

Ginger Water as a Complementary Therapy for Primary Dysmenorrhea among Nursing Students: An Experimental Study

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Abstract: Adolescence is a critical period of physical, psychological, and endocrinal transition. Dysmenorrhea, or painful menstruation, is one of the most common gynecological disorders among adolescent girls and young women and has a reported prevalence as high as 79.67% in India. Dysmenorrhea negatively affects physical activity, academic performance, concentration, emotional wellbeing, sleep quality, and overall quality of life among young females. Although pharmacological interventions such as non-steroidal anti-inflammatory drugs (NSAIDs) are commonly used for pain relief, prolonged use may lead to adverse gastrointestinal effects including gastritis, nausea, abdominal discomfort, and indigestion. Therefore, interest in safe, effective, and non-pharmacological complementary therapies has increased. The present study was undertaken to assess the effectiveness of ginger water as a complementary therapy for primary dysmenorrhea among nursing students. An experimental study was conducted among 66 nursing students selected through simple random sampling from a selected college in New Delhi. Participants with primary dysmenorrhea and moderate to severe menstrual pain were included in the study. The participants were divided into Group A (Experimental Group) and Group B (Control Group), with 33 participants in each group. Group A received 60 ml concentrated ginger water during menstruation for three consecutive days, whereas Group B received routine care without intervention. Pain intensity was assessed using the Numerical Rating Scale (NRS) during morning and evening observations for three consecutive days. The prevalence of dysmenorrhea among nursing students in the study setting was found to be approximately 78%. Mean pain scores gradually reduced in both groups across three days; however, the reduction was comparatively greater in the experimental group receiving ginger water. On Day 1, the mean pain score in Group A was 4.66 ± 1.85 compared to 5.06 ± 2.22 in Group B. By Day 3, the mean score reduced to 1.54 ± 1.44 in Group A and 2.10 ± 1.80 in Group B. Although the intergroup difference was statistically non-significant ($p > 0.05$), participants receiving ginger water demonstrated comparatively greater reduction in pain intensity. The findings suggest that ginger water demonstrated partial effectiveness in reducing dysmenorrhea among nursing students and may be considered a safe, economical, accessible, and culturally acceptable complementary therapy for menstrual pain management

Keywords: Dysmenorrhea, Ginger Water, Menstrual Pain, Nursing Students, Complementary Therapy, Numerical Rating Scale (NRS)

1. Introduction

Dysmenorrhea refers to painful menstruation characterized by cramping lower abdominal pain occurring before or during menstruation. It is one of the most common gynecological disorders among adolescent girls and young women. Primary dysmenorrhea occurs in the absence of pelvic pathology and is mainly associated with excessive production of prostaglandins, resulting in increased uterine contractions, ischemia, and pain. Menstrual pain may also be accompanied by nausea, vomiting, fatigue, headache, diarrhea, irritability, and backache, which significantly affect the daily functioning of women.

Globally, dysmenorrhea affects approximately 45–95% of menstruating women, with higher prevalence reported among adolescents and college-going females. In India, studies have reported prevalence rates ranging from 70% to 80% among young females, indicating dysmenorrhea as a major public health concern. Dysmenorrhea significantly interferes with routine activities, concentration, academic performance, emotional wellbeing, sleep quality, social interaction, and attendance in educational institutions. It is also considered one of the leading causes of recurrent short-term absenteeism among school and college-going adolescent girls.

Pharmacological management of dysmenorrhea commonly includes non-steroidal anti-inflammatory drugs and hormonal therapies, which are considered effective for relieving menstrual pain. However, prolonged use of

NSAIDs may result in adverse effects such as gastritis, nausea, abdominal discomfort, constipation, and indigestion. Due to these limitations, increasing attention has been given to complementary and non-pharmacological approaches for menstrual pain management.

Ginger (*Zingiber officinale*) is a medicinal herb traditionally used for its anti-inflammatory, antioxidant, antiemetic, and analgesic properties. The active constituents of ginger, including gingerol, shogaol, and zingerone, inhibit cyclooxygenase and lipoxygenase pathways, thereby reducing prostaglandin synthesis responsible for uterine contractions and menstrual pain. Several studies have demonstrated the effectiveness of ginger in reducing the severity of dysmenorrhea. Daily et al. (2015), in a systematic review and meta-analysis, reported that ginger significantly reduced pain severity in primary dysmenorrhea when compared with placebo. Similarly, Rahnama et al. (2012) observed significant reduction in pain intensity among women receiving ginger intervention during menstruation. Considering the increasing burden of dysmenorrhea among young females and the need for safer, affordable, and culturally acceptable therapies, the present study was undertaken to assess the effectiveness of ginger water among nursing students experiencing dysmenorrhea.

2. Need for the Study

Dysmenorrhea remains a major health concern affecting adolescent girls and young women worldwide. It is one of the leading causes of recurrent short-term absenteeism from

schools and colleges and negatively influences educational performance and quality of life. Studies conducted in India have reported prevalence rates as high as 79.67% among adolescent girls, highlighting the magnitude of the problem.

In the present study setting, approximately 78% of nursing students reported experiencing dysmenorrhea, indicating a high burden of menstrual pain among young females. Menstrual pain adversely affected concentration, sleep, physical activity, emotional wellbeing, and academic participation among students. Although NSAIDs are effective for pain management, prolonged use may produce adverse effects such as gastritis, nausea, constipation, abdominal discomfort, and indigestion. Therefore, there is a growing need for safe, economical, easily available, and effective complementary therapies for dysmenorrhea management. Ginger water is inexpensive, natural, culturally acceptable, and associated with minimal side effects. Due to its analgesic and anti-inflammatory properties, ginger water may help reduce menstrual pain safely and effectively. Hence, the researcher felt the need to assess the effectiveness of ginger water during dysmenorrhea among nursing students.

Aim of the Study

To assess the effectiveness of ginger water during dysmenorrhea among nursing students of a selected college in New Delhi.

Objectives of the Study

- 1) To identify dysmenorrheic nursing students.
- 2) To assess the effectiveness of ginger water during dysmenorrhea among nursing students.
- 3) To determine the association between dysmenorrhea and selected demographic variables.

3. Materials and Methods

An experimental research design was adopted for the present study to assess the effectiveness of ginger water during dysmenorrhea among nursing students. The study was conducted among nursing students of a selected college in New Delhi. A total of 66 nursing students were selected using a simple random sampling technique. Participants who had regular menstrual cycles, primary dysmenorrhea, moderate to severe menstrual pain, and willingness to participate were included in the study. Students with secondary dysmenorrhea, menstrual abnormalities, chronic medical illnesses, or those undergoing hormonal treatment for menstrual disorders were excluded from the study. The participants were divided into two groups based on a lottery method.

Group A (Experimental Group)

The experimental group consisted of 33 nursing students who received 60 ml concentrated ginger water during menstruation for three consecutive days. Ginger water was administered during the menstrual period as a complementary intervention to reduce dysmenorrhea.

Group B (Control Group)

The control group consisted of 33 nursing students who received routine care without any intervention.

Data collection was done using the "Dysmenorrhea Pain Assessment Tool," which consisted of two sections:

Part I: Socio-demographic Variables: This section included variables such as age, Body Mass Index (BMI), dietary habits, year of study, age of menarche, menstrual cycle frequency, and duration of menses, which may influence the severity of dysmenorrhea.

Part II: Numerical Rating Scale (NRS): The Numerical Rating Scale (NRS) was used to assess dysmenorrhea intensity. Participants rated their pain on a numerical scale, and pain scores were recorded during morning and evening observations for three consecutive days of menstruation.

Prior permission was obtained from the concerned institutional authority before conducting the study. Ethical approval was obtained from the institutional authority, and written informed consent was obtained from all participants before data collection. Confidentiality, anonymity, and privacy of the participants were maintained throughout the study.

The collected data were analyzed using descriptive and inferential statistics. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the data. Inferential statistics including the Chi-square test and independent t-test were used to determine the effectiveness of ginger water and the association between dysmenorrhea and selected demographic variables.

4. Results

A total of 66 nursing students participated in the study. The findings revealed that approximately 78% of nursing students experienced dysmenorrhea, indicating a high burden of menstrual pain among young females. Most participants belonged to the 20–22 years age group and had a normal Body Mass Index (BMI). The majority reported menstrual cycle frequency between 21–28 days and duration of menses between 4–5 days.

Table 1: Comparison of Mean Pain Scores Between Group A and Group B Across Three Days

Time point	Group A (Mean ± SD)	Group B (Mean ± SD)	P-value	Significance
Day 1	4.66 ± 1.85	5.06 ± 2.22	0.4277	NS
Day 2	3.46 ± 1.79	3.65 ± 1.80	0.669	NS
Day 3	1.54 ± 1.44	2.10 ± 1.80	0.165	NS

The table shows the comparison of mean pain scores between Group A and Group B over three consecutive days. On Day 1, the mean pain score was 4.66 ± 1.85 in Group A and 5.06 ± 2.22 in Group B ($p = 0.4277$). On Day 2, Group A had a mean score of 3.46 ± 1.79 while Group B had 3.65 ± 1.80 ($p = 0.6690$). By Day 3, the mean pain score further reduced to 1.54 ± 1.44 in Group A and 2.10 ± 1.80 in Group B ($p = 0.1650$). Although both groups demonstrated a gradual reduction in pain scores over time, the differences between the groups at all time points were not statistically significant ($p > 0.05$).

The findings indicate that ginger water demonstrated partial effectiveness in reducing dysmenorrhea among nursing students. These findings are supported by Daily et al. (2015), who reported that ginger significantly reduced pain severity in primary dysmenorrhea, and Rahnama et al. (2012), who observed statistically significant reduction in menstrual pain among participants receiving ginger intervention during the first three days of menstruation.

Table 2: Association Between Selected Demographic Variables and Baseline Pain Severity

Variables	No Pain/ Mild	Moderate	Chi- square	p- value
Age (in yrs)				
17–19	0	8	0.682	0.7107
20–22	0	19		
23–25	0	3		
BMI (kg/m²)				
<19	0	2	1.1405	0.7107
19–24.9	0	27		
25–29.9	0	1		
Year of study				
1st year	0	6	2.549	1.6354
2nd year	0	11		
3rd year	0	6		
4th year	0	7		
Diet				
Pure veg	18	4	0.845	0.7107
Egg veg	0	2		
Non veg	10	1		
Age of menarche			11.452	0.021*
Menstrual cycle frequency			15.341	0.004*
Duration of menses			13.884	0.007*
Note: * Statistically significant at p < 0.05				

The table shows the association between demographic variables and baseline pain score using Chi-square test. A significant association was found with duration of menses ($\chi^2 = 13.884$), age of menarche ($\chi^2 = 11.452$, $p < 0.05^*$), and menstrual cycle frequency ($\chi^2 = 15.341$, $p < 0.05^*$), indicating their influence on pain levels. No significant association was observed with age ($\chi^2 = 0.682$), BMI ($\chi^2 = 1.1405$), year of study ($\chi^2 = 2.549$), and diet ($\chi^2 = 0.845$), as all values were below the table value at $p = 0.05$.

The findings of the present study revealed statistically significant associations between dysmenorrhea severity and menstrual variables such as age of menarche, menstrual cycle frequency, and duration of menses. These findings are supported by Omidvar and Begum (2012), who reported significant relationships between menstrual characteristics and severity of dysmenorrhea among young women. Similarly, Sharma et al. identified that prolonged menstrual duration and irregular cycles contributed to increased dysmenorrhic symptoms among adolescents.

5. Discussion

The present study assessed the effectiveness of ginger water in reducing dysmenorrhea among nursing students. The findings demonstrated that participants receiving 60 ml concentrated ginger water experienced comparatively greater reduction in pain scores than those in the control group. The

anti-inflammatory and analgesic effects of ginger may be responsible for reduction in menstrual pain. Ginger inhibits cyclooxygenase and lipoxygenase pathways, thereby suppressing prostaglandin synthesis, reducing uterine contractions and inflammation associated with dysmenorrhea.

The findings are supported by Rahnama et al. (2012), who reported statistically significant reduction in pain severity among women receiving ginger intervention during menstruation. Similarly, Daily et al. (2015) concluded in their systematic review and meta-analysis that ginger was effective in reducing menstrual pain intensity in women with primary dysmenorrhea.

However, the present study demonstrated only partial effectiveness, as the differences between the experimental and control groups remained statistically non-significant ($p > 0.05$). This may be attributed to the small sample size, short duration of intervention, variation in ginger dosage, and individual differences in pain tolerance among participants. The present study also identified significant associations between dysmenorrhea severity and menstrual variables such as age of menarche, menstrual cycle frequency, and duration of menses. These findings suggest that menstrual characteristics may influence the severity of dysmenorrhea among young females.

6. Limitations

- 1) The study was conducted among a limited sample size, restricting generalizability.
- 2) The study was limited to nursing students of one selected college.
- 3) The duration of intervention and observation was limited to three days.
- 4) Variations in compliance and acceptability of ginger water intake may have influenced findings.

7. Nursing Implications

- 1) **Nursing Practice:** Nurses can encourage the use of safe and evidence-based complementary therapies such as ginger water for menstrual pain management.
- 2) **Nursing Education:** Health education programmes can create awareness regarding dysmenorrhea management and non-pharmacological interventions among adolescent girls.
- 3) **Nursing Administration:** Healthcare administrators can support implementation of menstrual health awareness programmes and complementary therapies in educational institutions.
- 4) **Nursing Research:** Further randomized controlled trials with larger sample sizes and longer duration of intervention are recommended to strengthen evidence regarding the effectiveness of ginger water.

8. Conclusion

The present study assessed the effectiveness of ginger water during dysmenorrhea among nursing students of a selected college in New Delhi. The findings demonstrated that participants receiving ginger water experienced

comparatively greater reduction in pain scores than those in the control group. Although the intergroup differences were statistically non-significant, ginger water showed partial effectiveness in alleviating dysmenorrhea. Significant associations were identified between pain severity and menstrual variables such as age of menarche, menstrual cycle frequency, and duration of menses. Therefore, ginger water may be considered a safe, economical, accessible, and culturally acceptable complementary therapy for management of primary dysmenorrhea among young women.

References

- [1] Daily JW, Zhang X, Kim DS, Park S. Efficacy of ginger for alleviating symptoms of primary dysmenorrhea: A systematic review and meta-analysis of randomized clinical trials. *Pain Medicine*. 2015;16(12):2243-2255.
- [2] Rahnama P, Montazeri A, Huseini HF, Kianbakht S, Naseri M. Effect of ginger on primary dysmenorrhea: A double-blind clinical trial. *BMC Complementary and Alternative Medicine*. 2012; 12: 92.
- [3] Omidvar S, Begum K. Characteristics and determinants of primary dysmenorrhea in young adults. *American Medical Journal*. 2012;3(1):8-13.
- [4] Jenabi E. The effect of ginger for relieving primary dysmenorrhea. *Journal of Pakistan Medical Association*. 2013;63(1):8-10.
- [5] Sharma P, Malhotra C, Taneja DK, Saha R. Problems related to menstruation amongst adolescent girls. *Indian Journal of Pediatrics*. 2008;75(2):125-129.
- [6] Adib-Rad H, Basirat Z, Faramarzi M, Mostafavi F. Effect of ginger and Novafen on menstrual pain: A cross-over trial. *Taiwanese Journal of Obstetrics and Gynecology*. 2018;57(6):806-809.
- [7] Grandi G, Ferrari S, Xholli A, et al. Prevalence of menstrual pain in young women: What is dysmenorrhea? *Journal of Pain Research*. 2012; 5: 169-174.
- [8] Dawood MY. Primary dysmenorrhea: Advances in pathogenesis and management. *Obstetrics and Gynecology*. 2006;108(2):428-441.