

• Research Article

Use of ginger versus stretching exercises for the treatment of primary dysmenorrhea: a randomized controlled trial

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ABSTRACT

BACKGROUND: Dysmenorrhea is a common gynecologic problem. In some cases, non-medical treatments are considered to be more effective, with fewer side effects. Ginger and exercise are alternative treatments for dysmenorrhea, but in the present study they were not combined.

OBJECTIVE: In this study, the effects of ginger and exercise on primary dysmenorrhea were compared.

DESIGN, SETTING, PARTICIPANTS AND INTERVENTIONS: This randomized controlled trial was performed in Mazandaran University of Medical Sciences, Iran. Two groups of female students were recruited by simple random allocation. In each group, 61 students with moderate to severe primary dysmenorrhea with regular menstrual cycles and without a history of regular exercise were assessed. The ginger group received 250 mg ginger capsules from the onset of menstruation. In the exercise group, belly and pelvic stretching exercises were performed for 10 min, 3 times per week.

MAIN OUTCOME MEASURES: Intensity of pain was assessed according to a visual analogue scale after the first and the second month.

RESULTS: Exercise was significantly more effective than ginger for pain relief (31.57 ± 16.03 vs 38.19 ± 20.47 , $P = 0.02$), severity of dysmenorrhea (63.9% vs 44.3% mild dysmenorrhea, $P = 0.02$) and decrease in menstrual duration (6.08 ± 1.22 vs 6.67 ± 1.24 , $P = 0.006$), in the second cycle.

CONCLUSION: Stretching exercises, as a safe and low-cost treatment, are more effective than ginger for pain relief in primary dysmenorrhea.

TRIAL REGISTRATION: The trial was registered in www.IRCT.ir with No. 201203118822N2.

Keywords: ginger; pain; primary dysmenorrhea; stretching exercise

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1 Introduction

Dysmenorrhea refers to the occurrence of painful uterine cramps during menstruation.^[1-3] It is characterized by acute and cyclic pain in the midline of the lower abdomen but it may be described as dull in the lumbar area and the thighs.^[4,5] Pain usually begins from a few to several hours before the onset of menstrual bleeding, and continues until the first or the second day of the menstrual cycle.^[3-5] Diarrhea, nausea and vomiting are associated symptoms.^[4,6] This pain can affect women's quality of life, and may lead to absence from work or school, and time spent on self-care and professional-care.^[7] Between one-third and one-half of women presenting for primary care report moderate or severe dysmenorrhea.^[1] Among Iranian women, the prevalence of moderate to severe dysmenorrhea is 50%.^[8] Physiologically, the pain is caused by excessive amounts of prostaglandins, which introduce abnormal uterine contractions and reduce uterine blood flow.^[7]

Medication by nonsteroidal anti-inflammatory drugs (NSAIDs), inhibitors of cyclooxygenase enzymes and prostaglandins, is one of the conventional treatments for primary dysmenorrhea.^[3] Current medical therapies offer inadequate treatment, with a failure rate of 20%–25%.^[4] Some women prefer not to use NSAIDs because they perceive no benefit and have adverse side effects or for cultural reasons.^[4,9,10] Thus, alternative treatments with low toxicity, such as traditional medicine, are recommended.^[9] Several studies have reported that ginger, an inhibitor of prostaglandin synthesis, with a long history of use in traditional medicine, has beneficial effects on primary dysmenorrhea.^[11-13] On the other hand, physical activity stimulates the release of β -endorphin, which functions as an analgesic, and reduces the frequency and severity of primary dysmenorrhea.^[6] Because alternative treatments may reduce some symptoms of dysmenorrhea during the menstrual period, without the side effects of conventional treatments, they have been considered for the management of dysmenorrhea.^[10,14,15]

Few studies have compared herbal drugs with physical activity for the treatment of dysmenorrhea. This comparison helps both practitioners and patients make decision about the treatment, when several choices are available.

Although, some herbal drugs and non-pharmacological treatments have been suggested for primary dysmenorrhea, there is a lack of information about comparison of these approaches. The aim of this study was to compare the effectiveness of exercise and ginger on primary dysmenorrhea.

2 Materials and methods

2.1 Study design and subjects

This article reports some of the results of a randomized clinical trial, with parallel design, conducted from January

to May 2014. It involved female students of Mazandaran University of Medical Sciences, Iran. The ethics committee of this university approved the study protocol in conformation with the *Declaration of Helsinki*.

Following a review of previous studies and the size effects of physical activity (2.2 ± 2.4) and ginger (2.3 ± 2.8) with $\alpha = 0.05$, and $b = 80\%$, the sample size was calculated to be 61 for each group.^[3,15,16]

The participants were allocated to the groups by simple randomization. For this reason, we provided a list of eligible students ($n = 122$) with one number given to each of them. Then they were sequentially allocated to two groups using the random number table. One group received training for exercise, and the other group received ginger. The purpose and method of the study and the participants' rights (e.g., voluntary participation and ability to leave the study) were explained in a handout. Then written informed consent was obtained from all participants.

Inclusion criteria: students who lived in the dormitory and were interested in participating in the study; history of primary dysmenorrhea which had affected daily activities in at least 50% of their cycles through the past 6 months; and pain intensity over 40 mm, based on the 100-mm visual analogue scale (VAS). Exclusion criteria: irregular menstrual cycles; the use of intra-uterine devices and oral contraceptive pills; history of regular exercise (3 times weekly for 30–45 min); diseases of the genitourinary system (e.g., pelvic inflammatory disease and urinary tract infections) and secondary dysmenorrhea.^[6]

2.2 Measures

The participants completed a demographic form. The primary treatment outcome was pain intensity, measured with VAS. Pain intensity was classified as follows: 40–60 mm (moderate), more than 60 mm (severe) and under 40 mm (mild). In addition, duration of pain and some other menstruation characteristics (e.g., length of menstruation and menstrual cycle and change in bleeding) were assessed as secondary outcomes. In both groups, participants were asked to record pain intensity and other variables at the end of the first and the second menstruation cycles.

2.3 Interventions

In one group, exercise programs were taught by two trained instructors. First, they were trained by a qualified sport sciences instructor. Then they performed the exercise programs with students in the fitness hall of the dorm for several sessions, until they were sure that all participants could do the exercises correctly. Furthermore, pamphlets including images and instructions for the exercises were given to each of the participants in the exercise group. The exercise programs included 5 min of warm-up movements in a standing position, followed by 6 stretching exercises for the abdomen and pelvis for 10 min. This program was performed for 15 min, 3 times per week, for two

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