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The effect of Cinnamon on primary dysmenorrhea: A randomized, double-blind clinical trial

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ABSTRACT

Background: Primary dysmenorrhea is a cyclic cramp in pelvic which interferes with daily activity. This study determined the effect of Cinnamon on relieving dysmenorrhea.

Methods: This is a randomized, double-blind clinical trial. The intervention group received Cinnamon (capsules contained 1000 mg cinnamon) and the control group received placebo (capsules contained 1000 mg starch) during the first 72 h of menstruation for two cycles continuously. The Visual Analogue Scale was used to determine the severity of pain. The subjects were followed up for two cycles. Descriptive statistics, Independent T test, analysis of variance (ANOVA) with repeated measures were used for continuous quantitative variables. Mann-Whitney and Chi-square tests were used for nominal and ordinal qualitative variables.

Results: The results showed the mean intensity of dysmenorrhea significantly decreased over time in both groups (time: $P < 0.001$) and this reduction was significantly different over time between two groups (time*group: $P = 0.02$). There is significantly more reduction in the intervention group. Also the pain reduction in the intervention group was significantly lower than the placebo group after the first treatment ($P = 0.001$) and the second treatment ($P = 0.002$) compared to before treatment.

Conclusions: Cinnamon can reduce the intensity of primary dysmenorrhea. This aromatic spice for relive of primary dysmenorrhea is recommended.

1. Introduction

Primary dysmenorrhea is a cyclic and painful cramps in pelvic, occurring just before or during menstruation which interferes with daily activities [1]. The prevalence of dysmenorrhea varies between 16% and 91% in women of reproductive age [2]. About 6 billion work hours are lost in this manner every year in the US which equals an economic loss of nearly 200 million US$ [3]. There is much debate about the etiology of primary dysmenorrhea, but it can be explained by excessive or imbalanced amount of prostanoids secreted from the endometrium during menstruation [4–6]. Concentrations of PGF2-alpha and PGE_2 correlate with severity of dysmenorrhea. In general, women with the highest endometrial concentrations of PGF2-alpha and PGE2 have the most severe primary dysmenorrhea [7,8].

Non-steroidal anti-inflammatory drugs (NSAIDs), are the main pharmacological treatments for controlling dysmenorrhea symptoms but their long-term use have some adverse effects including nephrotoxic and hepatotoxic effects, bronchospasm, fluid retention, edema [4,9], and gastrointestinal symptoms such as nausea, dyspepsia, peptic ulcer, and diarrhea [10]. Hormonal contraceptives are other treatments but their use have many contraindications and limitations [11]. In recent years, researchers have considered the use of medicinal herbs as the substitute of chemical drugs. There are a lot of studies about herbal medicines used for reducing pain in primary dysmenorrhea such as cumin [12], fennel [13–15], thymus vulgaris [16], echinophora-platyloba [14,17], ginger [18,19], chamomile [20–22].

Cinnamomum (cinnamon) from the Lauraceae family has been used in food preparations and in traditional medicine by the Egyptians and the Chinese since ancient times. This spice has many antioxidant, antibacterial, antifungal, and anti-inflammatory properties [23], [24]. This plant has many applications in medicine and has been used for cough, indigestion, abdominal cramps, intestinal spasms, nausea [23] and reduces the serum glucose and total cholesterol in diabetic peoples [25], but there are no comprehensive studies on effectiveness of cinnamon on dysmenorrhea. Therefore, this study was designed to evaluate the effect of Cinnamon on primary dysmenorrhea.

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2. Materials and methods

2.1. Study design

This study was a double-blind, clinical trial that was performed at the Isfahan University of Medical Sciences, Isfahan, Iran between April and September 2015. Eighty single female college students with primary dysmenorrheal who were living in dormitories of Isfahan University of Medical Sciences were enrolled into the study. We are used the following formula for calculating the sample size:

$$n = \frac{(Z_1 + Z_2)^2 . 2S^2}{d^2} \cong 40$$

$Z_1 = 1.96$

$Z_2 = 0.80$(Test power)

S = an estimate of the standard deviation of visual analogue scale (VAS) in each group.d = the minimum of the mean difference of VAS between the groups which showed a significant difference and considered 0.75S.

2.2. Subjects

A simple random sampling design was used. The framework of sampling is shown in (Fig. 1). The procedure was explained to the participants and written informed consent was obtained. The inclusion criteria were: having regular menstrual cycle (21–38 days), negative history of gynecological, systemic diseases and allergies to herbal medicines. The exclusion criteria were: having irregular menstrual cycle (shorter than 21 days or longer than 45 days), occurring allergy, using hormonal drugs and pain killers, and not following treatment correctly. Eligible participants completed the verbal multidimensional scoring system (VMS) before randomization. Subjects who had mild (Menstruation is painful but rarely inhibits the women's normal activity) and moderate menstrual pain (Daily activities are affected) participated in the study. Due to ethical considerations, subjects with severe menstrual pain (Activity clearly inhibited with Poor effect of analgesics) were not included in the study.

2.3. Intervention

The intervention group (n = 40) received 1000 mg cinnamon and the placebo group (n = 40) received 1000 mg starch 3 times a day during the first 72 h of menstruation for two cycles continuously. Subjects were followed up after the first and second cycle and changes in the severity of pain were compared between groups. The VAS was used to determine the severity of pain before and after the first and second treatment. VAS rating is a standard tool for evaluating the intensity of menstrual pain from 0: no pain to 10: unbearable pain. Previous studies have confirmed validity and reliability of both tools [18,26,27]. Preparation of capsules was based on copulating process in faculty of pharmacology of Isfahan University of Medical Sciences. For blinding the study shape and prescription of the capsules were similar in both groups.

2.4. Ethical considerations

All participants were informed of the study details and were free to leave the study at any time. Informed consent was obtained from all samples who agreed to participate in the study. The study was approved by the Ethics Committee of Isfahan University of Medical Sciences and registered at the IRCT Center with the number of 2015101024452N1.

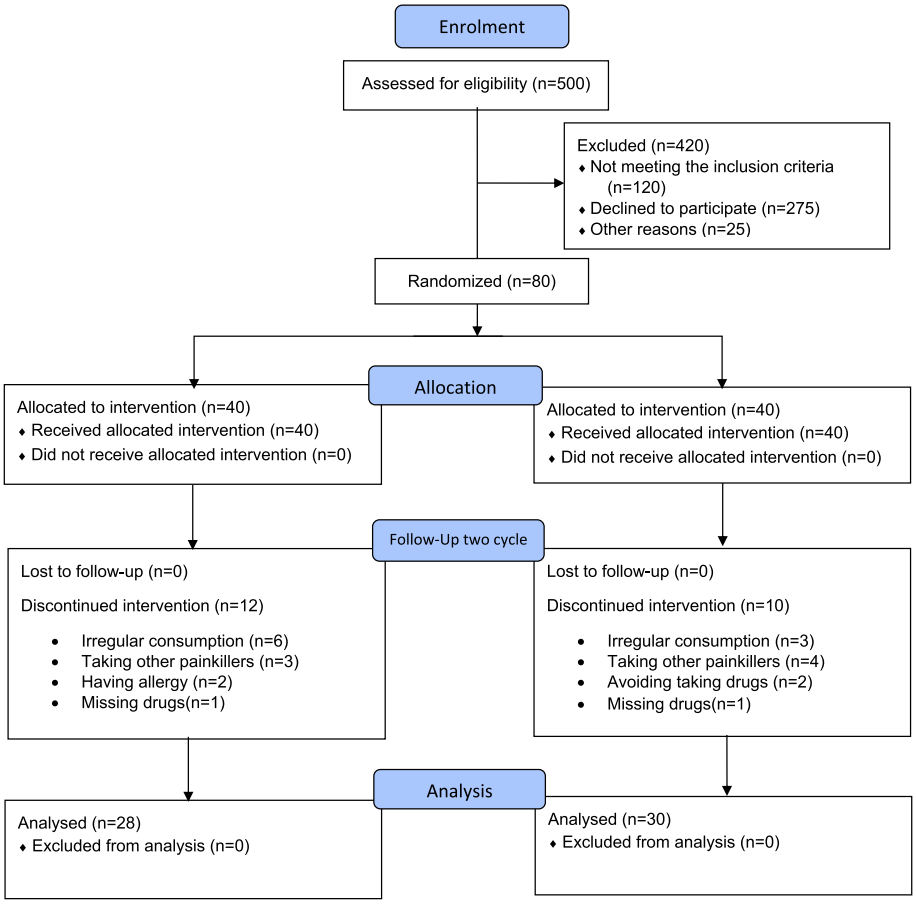

Fig. 1. The framework of the study sampling.