Do Chamomile effect on duration, amount of bleeding, and interval of menstrual cycles?

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1. Introduction
Menstruation is a physiological process that occurs in most women of reproductive age. This is the regular discharge of blood and mucosal tissue from the inner lining of the uterus through the vagina [1], that occurs due to the declining levels of progesterone and estrogen which stimulates the release of prostaglandins that cause the uterine spiral arterioles to constrict [2]. As a result, the cells they supply become oxygen-deprived and start to die. The entire stratum functional is sloughed off [3]. The menstrual flow passes from the uterine cavity through the cervix and vagina to the exterior [4]. Menstruation occurs according to a specific pattern and order, the menstrual pattern includes the amount of bleeding and duration and interval of menstrual cycles [3]. The duration of the menstrual cycle typically ranges from 24 to 35 days, with an average of 28 days. The menstrual phase, which is generally called menstruation or menses, lasts for about the first 5 days of the cycle [5], and the average bleeding in the

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Menstruation, bleeding, Chamomile, Herbal Plants

Abstract
Objectives: Heavy menstrual bleeding has a significant effect on women’s daily life and health consequences for theirs. Attention to women’s and girls’ menstrual health is critical for their health. This study presents the results of a novel research on the effect of chamomile capsule on the amount of bleeding, and the duration and interval of menstrual cycles.

Methods: The current study was a randomized, double-blind, clinical trial, which was carried out on 118 female students living in dorms of Guilan University of Medical Sciences. The participants were divided into two groups of 59, each receiving either chamomile capsule 250 mg or placebo three times a day, for an interval beginning from 7 days before the starting menstruation till the next onset. Higham chart is the pictorial blood loss assessment to determine the amount and duration of menstrual bleeding. Data were analyzed using SPSS version 20. Alpha was set at 0.05 for all analyses.

Results: The average amount of bleeding in the chamomile group decreased after taking the capsule (p = 0.001). However, statistical tests did not show any significant difference in terms of duration and interval between two bleeding in both the experimental and control groups (p > 0.05).

Conclusion: The present study showed that the chamomile capsule decreases the amount of menstrual bleeding and can be used as a therapeutic method.
normal menstrual cycle is 30-40 ml [6]. It seems that the use of some herbs can affect menstruation. Today, the use of herbal medicine has become more important. In Iran, more attention has been paid to traditional medicine [7]. One of the most well-known and most used herbal plants is Matricaria Chamomilla (Chamomile) [8]. It has been stated in traditional books that chamomile is a medicinal plant that can affect menstruation [9]. Chamomile is a plant of the Asteraceae Family, Matricaria Genus, and Chamomilla Species [10]. Chamomile extract consists of 120 types of chemical composition including Chamazulene which has anti-inflammatory and antioxidant effects, Apigenin with anti-inflammatory, sedative and anti-neoplastic effects, Flavonoid with anti-inflammatory and anti-anxiety effects, and Alpha-Bisabol with anti-inflammatory and digestive effects, and the most important active ingredients in it are: α - Hetroside, B- Hetroside, Salicylic acid, and Metoxy-coumarin, Chamomile has a strong anti-spasmodic effect due to the presence of a spirometer [11]. Chamomile anti-spasmodic properties justify the ancient reputation of this plant in relieving painful menstruation [12]. The Glycine chemical found in chamomile relieves muscle spasms and can act as a relaxant, higher levels of Glycine may relax the uterus [13]. In a study by Sharifi et al in 2014, excessive menstrual bleeding was reported in the chamomile extract receiving group [12]. The results of Ehsani et al. research in 2014 showed that a decoction of herbal plants (Anthemis, Salvia, and Zataria) could decrease the intensity of menstrual flow [14]. Although, the United States Food and Drug Administration has classified chamomile essential oil and oil as safe items [8]. But, Chamomile is of the Compositae family; thus, patients hypersensitive to this family may experience allergy symptoms. Also, possible side effects of chamomile include severe allergic reactions (chest tightness, wheezing, hives, rash, itching), contact dermatitis/skin reactions, eye irritation (when applied near the eyes), hypersensitivity reaction and vomiting [15]. In the present study, we have been using chamomile capsules, which is a new form of this plant and made from dried flowers of chamomile and containing all the active ingredients of chamomile. Considering the willingness of people to receive herbal medicines, it is imperative that physicians and midwives have full information about the effect of herbal medicines on the menstrual pattern. The literature review indicates that Chamomile’s effect on menstrual bleeding was different. Therefore, in order to consolidate the previous results or find new results, this study aimed to investigate the effect of chamomile capsule on the amount of bleeding and the duration and interval of menstrual cycles.

2. Materials and methods

This randomized, double-blinded and placebo-controlled trial was performed following the approval by the ethics committee of Guilan University of Medical Sciences, Guilan, Iran, under registration (IR.RUMS.REC.1395.396) and recorded by the International Center for Registration of Clinical Trials in Iran (code IRCT201705214295N3). The study was conducted on 118 students residing in the Kows-
square, Mann Whitney test was used to make intergroup and intragroup comparisons in terms of intensity of the amount and duration of menstrual bleeding. A P-value of less than 0.05 was considered significant.

3. Results

Baseline characteristics of cases and controls are presented in Table 1, the results showed that 73% of the first group and 68% of the second group ranged between 20 - 25 years, the age at menarche in 84% of the first group and 87% of the second group was 11 - 13 years old, 63% of the first group and 56% of the second group had normal body mass index, the duration of bleeding in 48% of the first group and 56% of the second group was 5 - 6 days, and the interval between the periods was 52% the first group and 56% in the second group was 24 - 27 days. The rate of bleeding was estimated at more than 60 cc in 43% of the subjects in the first group and 39% of the second group. The two groups were matched together and there was not significantly different between the Chamomile and control groups (p > 0.05). As shown in Table 2, in the Chamomile group amount of bleeding after intervention reduced significantly than before intervention from 56.9 ± 13.4 to 52.5 ± 12.8 (p < 0.001), whereas this score after intervention in the placebo group had no significant difference with before intervention (55.7 ± 12.2 to 54.4 ± 12.8, p = 0.36). However, duration and interval of menstrual cycles after intervention in Chamomile and the placebo group had no significant difference with before intervention (p > 0.05), also, there was no significant difference between the duration and interval of menstrual cycles after treatment between the two groups (p > 0.05).

4. Discussion

Based on our results, after having one menstrual cycle intervention, participants in the Chamomile group showed significant reductions in the amount of bleeding than before the intervention.

One of the most likely factors causing severe menstrual bleeding has been reported to be an increase in the production of uterine prostaglandins [6, 16]. Regarding the fact that E2 and F2a prostaglandins increase blood flow to the uterus and E2 prostaglandins are Vasodilators, the probability of an increase in menstrual bleeding increases [17]. Several research has shown that the inhibition of prostaglandin synthesis can ameliorate the amount of menstrual bleeding in women [18, 19]. In the present study, the amount of menstrual bleeding in the pre-intervention stage was 56 mg on average, which was more than the mean of bleeding in the normal menstrual cycle (40-30 ml) per cycle [2]. Since chamomile has anti-prostaglandin property, this plant interrupts Cyclooxygenase resulting in the production of prostaglandins and leukotrienes [11]. Considering the difference between the results

| Table 1 | Characteristics of the participants |
|---------|-----------------------------------|
| Variables | Chamomile (n = 54) | Placebo (n = 54) | P-value |
| Age (years) | 22.8 ± 2.1 | 23.5 ± 2.3 | 0.09* |
| Body mass index (kg/m2) | 21.7 ± 1.9 | 22.2 ± 2.0 | 0.25* |
| Menarche age (years) | 12.1 ± 0.9 | 11.8 ± 0.9 | 0.07* |
| Duration of menses (days) | 6.5 ± 0.6 | 6.3 ± 0.7 | 0.12* |
| Menstrual interval (days) | 27.2 ± 1.5 | 26.6 ± 1.2 | 0.05* |

* In depended t-test

| Table 2 | Amount and duration of menstrual bleeding before and after treatment |
|---------|-----------------------------------|
| Variables | Group | Time |
| | | Before treatment (Mean ± SD) | After treatment (Mean ± SD) | P-value* |
| Amount of menstrual bleeding (cc) | Chamomile | 56.9 ± 13.4 | 52.5 ± 12.8 | P < 0.001 |
| | Placebo | 55.7 ± 12.2 | 54.4 ± 12.8 | P = 0.36 |
| Duration of menstrual bleeding (day) | Chamomile | 6.3 ± 0.7 | 6.5 ± 0.6 | P = 0.08 |
| | Placebo | 6.3 ± 0.5 | 6.3 ± 0.6 | P = 0.48 |
| Interval of menstrual cycles (day) | Chamomile | 27.13 ± 1.6 | 26.16 ± 1.6 | P = 0.07 |
| | Placebo | 26.95 ± 1.3 | 26.65 ± 1.5 | P = 0.37 |

* paired sample t-test; ** In depended t-test
of this study with Sharifi’s research, which showed that Chamomile extract increases menstrual bleeding [12], it seems that the type and concentration of chemical compounds present in dry chamomile and chamomile extract have different effects on menstruation. Few studies have been performed on the dose and duration of chamomile for the treatment of the amount of bleeding, and duration and interval of menstrual cycles. But, the evidence available indicates the extract of chamomile at the doses of 25 ml decreased the amount of menstrual bleeding [14]. Also, a typical protocol for decrease the severity of dysmenorrhea taking Chamomile at the doses of 15 ml [20]. The results of the study by Karimian et al. revealed the chamomile capsule effect on the decrease amount of menstrual bleeding. In the study, participants consumed 250 mg chamomile capsule every 8 hours in the first 3 days of menstruation [21]. As well as, in contrast to the research conducted by Elsani et al. With the aim of investigating the efficiency of herbal medicine (Anthemis, Salvia, and Zataria) on menstrual cycle, blood discharging [14], it seems that the consumption of dried chamomile capsules, such as drinking mixture decoction of the herbal composition, reduces the amount of menstrual bleeding. Similarly, in a study by Mirbagheri et al. (2012), results similar to those of the present study were obtained, based on the results of this study pure honey consumption has reduced the amount of menstrual bleeding in comparison with before the intervention, but it did not affect the duration of bleeding and the interval between two bleeding [22]. Also, in a study by Mohammad Alizadeh et al. The positive effect of calcium and magnesium composition for reducing the amount and duration of menstrual bleeding has been shown [23]. In the above studies, chamomile extract and tea or chemical compounds were used to reduce bleeding, but in the present study, chamomile capsules were used to reduce bleeding.

5. Conclusions

Because herbal medicines are generally considered safe and proved to be effective against various human ailments, have received attention in different fields of medical science in the past decade, and due to the increasingly popular tendency to use herbal medicines, it is imperative that physicians and midwives be aware of the effect of these herbs on menstrual patterns. The results of our study demonstrated the usefulness and benefits of chamomile in reducing the amount of menstrual bleeding, while no specific side effects have been seen.

Several limitations exist in the current study beginning with the sample being drawn from a population of students at a single dormitory. Thus, the results may not be generalizable to students at other demographics. Secondary, the bleeding patterns were self-reported by the participants, they may not be able to assess the amount of menstrual bleeding accurately. Accordingly, the major implication of the present research is that it provides useful information for physicians. They can prescribe Chamomile capsules as a traditional medicine with beneficial effects in reducing menstrual bleeding. Chamomile is less toxic or having fewer side effects in contrast to synthetic drugs.

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