the third month of the intervention and wet cupping in vertex areas, both scapula and around lumbar vertebrae for 20 minutes per month, the results showed a significant improvement in total HDL and LDL cholesterol levels in the intervention group (p=0.0001), while the control group that did not receive any specific intervention, and there was no change in any relevant reported parameter at the end of the study (p=1.00) (45). The strengths of their study include the explanation of the randomization method, the complete mention of inclusion and exclusion criteria, as well as the use of laboratory diagnosis criteria. Failure to report the determination of sample size and limitations of the study were considered as weakness.

Cupping therapy and Oligomenorrhea

The results of the research by Mokaberinejad et al. showed that simultaneous use of dry cupping therapy and fennel tea mixture once a day (5 gr of fennel seeds with a teaspoon of sugar in 200 ml of boiling water) on all days of menstrual cycle (except for menstrual bleeding days) in women with oligomenorrhea due to polycystic ovary syndrome was associated with better results compared to metformin group. In addition to consuming fennel tea in the intervention group, dry cupping was performed over the upper part of pubic bone and pubic hairline on 7th to 14th days of menstrual cycle. Metformin 500 mg tablets were administered twice a day for the first week in the control group, and then it was continued as three times a day regime. The results showed that although there was more decrease in the duration between two cycles in metformin group compared to fennel plus cupping therapy group at the end of third month after start of intervention, this decrease was significant in both groups at the end of sixth month after start of intervention, and it was significantly higher in the fennel plus cupping therapy group ($p<0.05$). Also, menstrual pain intensity based on visual analog scale was significantly higher in cupping plus fennel tea therapy compared to the metformin group ($p < 0.001$) (46). The 6-month follow-up of patients is one of the important strengths of this research. Although mentioning the inclusion and exclusion criteria, the randomization method, the method of implementing the intervention and the report of sample loss are also well stated, but mentioning some features, such as the type of cups used in cupping therapy, the name of the metformin pharmaceutical company used in the research, and the name of hormonal drugs considered to be excluded from the study, could have made the study more valid. It seems that the use of two combined methods of fennel consumption and cupping therapy is one of the strengths of the study; however, it can affect the results related to cupping therapy alone.

Cupping therapy and Idiopathic Menorrhagia

The results reported in the study by Azizkhani et al. (2018) showed that the use of dry cupping is associated with better results for idiopathic menorrhagia compared to medroxyprogesterone acetate 10 mg tablets (in the luteal phase). Cupping was performed by trained nurses in three sessions by putting three glass cups in upper and lower areas of both breasts for 10 minutes in half-hour intervals during the menstruation bleeding days of 162 female patients. The menstrual blood lost volume was assessed by Pictorial Blood Loss Assessment Chart (PBAC Score). In one-month and three-month post-intervention evaluations, the mean of PBAC score was significantly lower in the cupping group than medroxyprogesterone acetate group ($p<0.0001$). Also, at the end of the first and third months post-intervention, the mean number of menstrual bleeding days significantly decreased

in cupping group compared to medroxyprogesterone acetate group (p=0.007) (47). Using a common hormonal drug (medroxyprogesterone acetate) in the treatment of menorrhagia against a complementary medicine treatment method (cupping therapy) is one of the positive and significant points in their research, which makes the results valuable for researchers. Also, the full mention of the outcome measurement tool and the details of the intervention have added to the credibility of this research.

Cupping therapy and Back pain

According to the findings, dry cupping in every other day schedule up to 4 consecutive sessions and 15 to 20 minutes for each session have been associated with positive results for low back pain in newly delivered women. Accordingly, 150 women who complained of low back pain due to pregnancy and childbirth-related lordosis were distributed in three groups: hot and dry cupping at BL23 point, daily acupressure at BL23 point up to 4 sessions and control group. Pain intensity was measured using two separate questionnaires before intervention, immediately after intervention, 24 hours and 2 weeks after intervention (McGill pain questionnaire and pain visual analog scale). There were significant differences in the mean of pain intensity in both intervention groups in successive stages of follow up (p=0.001). Further evaluations on the same population based on McGill Standard Questionnaire showed that reduction in the back pain severity in cupping group was significantly greater than the acupressure and control groups (p=0.001) (37, 48). Among the positive features of the design of these two studies is that there were three groups and the use of cupping therapy was compared with acupressure and the control group (no intervention). In addition, using two different tools to measure the outcome of pain and obtaining similar results can be one of the strengths of this research.

Cupping therapy and Postpartum perineal pain

Hot and dry cupping and acupressure on Shenshu point and its effects on the severity of postpartum perineal pain in primiparous women showed that although pain intensity decreased based on Visual Analog Scale in both intervention groups, the decrease in cupping group was significantly more than other groups at all times (p=0.01). Cupping at this point was performed for 15 to 20 minutes every other days up to 4 times (49). The fact that their research has three groups (control group, acupressure and cupping therapy) is one of the positive points of the study design. However, the sample size formula, the limitations of the study and the random allocation of women was not observed.

Cupping therapy and Postpartum Anxiety

Dry cupping and acupressure at Shenshu point as described in the above-mentioned study was also associated with positive results in the support of cupping implications in reducing severity of postpartum anxiety. Subjects in hot and dry cupping, acupressure and control groups were evaluated using Spiell Berger anxiety questionnaire before and after the intervention. The results showed that severity of postpartum anxiety decreased in both intervention groups, but the reduction was significant in cupping group (p<0.001). The results for the control group was associated with an increase in the mean score of anxiety (50). Inclusion and exclusion criteria, samples' exclude and sample size formula are fully reported in their research. Also, having a control group along with the use of acupressure and cupping therapy is one of the strong points of their study. However, the details of the implementation of the intervention in the two groups and the method of random allocation have not been fully explained.

A study titled “Application of cupping therapy in treatment of infertility resulting from PCOS” was found to report positive results in achieving fertility, but it was excluded from further reviews due to not access to the full text (51).

Discussion

The combination of documents in present narrative review revealed that different clinical studies with various design and criteria have studied the effects of cupping on conditions related to gynecology and midwifery; but with respect to the variety in studied diseases and limited number of clinical studies, further evaluation of cupping effects for each disease is

necessary. The effect of using this method on menstrual disorders and low back pain after delivery was the most studied and dry cupping was used more frequently than wet cupping. The results from all of these studies indicate that cupping therapy has a positive effect on improving conditions and complications and researchers have evaluated it as an effective and preferable intervention over other interventions.

Dysmenorrhea, or short-term pelvic cramps during menstruation, is one of the most common problems among teenage girls (52), and the use of combined oral contraceptive pill has been approved as a solution for the treatment of primary dysmenorrhea (53). Cupping therapy and leech therapy are branches of complementary medicine, both of which are used in the treatment of painful syndromes. Leech saliva has anti-inflammatory and anticoagulant properties, and it has been proven in various studies that leech saliva reduce blood lactate levels and the level of pain perception (54). Cupping therapy also by increasing the levels of beta-endorphins and reducing the level of prostaglandins creates endogenous analgesia and is effective on primary dysmenorrhea (55). In a research that measured the effect of leech and cupping therapy compared to the use of LD pills on primary dysmenorrhea, the results indicated that the intensity of pain significantly reduced in the second and third months after the intervention in the group of cupping therapy with leech compared to the LD pills group (43).

Chronic pelvic pain (CPP) is defined as a non-cyclical pain for at least 6 months and spreads to the lower abdomen and pelvis, which can significantly decrease the quality of life in women. Recurrent Pelvic Inflammatory Disease (PID) is an infection of the upper genital tract, one of the complications of which is chronic pelvic pain in women, and its treatment needs frequent visits to medical centers and the consumption of painkillers (56). Cupping therapy as a branch of complementary medicine can reduce the intensity of pain by stimulating the skin and increasing blood flow to the skin and muscles, stimulating the peripheral and autonomic nervous system, as well as reducing the level of lymphocytes and inflammatory factors in the blood (57). Laboratory examination of C-reactive protein in blood samples is an important clinical indicator in patients with chronic pelvic pain syndrome (58). In line with above mentioned, a study that examined the effect of dry cupping therapy on the BL23 point and lifestyle modification also showed that the level of C-reactive protein and chronic pelvic pain is significantly lower in Cupping therapy group than the control group (44).

The blood levels of total cholesterol, LDL, and HDL were positively influenced by wet cuppings in postmenopausal females (45). This positive effect has been attributed to blood pathological substances' detoxification property of wet cupping. In fact, in this method the suction produced by the cups in the scraped area of the skin triggers the release of some vasodilators including histamine, adenosine, and noradrenaline which lead to vasodilation, improved blood circulation and toxins excretion from the body (35, 59). High blood cholesterol levels in the elderly increases the risk of coronary heart disease, so wet cuppings may also prevent of cardiovascular diseases(45, 60).

Polycystic ovary syndrome is one of the most common diseases in women caused by endocrine disorders (61), and metformin is widely prescribed for treatment of this condition (62). In Persian and Chinese traditional medicine, it is believed that the dry cuppings can produce positive effects in treatment of oligomenorrhea and secondary amenorrhea by changes in blood vessels, cutaneous blood flow, biological characteristics of skin and a rapid reduction in inflammation level (63). In the only identified clinical study in this field, the positive effect of this modality on oligomenorrhea status of females suffering from polycystic ovary syndrome has been reported to improve ovarian function and number of days between two menstrual cycles for both metformin and dry cupping plus fennel tea groups (46). The fennel plant also has estrogenic and antioxidant properties and has been used in Persian traditional medicine for menstrual disorders (64). So, the reported positive effects may also be related to this plant and further studies are needed to discriminate the impact of these two interventions.

Menorrhagia is among menstrual disorders that has been evaluated in a clinical study and the findings showed that cupping therapy was associated with better results compared to receiving medroxyprogesterone acetate(47). The results suggest that one of the mechanisms by which cupping can reduce the intensity of menstrual bleeding is changes in endometrial vascular homeostasis(65, 66). Homeostasis is the body physiological response to stop bleeding from incised or damaged vessels and cupping can improve endometrial vascular homeostasis by increasing levels of platelet aggregation, suppressing vasodilators including prostaglandins, thromboxane, DGF2α and other vasoconstrictors (67-68).

Cupping therapy is widely used in treatment of diseases, especially painful syndromes (38). There is ample evidence showing that the use of cupping therapy in patients with low back and pelvic pain is more common than the use of conventional medical therapy (69). Review of clinical findings reported in all three studies focused on the effects of this modality on low back pain and perineal pain unanimously confirmed its positive effects. In all of these studies, cupping was performed on BL23 point (37, 48-49), which is one of the key points in the treatment of painful syndromes (70). Cupping can relieve pain by stimulation and relaxation of the body during the suction, extracting the excess fluids, relaxing and lifting the connective tissues, increase blood flow to the skin and muscles and finally, the stimulation of the peripheral nervous system(69, 71-72). A preliminary study by Sultana et al. also reported that dry cupping can be used in primary or secondary dysmenorrhea treatment based on its mechanism for increasing blood flow in uterus and ovaries (57).

In a study that measured the effects of cupping at the same point (BL23) on the severity of postpartum anxiety, the findings showed its positive effect in reducing the severity of postpartum anxiety(50). Despite the lack of precise information about main mechanisms of cupping and acupressure, it seems that the release of serotonin and other mediators in the central nervous system can produce a relaxation effect and improve the anxiety disorders (73).

According to the present review, the effects of cupping therapy as a branch of complementary medicine have been compared with the use of routine chemical drugs in modern medicine in the treatment of some problems related to gynecology and obstetrics, including primary dysmenorrhea which was treated with LD pills, oligomenorrhea in patients with polycystic ovary syndrome which was treated with metformin pills, and menorrhagia with medroxyprogesterone acetate pills. In all the studies, the amount of positive effects of cupping therapy was much higher than the use of common modern medicine drugs, and this point can confirm the effectiveness of using this method. Considering that today the tendency of people, especially women, to use complementary and alternative medicine methods has increased, also due to the side effects of chemical drugs or the prohibition of their use in some women (74) and no reports of serious side-effects of cupping therapy in the research. Done, the use of this method in contrast to modern medicine can be welcomed by women.

One of the advantages of the present study was searching the articles without any time limit. In addition, this is the first narrative review which specifically summarized data related to the application of cupping in gynecology and midwifery conditions. It is noteworthy that due to the small number of articles on each condition, a definite conclusion was impossible. In most reviewed studies, probable complications of this modality, especially wet cupping was not mentioned.

The findings of present review can be used for better understanding and clarification of cupping applications in the field of obstetrics and midwifery. With respect to limitations in clinical research conducted for each condition, more clinical studies with enough power are recommended to be performed in order to evaluate the impact of cupping applications on improving gynecology/obstetrics and midwifery conditions.

Conclusion

As findings of this narrative review shows, the use of cupping therapy in gynecology/obstetrics and midwifery field includes a wide range of diseases that according to the results of

reviewed studies had a positive effect on improving mentioned issues and support its implementation. Knowledge of various therapeutic applications of this ancient modality in the field of gynecology/obstetrics and midwifery can help the specialists to have a better view and decision-making to use this branch of adjunctive medicine as a therapeutic therapy along with other methods and establish a link between modern and traditional medicine by relying on reliable scientific sources.

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Conflicts of interest

Authors declared no conflicts of interest.

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