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RESEARCH ARTICLE

The Effect of Dry Cupping on Patients with Functional Bloating: A Randomized Controlled Trial Study

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ABSTRACT

Background and Aim: Flatulence is a frequent problem with high prevalence in human populations. Complementary medicine can help improve and speed up the flatulence treatment. The aim of this study was to investigate the effect of dry cupping in patients with flatulence.

Material and Methods: In this randomized clinical trial study, 70 patients were randomly divided into two groups: intervention (received dry cupping and 40 mg orally Dimethicone) and control (only received 40 mg oral Dimethicone) for 2 weeks. Before intervention, 2 weeks after starting treatment, and 2 weeks after stopping treatment, gastrointestinal symptoms were evaluated.

Results: Results showed that frequency of borborygmus, severity of bloating, and frequency of bloating had a significant decrease in 2 weeks after the intervention and 2 weeks after stopping treatment in the intervention group compared with that of the control group. All variables in both groups were statistically significant before and after the intervention, but the observed changes in the intervention group were greater than the control group.

Conclusion: Based on this study, dry cupping along with Dimethicone can improve flatulence symptoms.

KEYWORDS:
complementary medicine; dry cupping; flatulence; gastrointestinal symptoms; Persian medicine

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INTRODUCTION

Flatulence is defined as the presence of an excessive volume of air or gas in the stomach or intestine that affects patients' quality of life.[1] This situation is a mental symptom defined as a visible increase in abdominal diameter.[2] Flatulence is common in people of any age, especially in functional diseases of the gastrointestinal tract.[3] Approximately 10–30% of healthy people have experienced flatulence. Among gastrointestinal patients, this prevalence is 90%.[4] The prevalence of flatulence is higher in women than in men. Moderate to severe symptoms of flatulence are seen in 65% of patients.[5] There are various chemical drugs for the reduction of symptoms of flatulence such as Dimethicone. But, due to the lack of specific pathophysiology, treatment of these patients is still under discussion.[1,6–8] In Persian medicine (Iranian traditional

medicine), flatulence is known as related names, for example, Nafkh, Nafkhah, and Rih. Based on Persian medicine, three factors were described for flatulence induction: heat of the stomach, food, and impurities in the stomach.[9–12] The source of stomach heat is the instinctual heat that is responsible for the important process of food digestion.[12] If this heat is weak, stomach cannot fully digest food and lead to flatulence.[13,14] Paying attention to the causes of diseases from the perspective of Persian medicine and other complementary medicine can lead to the more effective and safer treatment of the disease.[15] Due to the insufficient effectiveness of conventional medicine on treatment of flatulence and its numerous side effects, recurrent disease, and inconsistent treatment outcomes, development of new therapeutic strategies for flatulence is necessary.[1,16] Application of alternative therapies, especially complementary medicine, have been developed for treatment of flatulence.[16,17] Cupping is known as an important complementary treatment strategy in different fields of medicine. This is an ancient technique in traditional medicine that developed in Europe, Asia, and Middle Eastern countries for the increase of blood and lymph circulation, pain relief, and so on. The use of a glass cup for the creation of suction over a body area is common in all types of cupping.[18,19] This technique was done by different strategies in detail. It can be divided into four groups in terms of technical procedure: dry, wet, massage, and flash cupping therapy. One of these main treatments is dry cupping.[14,20] Dry cupping as physical therapy has beneficial effects on organ function.[21,22] Types of suction induction can also vary in cupping. Based on this suction induction, cupping can be categorized as fire, manual vacuum, and electrical vacuum cupping therapy.[23] Due to very low side effects, Being cheap, and based on the availability, this study was designed for evaluation of the effect of hot, dry cupping in patients with flatulence along with Dimethicone treatment.

MATERIALS AND METHODS

In this clinical trial study, 84 patients were evaluated for eligibility. However, 70 patients were selected based on inclusion and exclusion criteria. This study was done between June 2020 and February 2021 at Ardakan hospital and Persian medicine school clinic, Iran. The study was performed in compliance with the Helsinki Declaration (2008 revised) and the Ethics Committee of the Yazd University of Medical Sciences (IR.SSU.REC.1399.073). This trial was registered on Iranian Registry of Clinical Trials (IRCT20200925048832N1). Inclusion criteria are all volunteer patients aged 18–55 years old, with the sign of bloating at least 1 day a week during the last 3 months. Symptoms should be present at least 6 months before diagnosis, according to ROME 4 criteria.[24] Exclusion criteria are abnormal abdominal examinations, acute or chronic diseases of the gastrointestinal tract, pregnancy or breastfeeding, celiac disease, lactase deficiency, and irritable bowel syndrome.

Selected patients were randomly divided into two groups based on the table of random numbers (35 patients in each group): intervention and control groups. The intervention group received dry cupping therapy in addition to Dimethicone (40 mg orally after each meal) and the control group received only Dimethicone (40 mg orally after each meal). For dry cupping therapy, four glass cups were placed on the patient's abdomen in 4 points: above the umbilicus (epigastrium), below the umbilicus (hypogastric), and both sides of the umbilicus. Diameter of each cup was 6 cm. A vacuum is created by fire. In this way, a piece of alcohol-soaked cotton was fired and the glass was placed upside down on the flame for a few seconds to create negative pressure. Then, the glass was quickly placed on the desired body surface for about 10-15 minutes. This process was done twice a week with an interval of 3 days. The CONSORT flow diagram is available in Figure 1.

Both groups were treated for 2 weeks. Before intervention, 2 weeks after starting treatment, and 2 weeks after stopping treatment, gastrointestinal symptoms (frequency and severity of bloating, frequency of early satiety, frequency of borborygmus, and eructation) were evaluated by questionnaire. Each symptom was given a specific score according to Table 1.[25]

After data collection, analysis was done by SPSS version 22 using paired t-test, Mann–Whitney, and Friedman test.

RESULTS

In this study, 70 patients participated. In each group, one patient did not follow the treatment steps and only referred on the first day. Finally, 34 patients remained in each group who went to the end of the study stages. There was no statistically significant difference between the two groups in terms of demographic variables including gender, marital status, job, and education (Table 2).

The results of the variables related to flatulence (gastrointestinal symptoms) in times before the intervention, 2 weeks after the intervention, and 2 weeks after stopping treatment are summarized in Table 3.

These variables were compared between the two groups using Mann–Whitney test. Based on acquired results, the two groups did not have a statistically significant difference in terms of flatulence-related variables before the intervention. Frequency of borborygmus, severity of bloating, and frequency of bloating showed a significant decrease in the 2 weeks after the intervention and 2 weeks after stopping treatment in the intervention group compared with that of the control group. Flatulence variables were also evaluated and compared in each group before and after the intervention using Friedman test (Table 4).

Table 4 showed that all variables in both groups were statistically significant before and after the intervention, but the observed changes in the intervention group were greater than the control group.

DISCUSSION

Dry cupping is one of the most important treatment methods in traditional medicine that has unique benefits and features and it is effective in diagnosing diseases and treating many

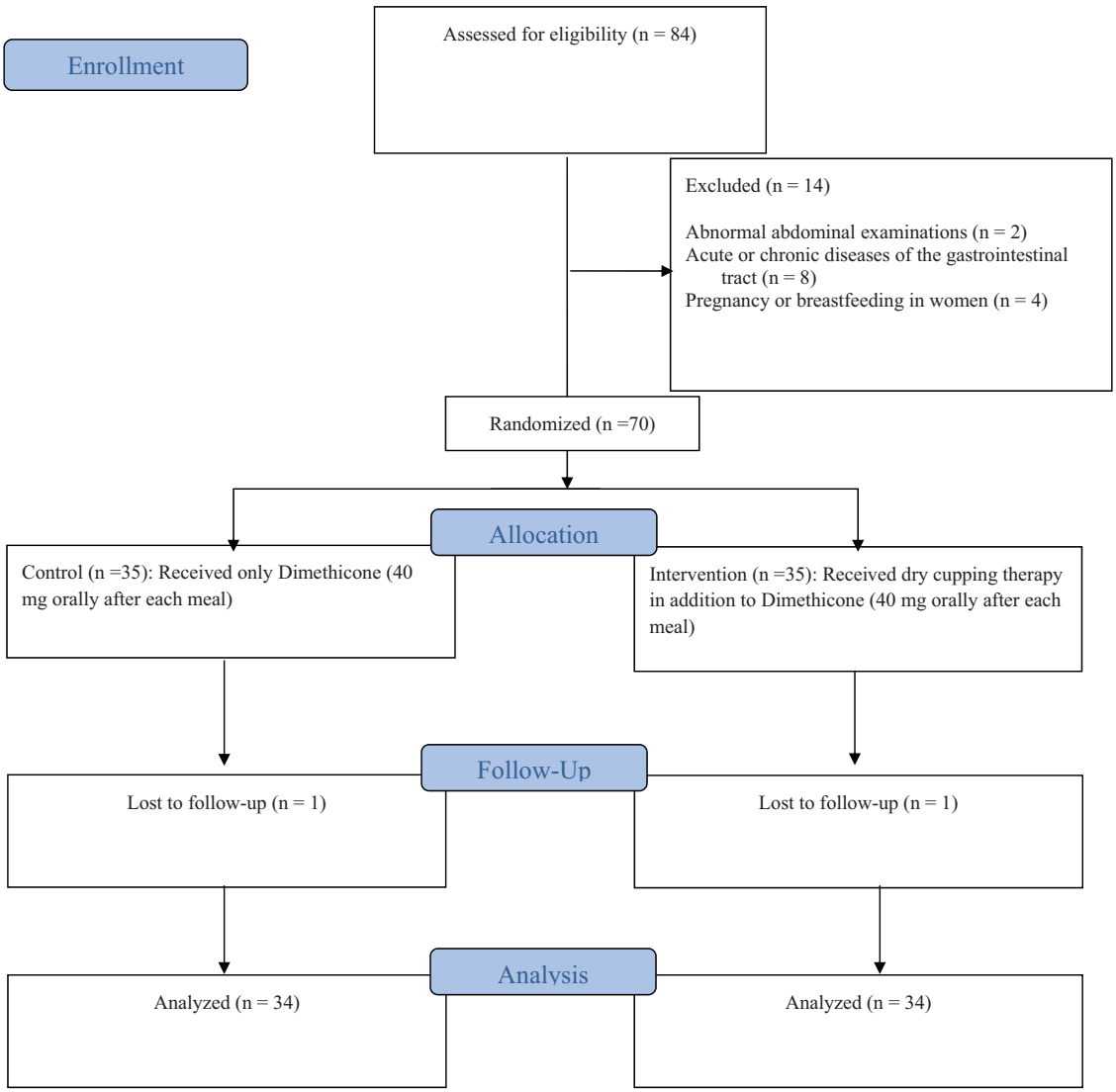

Figure 1 The CONSORT flow diagram

Table 1 Gaseous symptom scores.

Score	Frequency of bloating	Severity of bloating	Early satiety	Eructation	Borborygmus
0	Never	No complaint	Never	Never	Never
1	<1 day/month	Mild	1 day/week	1 day/week	1 day/week
2	1 day / month	Moderate	2 days/week	2 days/week	2 days/week
3	2–3days/month	Severe	3 days/week	3 days/week	3 days/week
4	1 day/week	Very severe	4 days/week	4 days/week	4 days/week
5	2 days/week	-	5 days/week	5 days/week	5 days/week
6	3 days/week	-	6 days/week	6 days/week	6 days/week
7	4 days/week	-	7 days/week	7 days/week	7 days/week
8	5 days/week	-	-	-	-
9	6 days/week	-	-	-	-
10	Every day	-	-	-	-

pains. This therapy was used to relieve inflammation, regulate blood flow, maintain calmness, and so on.[26] Dry cupping creates a negative pressure that is applied to the position by evacuating the air from the adhesive cup.[27] In this method, the therapist uses a special cup to create suction in the person's body for a few minutes.[28] In this study, the effect of cupping therapy along with chemical drug (Dimethicone) in reduction of flatulence symptoms was investigated. The results showed that cupping therapy could reduce the symptoms of flatulence in patients. This decrease was significantly different from

Table 2 Comparison of demographic variables between control and intervention groups.

Variables		Control	Intervention	P
Age (Mean ± SD, year)		37.69 ± 7.39	34.46 ± 7.81	0.673
Gender	Male	11	13	0.401
	Female	24	22	
Marital status	Single	4	3	0.5
	Married	31	32	
Job	Employed	24	22	0.40
	Unemployed	11	13	
Education	Under diploma	8	9	0.878
	Diploma and Bachelor	23	21	
	Higher than a bachelor's degree	4	5	

the group receiving only Dimethicone. Dimethicone acts as an anti-flatulent agent by prevention of mucus formation around gas pockets in the gastrointestinal tract.[29] It is usually used along with an antacid for elimination of trapped gas.[30] Reduction of flatulence symptoms was proved in various studies after Dimethicone treatment.[30-32] In our study, this significant reduction was also observed. However, different studies showed that Dimethicone has no effects on the actual amount of intestinal lumen gas. There are a lot of studies on alternative therapies for prevention of flatulence symptoms such as herbal and complementary medicine. Persian medicine, especially cupping therapy has a special place in this field. Traditional specialists showed that cupping therapy of the stomach can reduce the flatulence symptoms. These effects of cupping therapy can be due to promotion of digestive system. The suction caused by cupping effects on soft tissues, muscles, and ligaments and lead to increase in blood circulation.[33,34] This increase in blood flow exposes the tissues to more oxygen and nutrients. This exposure can relieve inflammation.[35] On the other hand, after the use of cupping therapy, the increase of eliminations occurs. These eliminations lead to reduction of flatulence-related symptoms such as bloating, distention of the abdomen, and fullness. Ahmad et al. indicated that cupping therapy improves subcutaneous blood flow and stimulates the autonomic nervous system.[36] Shahmat et al. found that abdominal dry cupping can be as effective as a standard laxative treatment in children with functional constipation.[37] In the study of Saha et al., the therapeutic effect of cupping was seen in the reduction of pain and increase of quality of life in patients with chronic non-specific neck pain.[38] Sultana et al. showed the effective reduction of pain intensity in dysmenorrhea.[39] Azizkhani et al. showed that cupping therapy reduces bleeding in menorrhagia.[40] Similar data were acquired from our study for cupping therapy in flatulence-related symptoms. Researchers also showed the potential effects of cupping therapy on symptoms of constipation in addition to bloating.[41,42] Based on these researches, cupping therapy reduces abdominal distention and bloating by reduction of gastrointestinal transit time or restore of healthy transit time and bowel movements. Increased release of trapped gas after cupping therapy can be one of the major reasons for reducing bloating and its symptoms.[37,43,44] So, dry cupping therapy can use along with chemical drugs for improvement of digestive and colon issues due to increase in bowel movements and decrease in gastrointestinal transit time. These effects lead to reduction of flatulence, abdominal discomfort, and abdominal distention and bloating. Our study proved these effects of cupping therapy.

Table 3 Comparison of flatulence variables between control and intervention groups.

Variables		Control	Intervention	P
Eructation	Before intervention	36.24	34.76	0.732
	2 weeks after starting treatment	35.79	33.21	0.518
	2 weeks after stopping treatment	36.82	32.18	0.247
Early satiety	Before intervention	35.07	35.93	0.836
	2 weeks after starting treatment	35.25	33.75	0.690
	2 weeks after stopping treatment	35.53	33.47	0.585
Borborygmus	Before intervention	36.80	34.20	0.581
	2 weeks after starting treatment	41.10	27.90	0.002
	2 weeks after stopping treatment	41.76	27.24	0.001
Bloating severity	Before intervention	35.44	35.56	0.978
	2 weeks after starting treatment	48.90	20.10	0.000
	2 weeks after stopping treatment	49.16	19.84	0.000
Bloating frequency	Before intervention	32.81	38.19	0.262
	2 weeks after starting treatment	47.21	21.79	0.000
	2 weeks after stopping treatment	48.84	20.16	0.000

Table 4 Comparison of flatulence variables in control and intervention groups before and after treatment.

Variables		Before intervention	2 weeks after starting treatment	2 weeks after stopping treatment	P
Eructation	Control	0.79	0.53	0.65	0.001
	Intervention	0.74	0.35	0.35	0.000
Early satiety	Control	0.5	0.37	0.47	0.039
	Intervention	0.5	0.29	0.29	0.001
Borborygmus	Control	1.85	1.24	1.59	0.000
	Intervention	1.68	0.41	0.5	0.000
Bloating severity	Control	3.12	2.44	2.76	0.000
	Intervention	3.12	0.56	0.91	0.000
Bloating frequency	Control	6.59	5.44	6.38	0.000
	Intervention	7.00	2.09	2.97	0.000

CONCLUSION

Based on this study, dry cupping could be applied to treat patients with flatulence and bloating.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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