ijNr

Research Article

Discomfort to Comfort, Coconut oil can Reduce Menstrual Pain!

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Abstract

Background: Menstrual pain usually begins several hours before or just after the onset of menstruation. Women commonly experience pain in the lower abdomen and in some, it radiates to lumbar region, it affects their performance of their daily activities. Coconut oil has many benefits like it is anti-inflammatory and anti-toxin and fights pain directly and also it is cheap as well as it is easily available in home.

Aims: The aim of the study was to find the effectiveness of applying coconut oil over lower abdomen in reducing menstrual pain among young women residing in a selected hostel.

Materials and Methods: A pre-experimental one group pre-test and post-test study design, using a quantitative approach and non-probability purposive sampling technique on 30 hostlers, participated on the basis of their severity of menstrual pain. The tools deployed include sociodemographic variables, universal pain assessment scale, and modified McGill questionnaire. On the day of the menstrual pain, a self-prepared pre-test questionnaire was administered and after 1 h of intervention the post-test was administered. Both descriptive and inferential statistics were used for the analysis of data.

Results: Pre- and post-test and paired-t test were analyzed. The mean ± standard deviations of pre-test were 2.03 ± 1.03 and the post-test was 0.76 ± 0.97. The pain reduced with 1.27 mean differences. The obtained *t*-value was13.32 and *P*-value significantly improved at $P < 0.00$.

Conclusion: The study revealed that applying coconut oil over lower abdomen of menstruating women showed improvement in bringing down the level of menstrual pain. This indicates that application of coconut oil effectively reduced the menstrual pain.

Keywords: Coconut oil, McGill pain questionnaire, menstrual pain/dysmenorrhea, universal pain assessment scale

Introduction

Women are the root of the family as well as society. To bring forth productive and healthy families, the health of women should be considered.[1] Adolescence is a transition period from childhood to adulthood and is characterized by a spurt in physical, endocrinal, emotional, and mental growth. As the direct reproducers of future generations, the health of adolescent girl effects not only their own health, but influences the health of the future generation.[2]

There are various physiological changes that take place in adolescent girls of which one of the major physiological changes is the onset of menarche. It is often associated with problems of irregular menstruation, excessive bleeding, and dysmenorrhea. Of these, one of the most common problems experienced by many adolescent girls and women is dysmenorrhea. Menstruation and the menstrual cycle are characterized by variability in volume, pattern, and regularity, which during the earlier stages of development of the adolescent can create emotional discomfort particularly to poorly informed girls.[3]

Menstrual pain or dysmenorrhea is usually the pain on the lower abdomen which occurs when menstrual period begins or can

Date of Submission: 21-01-2023
Date of Revision: 15-02-2023
Date of Acceptance: 20-02-2023

Access this article online
Website: http://innovationalpublishers.com/Journal/ijnr
ISSN No: 2454-4906
DOI: 10.31690/ijnr.2023.v09i01.002

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be just before the menstrual period. The menstrual pain may be cramping, throbbing, aching, dull, or sharp.[4] The pain usually lasts for 2–3 days. The pain can range from a mild pain to severe pain. For some women, the menstrual pain is merely annoying and for others, it can be severe enough that it may interfere with their everyday activities for a few days in every month.[3]

The prevalence of dysmenorrhea can vary between 16% and 91% in women of reproductive age, with severe pain observed between 2% and 29%. According to Ju *et al*., the prevalence of dysmenorrhea is 80% among adolescents.[5] Due to today's changing lifestyle and hectic schedule, hormonal imbalance occurs, increasing the incidence of dysmenorrhea to 90%. Inadequate treatment of dysmenorrhea may occur due to lack of medical understanding of the disease which leads to significant morbidity. With over-the-counter non-steroidal anti-inflammatory medicines readily available, it is easy to think that women are appropriately treating themselves. Primary dysmenorrhea is the most prevalent reason for 90% of women skipping work, school, or a special occasion. Over 90% of women say that menstrual cramp makes it difficult for them to continue their daily routine.[6]

Coconut oil has an anti-inflammatory, anti-toxin, and fights pain directly. There are literatures available on the effects of coconut oil, their use as treatment modalities, and home remedies to reduce pain. This study aimed to assess the effectiveness of application of coconut oil over lower abdomen on menstrual pain.[7]

Problem statement: "Effectiveness of applying coconut oil over lower abdomen in reducing menstrual pain among young women residing in a selected hostel of Mahabaleshwar Taluka, Satara, Maharashtra."

Objectives

The objectives of the study are as follows:

1. To assess the level of menstrual pain experienced among young women
2. To assess the effectiveness of application of coconut oil over lower abdomen in reducing menstrual pain among young women.

Materials and Methods

Research approach

A quantitative approach was adopted.

Research design

Pre-experimental pre-test and post-test design was employed to evaluate the effectiveness of applying coconut oil over lower abdomen in reducing menstrual pain among young women.

Variables of the study

Dependent variables

The dependent variable was menstrual pain experienced by young women.

Independent variables

Coconut oil was the independent variable.

Setting of the study

The research was conducted in a selected hostel of Mahabaleshwar.

Population

The population consisted of young women experiencing menstrual pain.

Target population

Target population includes all young women of reproductive age group of 18–25 years with regular menstrual pain.

Accessible population

Accessible population are all young women of reproductive age group of 18–25 years with menstrual pain residing in Mahabaleshwar Taluka, Satara, Maharashtra.

Sample

Samples are all young women of reproductive age group of 18–25 years with menstrual pain residing in a selected hostel of Mahabaleshwar Taluka, Satara, Maharashtra, and who can participate in the research study.

Sample size

Sample size comprised of 30 young women residing in a selected hostel of Mahabaleshwar Taluka, Satara, Maharashtra.

Sampling technique

In this study, a non-probability purposive sampling technique was deployed.

Criteria for sample selection

Inclusion criteria

The following criteria were included in the study:

- Young women between the age group of 18–25 years
- Young women who have pain during menstruation
- Young women residing in the selected hostel of Mahabaleshwar, Taluka, Satara, India.

Exclusion criteria

The following criteria were excluded from the study:

- Young women who are allergic to coconut oil
- Young women who have poly-cystic-ovarian disorder
- Young women who have amenorrhea
- Young women with irregular menstrual cycle
- Young women with secondary dysmenorrhea.

Tool description

A self-prepared tool was deployed.

Section A

Sociodemographic variables and personal characteristics of participant:

Age, education, height, weight, body mass index, last menstrual period, age of menarche, and diet.

Section B

Universal pain assessment tool (UPAT)/Wong Baker Facial Grimace Scale to assess the intensity of pain (Pain score).

Wong Baker Facial Grimace Scale was used to assess the intensity of menstrual pain among young women. The pain scale has six faces which scored between 0 and 10. The first face symbolizes the pain score-0 and designates "no hurt". The second face symbolizes pain score-2 and designates "hurts a little bit." The third face symbolizes pain score-4 and designates "hurt a little more." The fourth face symbolizes pain score-6 and designates "hurts even more." The fifth face symbolizes a pain score-8 and designates "hurts a whole lot." The sixth face symbolizes a pain score-10 and designates "hurts worst." The participants graded their pain score according to their severity before and after the application of coconut oil. The pre-test and post-test scores were used to assess and analyze the effectiveness of application of coconut oil over lower abdomen in reducing menstrual pain.[8]

Section C

McGill pain questionnaire (MPQ) to assess the quality of pain.

The MPQ is a pain scale which is used for rating and evaluating the quality of pain experienced by a person. It was developed by Melzack and Torgerson in 1971. The scale was modified for this study and validated by11 experts. It was used to analyze the quality and intensity of pain and also to assess the onset of menstrual pain, level of menstrual pain, duration of menstrual pain, duration of menstrual flow, region of menstrual pain, effect of menstrual pain on daily activities, associated complaints with menstrual pain, and treatment modalities used for reducing the menstrual pain. It consists of 15 questions and allowed multiple markings.[9]

Validation of tool

The tool was given to eleven experts including two physicians, one Ayurveda physician, one statistician, and seven M.Sc. nursing faculty of the institution.

Reliability of tool

UPAT prepared by Wong Baker was used to assess the level of pain in people with limited communication skills. The UPAT enables clinicians to consult a specialized pain management team more often and lead to earlier interventions. The reliability of the tool was found to be r = 0.00.99.[10,11]

The MPQ was prepared by Ngamkham *et al*., consists primarily of three major classes of word descriptors-sensory, affective, and evaluative that are assessed by patients to specify subjective pain experience. It also contains scale to assess the intensity of pain and other items to determine the properties of pain experienced. The questionnaire was designed to provide quantitative measures of clinical pain that can be treated and measured statistically. The tool evaluates the MPQ as a multidimensional measure of pain in people with cancer, using test-retest method the reliability of the tool was "r=0.70."[12]

Pilot study

The pilot study was conducted on 10% of the sample size. The residents of the selected hostel who experienced dysmenorrhea were informed about the purpose of the study and their consent was obtained. The participants were asked to report once the menstrual pain began. Before the intervention, pre-test score was assessed. The investigators instructed the participants to lie down in supine position and apply coconut oil by themselves on their lower abdomen for 5 min and take rest, after 1 h, the post-test was obtained using universal pain scale. Findings of the study have helped the investigators to visualize practical problem that could be encountered while conducting the main study. Pilot study has given an insight into the actual process of data collection and analysis and the study was found feasible.

Procedure for data collection

The main study was carried over a period of 12 days from September 3, 2022, to September 14, 2022.

Approval was taken from the Institutional Ethics Committee. Before data collection, formal permission was obtained from the head of the institution. Informed consent was obtained from the participants. The purpose and method of the study were explained and cooperation was sort. Confidentiality of the participants was maintained. Based on the inclusion and exclusion criteria, 30 participants who experienced menstrual pain were selected. The young women were asked to report once the menstrual pain began. They were instructed, not to take any kind of medications for reducing their menstrual pain for an hour. Pre-test such as sociodemographic data, UPAT, McGill questionnaire was administered to the participants before the intervention following which they were instructed to lie-down in supine position and apply commercially prepared coconut oil on their lower abdomen by themselves for 5 min and rest. After 1 h of application, the post-test was administered to assess the effectiveness of the intervention using UPAT.

Plan for data analysis

- Collected data were analyzed using descriptive and inferential statistics
- Analysis of distribution of demographic variables was performed by calculating the frequency and percentage
- Analysis of knowledge scores of pre-test and post-test was calculated using frequency, percentage, mean, and standard deviation
- Paired "t" test was used for testing the effectiveness of application of coconut oil in reducing menstrual pain.

Ethical consideration

- The main study was conducted after the approval of the Institutional Ethics Committee
- The study was conducted after obtaining prior written permission from the head of the institution and with the written consent from the participants
- Assurance was given to the participants that the current study will not pose any physical or emotional threat to them and confidentiality of personal data collected will be strictly adhered to.

Results

The study found that 53.3% of participants were between the age group of 18–20 years, 46.7% were between 21 and 23 years. Majority (57%) of them weighed between 40 and 45 kg, most (93.33%) of them were non-vegetarians [Table 1]. About 70.0% of samples experienced tolerable pain, 26.7% experienced intolerable pain and 3.3% experienced extreme pain [Table 2]. About 40.0% had menstrual pain for <12 h, 36.7% had for 13–24 h and 23.3% had for 2–4 days [Table 3]. Majority (60%) samples experienced cramping pain, 20% experienced radiating to other parts, 16.7% experienced dull pain, and 3.3% experienced colicky pain [Table 4]. About 46.7% had pain which affected their daily activities some of the time, 33.3% had most of the time, 6.7% had seldom, and 13.3% had pain that had never affected their daily activities [Table 5]. Majority (40%) of them experienced menstrual pain on first day of menses [Table 6]. About 36.7% complained of fatigue. According to distribution of region of pain, 37% of participant experienced in the lower abdomen along with back region, 20% experienced in the lower abdomen, and 43% experienced in other region of body such as abdomen, back, thigh, legs, and breast. It was observed that our participants used other treatment modalities for pain relief. About 46.7% of participants used hot applications, 3.3% of participant had never used any treatment modalities for menstrual pain.

Pre- and post-test and paired t test were assessed. The result shows that the mean ± standard deviations of pre-test were 2.03 ± 1.03 and the post-test were 0.76 ± 0.97. The pain reduced with mean differences of 1.27. The obtained *t*-value was 13.32 and *P*-value significantly improved at $P < 0.00$.

The sociodemographic samples characteristics of the study are presented in Table 1. About 53.3% of participants were between the age group of 18–20 years, 46.7% were between 21 and 23 years. Majority of them weighed between 40 and 45 kg, most of them were non-vegetarians.

Table 1: Frequency and distribution of participants according to demographic data

Demographic variable	Frequency, *n* (%)
Age (years)	
18–20	16 (53.3)
21–23	14 (46.7)
Education	
ANM 1st year	5 (16)
1st year B.Sc	8 (27)
2nd year B.Sc	5 (17)
4th year B.Sc	12 (40)
Height (cm)	
141–150	6 (20)
151–160	19 (63)
161–170	5 (17)
Weight (kg)	
40–49	17 (57)
50–59	5 (17)
60–69	7 (23)
70–79	1 (3)
BMI (kg/m^2)	
16–20	17 (57)
21–25	7 (23)
26–30	5 (17)
31–35	1 (3)
Age of menarche (years)	
8–10	2 (75)
11–12	4 (13)
13–14	17 (57)
15–16	7 (23)
Diet	
Nonvegetarian	28 (93.33)
Ovo vegetarian	2 (6.66)

BMI: Body mass index

Table 2: Frequency and distribution of participants according to level of menstrual pain

Level of pain	Frequency, *n* (%)
Tolerable	21 (70.0)
Intolerable	8 (26.7)
Extreme	1 (3.3)
Total	30 (100.0)

Table 3: Frequency and distribution of participants according to duration of menstrual pain

Duration of menstrual pain	Frequency, *n* (%)
<1–12 h	12 (40.0)
13–24 h	11 (36.7)
2–4 days	7 (23.3)
Total	30 (100.0)

Table 4: Frequency and distribution of participants according to type of pain

Type of pain	Frequency, *n* (%)
Colicky pain	1 (3.3)
Cramping pain	18 (60)
Dull pain	5 (16.7)
Radiating to other parts	6 (20)
Total	30 (100.0)

Table 5: Frequency and distribution of participants according to effect of menstrual pain on daily activities

Effect on daily activities	Frequency, *n* (%)
Never	4 (13.3)
Seldom	2 (6.7)
Some of the time	14 (46.7)
Most of the time	10 (33.3)
Total	30 (100.0)

Table 6: Frequency and distribution of participants according to onset of menstrual pain

Onset of menstrual pain	Frequency, *n* (%)
Just before menses	2 (6.7)
1st day of menses	12 (40)
Mid of menses	4 (13.3)
During days of menses	7 (23.3)
Throughout the menses	5 (16.7)
Total	30 (100.0)

The table depicts that 70.0% of samples experienced tolerable pain, 26.7% of sample experiences intolerable pain, and 3.3% experienced extreme pain.

About 40.0% of samples had menstrual pain for ≤12 h, 36.7% had for 13–24 h, and 23.3% had for 2–4 days.

About 60% of samples experienced cramping pain, 20% experienced radiating to other parts, 16.7% experienced dull pain, and 3.3% experienced colicky pain.

The effect of menstrual pain on daily activities 46.7% had some of the time, 33.3% had most of the time, 6.7% had seldom, and 13.3% had never.

Majority (40.0%) of the participants had onset of menstrual pain on the 1st day of menses 23.3% during the days of menses, 16.7% had pain throughout the menses, 13.3% had at the mid of the menses, and 6.7% had just before the menses.

Discussion

The study was conducted to assess the effectiveness of applying coconut oil on the lower abdomen in reducing menstrual pain among young women. The samples were 30 young women who experienced menstrual pain and voluntarily participated in the study. The study found that under 50% of the participants experienced pain that impeded their effectiveness in carrying out day to day chores some of the time. One-third of the participant's effectiveness was significantly affected by the menstrual pain and reported challenges in going about their daily activities most of the time. Thus, around a three-fourth of the participant's well-being was compromised with the onset of pain. A study carried out by Ahuja *et al*. on the impact of dysmenorrhea on quality of life, also revealed that there is a significant correlation between menstrual pain and interference with daily activities.[13] A study done by Elia Fernandez, Ana Fernández-Martínez *et al*. on "living with restrictions –the perspective of nursing students with primary dysmenorrhea found that dysmenorrhea restricts their personal, social, and academic life."[14]

The dietary habits of the participants with a significant majority (>90%) who are non-vegetarians may have contributed to the incidence of pain inhibiting work effectiveness. This is in contrast with a study done by Baines *et al*., which concludes that vegetarian and semi vegetarian women report more menstrual symptoms, including irregular periods, severe period pain, and premenstrual tension.[15] The body weight of over 50% of the samples was in the 40–45 kg category and 20% were overweight which may also have contributed to the increase in menstrual pain. This is in variance with studies carried out by Montero *et al*., who found that attempt to lose weight was significantly associated with increased prevalence on menstrual pain.[16] A study done by Barnard *et al*. concluded that "a low fat vegetarian diet was associated with increased serum sex-hormone binding globulin concentration and reduction in body weight, duration, and intensity of menstrual pain."[17]

The extent and severity of pain experienced by the participants were varied. Most of our participants experienced many associated complaints related to dysmenorrhea such as headache, diarrhea, fatigue, vomiting, and loss of appetite.

The present study found that the menstrual pain significantly reduced ($P < 0.00$) after applying coconut oil on their abdomen. There are studies reporting the effect of coconut oil on joint pain.[18] However, it is interesting to observe that this was the first study that was reported on effectiveness of coconut oil in reducing menstrual pain. There are studies conducted by Padmavathi *et al*. where ginger powder was effective in reducing dysmenorrhea.[19] Studies have also reported that Zumba exercise and practice of yoga have effectively reduced menstrual pain.[20,21] In addition, studies have shown that aromatherapy was effective in easing ones menstrual pain.[22]

Conclusion

The study shows that menstrual pain has an impact on daily activities of women due to the intensity and severity of pain. The severity of menstrual pain is inversely proportional to daily activities of women. Helping women in reducing their menstrual pain can assist them in enhancing their activities of daily living. Home remedies for reducing menstrual pain can significantly enhance their well-being and is a cost-effective remedy. In conclusion, this study found that application of coconut oil over lower abdomen was effective in reducing the menstrual pain among young women.

Acknowledgment

We acknowledge our gratitude to God Almighty for His grace, compassion, and immense blessings on us and who has always been our strength and support. We express our heartfelt thanks to Rev. Fr. Tomy K., the Director of Bel-Air Institution for being our leader throughout our student life and inspiring us to succeed in life. We acknowledge Dr. Satish Kakade (statistician) for his support and guidance. We also extend our thanks to the participants for their willingness and cooperation for our research study. Our research would not have been a success without their participation.

Conflicts of Interest

There are no conflicts of interest.

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How to cite this article: Vaishnavi K, Pratiksha K, Deepti K, Sharon I, Jeswel R, Maheshwari J, Shivani J, Sachita J, Komal G, Anuja K, Wansalansha K, Priyadarsini J. Discomfort to Comfort, Coconut oil can Reduce Menstrual Pain! Int J Nur Res. 2023;9(1):6-11.