

## Comparison of the Effect of Dry Cupping Therapy and Acupressure at BL23 Point on Intensity of Postpartum Perineal Pain Based on the Short Form of McGill Pain Questionnaire

Marzieh Akbarzade<sup>1\*</sup>, Mehrnoush Ghaemmaghami<sup>2</sup>, Zahra Yazdanpanahi<sup>1</sup>, Najaf Zare<sup>3</sup>, Abdolali Mohagheghzadeh<sup>4</sup>, Amir Azizi<sup>5</sup>

1- Maternal-Fetal Medicine Research Center, Department of Midwifery, School of Nursing and Midwifery, Shiraz University of Medical Sciences, Shiraz, Iran

2- Departments of Midwifery, Faculty of Nursing and Midwifery, Shiraz University of Medical Sciences, Shiraz, Iran

3- Department of Biostatistics, Infertility Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

4- Department of Traditional Pharmacy, Faculty of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran

5- Faculty of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran

### Abstract

**Background:** Perineal pain is a major morbidity in the first few days after delivery. This study aimed to investigate the effect of dry cupping therapy and acupressure at BL23 point on the intensity of postpartum perineal pain based on the short-form of McGill pain questionnaire (SMPQ).

**Methods:** The present clinical trial was conducted on 150 subjects in 3 groups of 50 cases. After at least 4-8 hr of delivery, cupping therapy was performed for 15-20 min up to 3 times a week (once a day) and acupressure was performed for 15-20 min based on clockwise model. The short-form of McGill pain questionnaire was completed both before and after the intervention. The SPSS statistical software was used to analyze the data using repeated measures ANOVA. Besides,  $p < 0.05$  was considered statistically significant.

**Results:** In the cupping therapy group, mean of the perineal pain intensity reduced from  $37.5 \pm 6.8$  before the intervention to  $11.1 \pm 6.1$ ,  $6.9 \pm 4.7$ , and  $3.8 \pm 3.6$  immediately, 24 hr, and 2 weeks after the intervention, respectively. The results of study showed that the differences between the intervention and control groups were statistically significant ( $p < 0.01$ ). Mean difference of the perineal pain intensity in the acupressure group reached from  $35.6 \pm 8.1$  before the intervention to  $10.4 \pm 5.5$  two weeks after the intervention, so the variation between intervention and control groups was statistically significant.

**Conclusion:** The study findings showed that cupping therapy and acupressure reduced perineal pain. Therefore, they may be considered as effective treatments for reducing pain intensity of allowing delivery.

**Keywords:** Acupressure, BL23 point, Dry cupping, Perineal pain, Postpartum.

**To cite this article:** Akbarzade M, Ghaemmaghami M, Yazdanpanahi Z, Zare N, Mohagheghzadeh A, Azizi A. Comparison of the Effect of Dry Cupping Therapy and Acupressure at BL23 Point on Intensity of Postpartum Perineal Pain Based on the Short Form of McGill Pain Questionnaire. *J Reprod Infertil.* 2016;17(1):39-46.

\* Corresponding Author:  
Marzieh Akbarzade,  
Department of Midwifery,  
Faculty of Nursing and  
Midwifery, Shiraz  
University of Medical  
Sciences, P.O. Box:  
71345-1359, Shiraz, Iran  
E-mail:  
akbarzadm@sums.ac.ir

Received: Oct. 26, 2014

Accepted: Mar. 3, 2015

### Introduction

Perineal pain is a major morbidity in the first few days after the delivery. Overall, one fifth of the female population experience this discomfort up to 10 days after natural vaginal delivery (NVD) (1). Perineal trauma has been reported

in 63% of vaginal deliveries, 15% of episiotomies, 46% of spontaneous ruptures, and 2% of the spontaneous ruptures accompanied by episiotomies. Therefore, a large number of women experience perineal trauma after delivery (2). In a study in

Canada, perineal pain was reported in 97% of the women with episiotomy, 95% of those with types I and II ruptures, and 75% of the women with healthy perineum. However, 71%, 60%, and 38% decrease was observed in these measures during the first week, respectively (3). The pain can reduce mobility, cause discomfort in urination and defecation, has negative effects on breast feeding, interferes with the women's taking care of themselves or their babies, and leads to maternal depression and fatigue. Moreover, perineal pain and long-lasting pain during the puerperium can have long term effects, such as painful intercourse, up to more than 18 months after the delivery (4). Georgina et al. (2001) conducted a randomized clinical trial in Australia in order to investigate the effect of perineal massage in the second stage of labor on the labor outcomes. In that study, the two groups were similar regarding the rate of healthy perineum, types I and II ruptures, and episiotomy. However, the rate of type III rupture was lower in the massage group compared to the control group (1.7% vs. 3.6%) (5). Pain is the most important reason for treatment and various complementary methods as well as traditional medicine have been advised for pain relief. The more intense the pain lead to the higher number of using treatment methods (6). Due to the fact that, regardless of the incidence of rupture, most of the women experience the perineal pain in the first days of the puerperium, pain relief interventions can be used for them. These interventions include pharmacological options, such as paracetamol, non-steroidal anti-inflammatory drugs (aspirin and naproxen and *etc.*), and opioids as well as non-pharmacological methods, such as subcutaneous electrical nerve stimulation, massage, and using local ice packs (7). In addition, cupping therapy is a type of physical therapy which is highly important in treatment of diseases, particularly painful syndromes (8). Cupping therapy removes the extra fluids, loosens and moves up the connective tissue joints, directs the blood flow toward the skin and muscles, stimulates the peripheral nervous system, and reduces pain (9). Cupping was performed by who trained in cupping and clinical setting which has been used in the treatment of pain in different diseases (10). Cupping therapy is an ancient medical technique from Europe, Asia, and the Middle East culture. Each of the different techniques of glass creates a suction cup on the painful area. Dry or fire cupping is used for normal skin (intact skin), while in the so-called wet or bloody skin

(hijama), the skin is cut. Cupping is applied to increase local blood and lymph circulation and to relieve painful muscle tension (11, 12).

Acupressure is also another branch of acupuncture. In this method, fingers are used for pressing the key points on the skin in order to stimulate and induce the body's natural self-healing capabilities (13). In the present study, BL23 point (Shenshu) which is located 1.5 cuns lateral to the lower border of the spinous process of the second lumbar vertebra was employed. Due to the location of this point, the cups can be correctly placed on a flat space and acupressure can be appropriately applied. This point has also been used in treatment of pain syndromes such as low back and knee pain, genital pain, gynecological disorders such as infertility, irregular menstruation, chronic vaginal discharges, and insomnia (14). Furthermore, acupressure leads to improvement in blood circulation and energy flow, balance between Ying Yang symbols, secretion of neurotransmitters, activation of opioids system, and removal of lactic acid and carbon monoxide accumulated in the body during muscle contraction. Thus, it maintains the body's natural function and reduces the pain (15).

Considering the high frequency of the women suffering from this pain in Iran and other countries around the world and due to the limited number of clinical trials on cupping therapy, the present study aimed to link this science to the traditional medicine using the reliable scientific articles as well as the instructions of traditional medicine experts.

### Methods

The present randomized clinical trial was conducted in the postpartum unit of Hafez hospital affiliated of Shiraz University of Medical Sciences in 2012. According to the sample size formula and statistical consultation, a 150-subject sample size (50 cases in each group) was determined for the study. At first, 182 qualified women were enrolled in the study after signing written informed consents. However, 19 and 13 women were excluded from the study due to the pregnancy complications and demographic characteristics, respectively. Finally, 150 women were selected using purposeful random sampling and divided into three groups of cupping therapy, acupressure, and control.

**Admissions criteria:** The inclusion criteria were the age between 18 and 40 years, having at least

middle school education, not suffering from any serious physical and mental disorders such as vertebral fractures, disk hernia, acute inflammation, and deep venous thrombosis, living in Shiraz, being willing to take part in the study, and signing written informed consents.

**Data collection:** After at least 4-8 hr of delivery, cupping intervention was performed in the postpartum care unit of the hospital. Cupping therapy was performed for 15-20 min up to 3 times every other day. It was conducted by researchers, but for 3 weeks under the supervision of a professional adviser, necessary training was performed and cupping therapy was approved by the researchers. Cupping therapy is done in two forms of dry and wet cupping. Our study was conducted through dry cupping. The patients were laid in prone position and cupping was performed as follows: 3-4 glasses with diameters from 75 mm to 120 mm for obese and lean subjects were held inverted over BL23 point. A glass cup was utilized to create suction over a painful area. As the air inside of the cups was cooled, vacuums were created, drawing up the skin within each cup (12).

The glasses were removed after 10 to 20 min depending on the color of the circular so-called cupping marks, which range from slightly rose to dark pink. Cupping was performed on alternate days. It was hypothesized that specific changes in the local tissue structures occur as a result of local negative pressure in the cups used which stretches the nerve and muscle, thereby increasing blood and lymphatic circulation and causing autohemolysis and relieving painful muscle tension (16).

On the other group, acupressure was applied for 15-20 min. However, the control group subjects received no intervention.

In acupressure based on clockwise model, the researcher pressed "pressure points- BL 23" with his thumb, in counter-clockwise direction for 5 min. In the second 5 min, pressure was applied for 5 min on the opposite direction. Similarly the pressure continued for 20 min. In fact, this process took about 20 min, twice in the hospital and once after discharge. The third intervention was coordinated by calling mothers to refer to the hospital (17, 18).

The short-form of McGill pain questionnaire was completed in the three study groups before and immediately, 24 hr, and 2 weeks after the intervention. This questionnaire is one of the most reliable pain assessment tools allowing the patients

to express their perception of pain using appropriate words. The short-form of McGill pain questionnaire consists of 11 items in the sensory dimension and 4 items in the emotional dimension and the patients have to identify their pain quality through 4 options of none, mild, average, and severe. In the study conducted by Bagheri et al. (2007) on 78 patients who had undergone open surgery of lower extremity fractures at Imam Hossein hospital, Shahrood, Iran, the reliability of this questionnaire was reported as 98%. The reliability and validity of the questionnaire in the study of Bagheri et al. was also the basis for the present study (19).

**Data analysis:** The study data were analyzed using SPSS statistical software (v.16). Repeated measures ANOVA was used for comparing the changes in the mean score of pain before and after the intervention regardless of the effect of group and time. In addition, Chi-square test was utilized in order to compare the demographic features among the three study groups. All the statistical tests were performed considering CI=95% and alpha coefficient=0.05.

**Strengths of the study:** Strengths of this study include the following; first, the study employed BL 23 point (Shen Shu) through acupuncture and acupressure to relieve back pain and perineal pain, but few studies in this field are available.

Second, a study of cupping therapy and its impact has been done on chronic pain. But so far, in obstetrics and diseases of women no study has been performed in the last 30 years.

**Ethical considerations:** This research project was approved by the local Ethics Committee of Shiraz University of Medical Sciences and written informed consents were obtained from all the participants. The research in Iranian Registry of clinical trial has been registered with registration number IRCT: 2013072611944N2.

**Limitations of the study:** Apparently, placebo could be used in order to avoid bias. However, it was not employed in the current study due to the transparent nature of its performance. Thus, further placebo-controlled clinical trials are needed to be conducted in order to determine the accuracy of the obtained results.

## Results

The results of the present study showed that the three groups were similar regarding the demo-

**Table 1.** The results of short-form of McGill pain questionnaire (SMPQ) for the intervention and control groups (M±SD)

Data	Cupping group	Acupressure group	Control group	P-value
<b>SMPQ</b>				
Baseline	37.5±10.8	35.6±8.1	34.7±8.8	0.1
Immediately post-intervention	11.1±6.1	22.6±6.6	26.4±7.0	0.001
24 hr post-intervention	6.9±4.7	15.3±5.8	16.8±6.4	0.001
2 weeks post-intervention	3.8±3.6	10.4±5.5	11.6±4.7	0.001
<b>SMPQ sensory</b>				
Baseline	27.6±5.5	25.9±5.9	25.8±5.5	0.1
Immediately post-intervention	8.8±4.7	17.4±5.5	20.7±7	0.001
24 hr post-intervention	5.4±3.5	11.5±4.9	13.2±4.2	0.001
2 weeks post-intervention	2.7±2.9	7.7±4.1	8.8±3.7	0.001
<b>SMPQ emotional</b>				
Baseline	10.1±2.5	9.8±2.5	9.3±2.5	0.1
Immediately post-intervention	2.2±1.9	5.2±2.2	6.2±2.7	0.001
24 hr post-intervention	1.5±1.6	3.7±1.8	4.2±2.1	0.001
2 weeks post-intervention	1.6±1.0	2.8±2.3	2.9±1.9	0.001

graphic characteristics, such as the mothers' age ( $p=0.064$ ). Moreover, according to the short-form of McGill pain questionnaire, the means of perineal pain intensity before the intervention were  $37.5\pm6.8$ ,  $35.6\pm8.1$ , and  $34.7\pm8.8$  in the cupping therapy, acupressure, and control groups, respectively. The results of repeated measures ANOVA showed no significant difference among the three groups in this regard ( $p=0.1$ ). After the intervention, the means of perineal pain intensity were  $11.1\pm6.1$ ,  $22.6\pm6.6$ , and  $26.4\pm7.0$  in the cupping therapy, acupressure, and control groups, respectively and repeated measures ANOVA showed that the difference between the intervention groups and the control group was statistically significant ( $p<0.001$ ). Also, significant changes were shown in pain intensity 24 hr and 2 weeks after the intervention ( $p<0.01$ ). Thus, both cupping therapy and acupressure played an important role in reducing the perineal pain, with cupping therapy being more effective. In spite of the fact that no difference was found among the three groups before the intervention, cupping therapy and acupressure were quite effective in reducing the sensory dimension of the perineal pain immediately, 24 hr, and 2 weeks after the intervention ( $p<0.001$ ). The changes in the emotional dimension of the questionnaire are presented in table 1.

### Discussion

The present study was the first clinical trial on the gynecological diseases in Iran and around the

world. This study aimed to investigate the therapeutic effects of cupping therapy and stimulation of body points by application of pressure on the intensity of postpartum perineal pain. According to the study results, the mean intensity of postpartum perineal pain in the cupping therapy group, compared to the control group, reduced and the difference was statistically significant ( $p=0.01$ ). The results of a study by Emerich et al. (2014) on 12 patients (6 neck pain patients and 6 healthy subjects) indicated that cupping therapy led to increased pressure pain thresholds. This result is compatible with our findings (20).

Also, in the study by Markowski et al. (2014), the effect of cupping therapy was investigated on twenty-one patients who reported back pain for at least 8 weeks and the study revealed reduced pain and tenderness, and improved range of motion for patients with low back pain (LBP). The results showed that prompt reduction of pain and muscle tenderness and improving the range of motion have improved functional movement. This is compatible with our results, revealing the effectiveness of cupping therapy in reducing pain (21).

Kim et al. (2011) searched fourteen databases and in seven of them, all the inclusion criteria were analyzed. The positive effects of cupping was shown in cancer pain ( $p<0.05$ ) and trigeminal neuralgia ( $p<0.01$ ) compared with anticancer drugs and analgesics in two studies. The favorable effects of cupping on brachialgia pain compared with usual care ( $p=0.03$ ) or a heating pad ( $p<$

0.001) have been reported. However, they advised more detailed studies are needed to confirm the effectiveness of cupping which is used to treat pain (22). In a study conducted in Iran, cupping therapy was introduced as an effective method in sedation to reduce lower back pain after childbirth (23). The results of these studies are compatible with those of the current study.

Dry cupping therapy is based on the discharge principle, *i.e.* moving the waste materials from one place to another. Dry cupping therapy is employed in treatment of various disorders, including excessive menstrual bleeding, edema, scrotal hernia, sciatica, hydrocele, and nose bleeding (22).

In the acupressure group, the mean intensity of perineal pain reduced and the differences among intervention and control groups were statistically significant. This method is based on the assumption that special human body channels, called meridians, adjust the energy flow and imbalance in this flow results in incidence of diseases. However, acupressure results in opening of the channels as well as balance in the energy flow, and consequently it restores the human health (24). This might have caused significant reduction in the intensity of perineal pain in the acupressure group in this study.

In a study by Hsieh et al. (2004), the researchers used two groups of acupressure (69 patients) and physical therapy (77 patients); after the intervention, acupressure as an effective alternative medicine was introduced to reduce back pain (25). Yip et al. studied acupressure using lavender oil applied on patients with back pain. Before the intervention, VAS scores for the intervention and control groups were 6.38 and 5.70 of 10, respectively ( $p=0.24$ ). A week after the application of acupressure, the intervention group had a 39% pain reduction ( $p=0.0001$ ); also, walking time improved ( $p=0.05$ ) (26). The results of these studies are compatible with the current study. The only difference is the scale of measuring pain. The study of visual pain scale was used to measure pain, but in our study McGill questionnaire was administered.

The study was conducted in Iran, using acupressure at the sp6 point (27) and Jian Jing-Gall Bladder Meridian point (GB-21) (28) to reduce the pain of labor, duration of labor and reducing the rate of cesarean; also, a mechanism to reduce maternal anxiety was effective in increasing maternal fetal attachment (29).

The mean of the sensory dimension of perineal

pain intensity in the cupping therapy group decreased and the differences were statistically significant. Cupping therapy directs the blood flow towards the skin and muscles and stimulates the peripheral nervous system. It also stimulates the autonomic nervous system through mediating the immune as well as neurohormone systems and eventually reduces the patients' pain (30). On the other hand, the mean of the sensory dimension of perineal pain intensity in the acupressure group decreased. However, no significant difference was found compared to the cupping therapy group. Acupressure plays a key role in releasing endogenous endorphins and preventing the transfer of pain signals to hypothalamus through replacement of the pressure messages in the pain control valves (31). This causes the patient not to feel lonely and to be emotionally supported by the therapist. However, the lack of a significant difference might be due to the patient's discomfort by the therapist's finger pressure as well as the postpartum pains while breast feeding.

The mean of the emotional dimension of perineal pain intensity decreased in the cupping therapy group. However, the mean of the emotional dimension of perineal pain intensity increased after 2 weeks compared to 24 hr after the intervention which might be due to the disruption of the patients' relationship with the therapist. In fact, the psychological effects of cupping therapy which result from the continuous nature of treatment as well as the close physical and psychological relationships between the cupping therapists and the patients play a critical role in the emotional dimension of pain intensity (32).

In the acupressure group, the mean of the emotional dimension of perineal pain intensity decreased but the differences were not statistically significant compared to the cupping therapy group. This might be due to the same reason mentioned for the sensory dimension. Moreover, the continuous presence of the researcher beside the patients during the intervention and the follow-up has been of great help in improving the patients' emotional status. Jahdi et al. (2012) conducted a clinical trial on 60 primiparous women in Kamali hospital, Karaj, Iran in order to investigate the effect of lavender extract on reduction of the perineal pain. A significant difference was found between the two groups regarding the pain criteria 4 hr ( $p=0.002$ ) and 5 days ( $p<0.001$ ) after episiotomy. However, no significant difference was observed between the two groups after 12 hr ( $p=0.066$ ).

(33). Using the plant extracts for treating the diseases has always been important in traditional medicine.

Furthermore, Oliveira et al. (2012) performed a research in Brazil in order to assess the effect of using local ice packs for various time periods on perineal pain resulting from trauma during delivery. According to the results, pain reduced for above 50% in 72.8% and for 30-50% in 21.9% of the subjects. In addition, all the study participants were satisfied with using the ice packs (34). Moreover, Santos et al. (2012) carried out a clinical trial in Australia in order to study the effect of low-level laser therapy on improvement of perineal pain resulting from episiotomy in primiparous women. Laser therapy was directly performed on three perineal points after episiotomy suturing for three sessions. Then, the intensity of perineal pain was assessed using a scale containing 10 scores. The study results revealed a significant reduction in the intensity of pain in the second and third sessions of laser therapy compared to the first session ( $p=0.003$  and  $p=0.001$ , respectively) (35). Application of acupuncture on the right ankle could mobilize the blocked energy flow, affect the genital organs' function, and reduce the pain. It seems that in case of acupressure point is easily accessible to the researcher, the intervention will be accompanied by a higher success rate.

Up to now, the findings of various studies have supported the use of traditional medicine in treatment of diseases and no complications have been reported in this regard to affect its efficiency and safety. In this study, the intensity of pain decreased in both intervention groups, but a significant reduction of pain was found in the cupping therapy group. Therefore, both cupping therapy and acupressure can be considered as effective methods for reduction of postpartum perineal pain in primiparous women.

### Conclusion

The findings of the present study showed that postpartum pain reduced in both intervention groups, but a significant reduction was found in the cupping therapy group. Therefore, both cupping therapy and acupressure can be considered as effective methods for reduction of postpartum anxiety in primiparous women. Of course, further studies are required to be conducted on the issue in order to confirm the obtained results.

### Acknowledgement

The present article was extracted from the thesis written by Ms. Mehrnoosh Ghaemmaghami (proposal No. 91-6341, IRCT: 2013072611944N2).

This study was financially supported by the Research Vice-chancellor of Shiraz University of Medical Sciences, Shiraz, Iran. Hereby, the authors would like to thank the head of Hafez hospital and all the women who kindly cooperated in the study. The authors would like to thank Dr Shokrpour in clinical research center in Nemazee hospital of Shiraz University of Medical Sciences for improving the language of the manuscript.

### Conflict of Interest

Authors declare no conflict of interests.

### References

1. McAllister RK, Carpentier BW, Malkuch G. Sacral postherpetic neuralgia and successful treatment using a paramedial approach to the ganglion impar. *Anesthesiology*. 2004;101(6):1472-4.
2. Turner JA, Ciol MA, Von Korff M, Liu YW, Berger R. Men with pelvic pain: perceived helpfulness of medical and self-management strategies. *Clin J Pain*. 2006;22(1):19-24.
3. Macarthur AJ, Macarthur C. Incidence, severity, and determinants of perineal pain after vaginal delivery: a prospective cohort study. *Am J Obstet Gynecol*. 2004;191(4):1199-204.
4. Munir MA, Zhang J, Ahmad M. A modified needle-inside-needle technique for the ganglion impar block. *Can J Anaesth*. 2004;51(9):915-7.
5. Stamp G, Kruzins G, Crowther C. Perineal massage in labour and prevention of perineal trauma: randomised controlled trial. *BMJ*. 2001;322(7297):1277-80.
6. Wallace MS, Leung AY, McBeth MD. Malignant pain, textbook of regional anesthesia. Pennsylvania: Churchill Livingstone Publishers; 2002. 585 p.
7. Sultan AH, Thakar R. Lower genital tract and anal sphincter trauma. *Best Pract Res Clin Obstet Gynaecol*. 2002;16(1):99-115.
8. Michalsen A, Bock S, Ludtke R, Rampp T, Baecker M, Bachmann J, et al. Effects of traditional cupping therapy in patients with carpal tunnel syndrome: a randomized controlled trial. *J Pain*. 2009;10(6):601-8.
9. Farhadi K, Schwebel DC, Saeb M, Choubsaz M, Mohammadi R, Ahmadi A. The effectiveness of wet-cupping for nonspecific low back pain in Iran: a randomized controlled trial. *Complement Ther Med*. 2009;17(1):9-15.

10. Hsieh LL, Kuo CH, Yen MF, Chen TH. A randomized controlled clinical trial for low back pain treated by acupressure and physical therapy. *Prev Med.* 2004;39(1):168-76.
11. Eisenberg DM, Davis RB, Ettner SL, Appel S, Wilkey S, Van Rompay M, et al. Trends in alternative medicine use in the United States, 1990-1997: results of a follow-up national survey. *JAMA.* 1998;280(18):1569-75.
12. Lauche R, Cramer H, Choi KE, Rampp T, Saha FJ, Dobos GJ, et al. The influence of a series of five dry cupping treatments on pain and mechanical thresholds in patients with chronic non-specific neck pain--a randomised controlled pilot study. *BMC Complement Altern Med.* 2011;11:63.
13. Mirbagher-Ajorpaz N, Adib-Hajbaghery M, Mosaebi F. The effects of acupressure on primary dysmenorrhea: a randomized controlled trial. *Complement Ther Clin Pract.* 2011;17(1):33-6.
14. Lim S. WHO Standard Acupuncture Point Locations. *Evid Based Complement Alternat Med.* 2010;7(2):167-8.
15. Dibble SL, Chapman J, Mack KA, Shih AS. Acupressure for nausea: results of a pilot study. *Oncol Nurs Forum.* 2000;27(1):41-7.
16. Hong SH, Wu F, Lu X, Cai Q, Guo Y. [Study on the mechanisms of cupping therapy]. *Zhongguo Zhen Jiu.* 2011;31(10):932-4. Chinese.
17. Astin JA. Why patients use alternative medicine: results of a national study. *JAMA.* 1998;279(19):1548-53.
18. Gharloghi S, Torkzahrani S, Akbarzadeh AR, Heshmat R. The effects of acupressure on severity of primary dysmenorrhea. *Patient Prefer Adherence.* 2012;6:137-42.
19. Bagheri H, Noorian J, Ebrahimi H, Maghsood Z, Atash sokhan G. Prevalence and specifications of postoperative sore throat following general endotracheal anesthesia in patients undergoing surgery. *J Knowl Health.* 2007;2(2):6-10.
20. Emerich M, Braeunig M, Clement HW, Ludtke R, Huber R. Mode of action of cupping--local metabolism and pain thresholds in neck pain patients and healthy subjects. *Complement Ther Med.* 2014;22(1):148-58.
21. Markowski A, Sanford S, Pikowski J, Fauvell D, Cimino D, Caplan S. A pilot study analyzing the effects of Chinese cupping as an adjunct treatment for patients with subacute low back pain on relieving pain, improving range of motion, and improving function. *J Altern Complement Med.* 2014;20(2):113-7.
22. Kim JI, Lee MS, Lee DH, Boddy K, Ernst E. Cupping for treating pain: a systematic review. *Evid Based Complement Alternat Med.* 2011;2011:467014.
23. Akbarzadeh M, Ghaemmaghami M, Yazdanpanahi Z, Zare N, Azizi A, Mohagheghzadeh A. The effect of dry cupping therapy at acupoint BL23 on the intensity of postpartum low back pain in primiparous women based on two types of questionnaires, 2012; A randomized clinical trial. *Int J Community Based Nurs Midwifery.* 2014;2(2):112-20.
24. Kober A, Scheck T, Schubert B, Strasser H, Gustorff B, Bertalanffy P, et al. Auricular acupressure as a treatment for anxiety in prehospital transport settings. *Anesthesiology.* 2003;98(6):1328-32.
25. Hsieh LL, Kuo CH, Yen MF, Chen TH. A randomized controlled clinical trial for low back pain treated by acupressure and physical therapy. *Prev Med.* 2004;39(1):168-76.
26. Yip YB, Tse SH. The effectiveness of relaxation acupoint stimulation and acupressure with aromatic lavender essential oil for non-specific low back pain in Hong Kong: a randomised controlled trial. *Complement Ther Med.* 2004;12(1):28-37.
27. Akbarzadeh M, Moradi Z, Hadianfard MJ, Zare N, Jowkar A. Comparison of the effect of mono-stage and bi-stage acupressure at Sp6 point on the severity of labor pain and the delivery outcome. *Int J Community Based Nurs Midwifery.* 2013;1(3):165-72.
28. Akbarzadeh M, Moradi Z, Jowkar A, Zare N, Hadianfard MJ. Comparing the effects of acupressure at the Jian Jing-Gall Bladder Meridian (GB-21) point on the severity of labor pain, duration and cesarean rate in mono-and bi-stage interventions. *Women's Health Bull.* 2015;2(1): e24981.
29. Moradi Z, Akbarzadeh M, Moradi P, Toosi M, Hadianfard MJ. The Effect of Acupressure at GB-21 and SP-6 Acupoints on Anxiety Level and Maternal-Fetal Attachment in Primiparous Women: a Randomized Controlled Clinical Trial. *Nurs Midwifery Stud.* 2014;3(3):e19948.
30. Kim JI, Kim TH, Lee MS, Kang JW, Kim KH, Choi JY, et al. Evaluation of wet-cupping therapy for persistent non-specific low back pain: a randomised, waiting-list controlled, open-label, parallel-group pilot trial. *Trials.* 2011;12:146.
31. Hsieh LL, Kuo CH, Lee LH, Yen AM, Chien KL, Chen TH. Treatment of low back pain by acupressure and physical therapy: randomised controlled trial. *BMJ.* 2006;332(7543):696-700.
32. Hong YF, Wu JX, Wang B, Li H, He YC. The effect of moving cupping therapy on non-specific low back pain. *Chin J Rehabil Med.* 2006;21(4):340-3.

33. Sheikhan F, Jahdi F, Khoei EM, Shamsalizadeh N, Sheikhan M, Haghani H. Episiotomy pain relief: Use of Lavender oil essence in primiparous Iranian women. *Complement Ther Clin Pract.* 2012;18(1): 66-70.
34. Oliveira SM, Silva FM, Riesco ML, Latorre Mdo R, Nobre MR. Comparison of application times for ice packs used to relieve perineal pain after normal birth: a randomised clinical trial. *J Clin Nurs.* 2012;21(23-24):3382-91.
35. Santos Jde O, Oliveira SM, Nobre MR, Aranha AC, Alvarenga MB. A randomised clinical trial of the effect of low-level laser therapy for perineal pain and healing after episiotomy: a pilot study. *Midwifery.* 2012;28(5):e653-9.