



Effects of Yoga for Pain Relief in Dysmenorrhea by Comparing Two Different Sets of Population

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KEYWORDS

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ABSTRACT:

Introduction: Dysmenorrhea is a common issue experienced by teenage and adult women, characterized by pain occurring just before or during menstruation, often affecting the pelvic region, lower abdomen, and thighs. Its prevalence is high, and this study aims to investigate the effectiveness of yoga in alleviating dysmenorrhea-related pain. Yoga involves relaxing exercises that promote coordination between the mind and body.

Method: A sample of 30 women was divided into two groups: Group A consisted of 15 early adolescent girls aged between 18-25, and Group B included 15 late adulthood women aged 35-50. Inclusion and exclusion criteria were carefully considered, and a specific protocol of yoga asanas (postures) was designed for the participants. After four weeks, the subjects were assessed using the WaLLID and NPRS as outcome measures for the study.

Results: The findings indicated that the group practising yoga asanas with the tailored protocol experienced a significant reduction in pain associated with primary dysmenorrhea. Both the WaLLID and NPRS assessments demonstrated substantial improvements in pain relief and the overall quality of life for the participants.

Conclusion: The use of yoga asanas with a tailored protocol demonstrated significant effects in relieving pain and enhancing the quality of life for females experiencing primary dysmenorrhea. This study comprised two distinct groups categorized by age: Group 1 (ages 18-25) and Group 2 (ages 35-50), with strict adherence to inclusion and exclusion criteria. The results highlight the potential of yoga as a non-pharmacological approach for managing dysmenorrhea-related pain.

1. Introduction

Dysmenorrhea, also known as painful periods or menstrual cramps, is essentially the experience of pain during menstruation(1). It is a term used to describe the discomfort associated with menstruation, often involving cramps caused by the contraction of the uterus. Dysmenorrhea is one of the most commonly observed menstrual disorders, with more than half of women enduring mild to severe pain for 2-3 days or even longer each month(2). Typically, this pain is concentrated in the pelvic and lower abdominal regions. Dysmenorrhea tends to be more prevalent among individuals with heavy or irregular periods and those with lower body weight(3).

Dysmenorrhea can be categorized into two main types: Primary Dysmenorrhea: This type occurs without any identifiable pelvic pathology(4). It is primarily caused by naturally occurring chemicals known as prostaglandins, which are found in the lining of the uterus. Pain usually sets in just before menstruation begins, as the levels of prostaglandins increase(5). As the menstrual cycle progresses and the uterine lining sheds, these levels decrease, leading to a gradual reduction in pain(6).

Secondary Dysmenorrhea: This type is linked to issues in the reproductive system and typically develops later in life than primary dysmenorrhea. Pain may worsen over time and can persist beyond the menstrual period(7). Causes may include endometriosis, pelvic infections,



uterine fibroids, vaginal discharges, or anomalies. Symptoms can encompass pain in the lower abdomen or limbs, sharp pelvic cramps, dull aches, nausea, diarrhoea, light-headedness, dizziness, fatigue, fever, and a feeling of pressure in the abdomen. Pain may be localized in the umbilical or suprapubic area of the abdomen, often on the right or left side (8).

The prevalence of dysmenorrhea among females varies widely, ranging from 15.9% to 80.5%. For some, the pain can be so severe that it disrupts daily activities, leading to absences from school or work due to unbearable discomfort (9). Numerous studies have suggested that certain yogic postures can alleviate menstrual pain. Yoga primarily consists of physical poses or postures, breathing techniques, lung expansion exercises, meditation, and relaxation practices, all of which can improve physical fitness and reduce stress (10). Regularly practising yoga can contribute to stress relief, alleviate depression and anxiety, and potentially aid in managing dysmenorrhea.

During menopause, the prevalence of dysmenorrhea has been reported to range from 55.2% to 90.5% (11). Multiple studies examining the prevalence of dysmenorrhea pain have identified various factors contributing to this condition. These factors include age, the number of childbirths, contraceptive methods, obesity, hormone imbalances, high stress levels, and increased tension, all of which can elevate the risk of dysmenorrhea (12).

Dysmenorrhea has a significant impact on women's health, often being the primary cause of school and work absenteeism due to the extreme pain and discomfort it causes (13). This can lead to further health problems and reduced work effectiveness, significantly affecting the overall quality of life and work capacity of those affected. Risk factors for dysmenorrhea in individuals under the age of 20 include factors like parity, heavy menstrual flow, high socioeconomic status, weight loss attempts, low body mass index, early menarche, and psychological disturbances like anxiety. For those over the age of 20, risk factors include conditions such as cysts, cancer, uterine fibroids, inflammatory pelvic disease, postpartum depression, and the onset of menopause (14,15).

The pain associated with dysmenorrhea is often described as pulsating or cramping and can be quite

severe. It typically begins 1 to 4 days before the menstrual cycle, persists for at least 24 hours after the onset of menstruation, and gradually subsides within 2 to 3 days. The pain is commonly experienced as a dull, continuous ache that radiates from the abdomen to the back and thighs (16,17).

Dysmenorrhea stands as one of the most prevalent gynaecological disorders affecting women of all ages, with a prevalence rate ranging from 40% to 92%. It is important to note that dysmenorrhea, apart from physical discomfort, can be associated with symptoms such as vomiting, fatigue, lower back pain, headaches, drowsiness, insomnia, and gastrointestinal disturbances like diarrhoea (18,19).

2. Objectives

The objective of a study titled "Effects of Yoga for Pain Relief in Dysmenorrhea by Comparing Two Different Sets of Population" would typically be to investigate and compare the impact of yoga as a potential intervention for pain relief in individuals experiencing dysmenorrhea (painful menstruation), specifically by assessing its effects on two different groups or populations.

Methods

This experimental study focuses on assessing pain relief through the application of different yoga postures among two distinct groups of participants suffering from dysmenorrhea. The study's initial sample consists of 30 females, with 15 in the early adulthood category (teenagers and bachelors) and 15 in the late adulthood category (working women and married individuals). The study involves a detailed exercise protocol comprising various yoga postures to be performed by participants during the first three days of their menstrual cycle.

Inclusion Criteria:

For early adulthood participants (aged 18-25): Non-alcoholic, non-smoking, regular menstrual cycles.

For late adulthood participants (aged 35-50): Non-smoker, non-alcoholic, non-pregnant.

Exclusion Criteria: Participants under the age of 18 with any two disorders such as cysts or cancer, or those with polycystic ovary disorder (PCOD) were excluded from the study.



Sample Design: A total of 30 females, divided into Group A (early adulthood, ages 18-25) and Group B (late adulthood, ages 35-50), based on the inclusion criteria, were included in the study with their informed consent.

Intervention: Participants were required to perform various yoga asanas, including Surya Namaskar, Baddha Konasana, Supta Baddha Konasana, Balasana, Marjariasana, Bhujangasana, Matasyasana, Bitilasana, Janusirsasana, and other poses. The intervention involved a 40-minute daily session for 14 days during 4 weeks.

Outcome Measures: The study began with the screening of participants, checking inclusion and exclusion criteria, and measuring vital signs such as heart rate, blood pressure, temperature, pulse, and more. Participants' routines and work patterns were considered. Informed consent was obtained before the study commenced. Outcome measures included the Numeric Pain Rating Scale (NPRS) for pain intensity assessment and the WaLLID scale (assessing working ability, location of pain, pain intensity, pain area, pain duration, and days of pain). Questionnaires were administered to assess participants' progress, including pain intensity, area, duration, and working ability.

Data Analysis: Data and information were collected through participant assessments and questionnaires. Pain intensity was measured using NPRS, while pain area, duration, days of pain, and working ability were assessed using the WaLLID scoring scale. Parametric t-tests, non-parametric Wilcoxon tests, and Mann-Whitney tests (u-tests) were employed for the statistical analysis of the collected data. Overall, the study aimed to investigate the potential benefits of yoga in relieving dysmenorrhea-

related pain and enhancing the daily lives of affected females, with a focus on different age groups.

3. Results

Table 1 provides demographic data for both Group 1 and Group 2, presenting socioeconomic information statistically. It includes variables such as age, weight in kilograms, height in centimetres, and BMI (Body Mass Index). Mean values along with standard deviations are shown for each variable. Group 1 represents early adulthood participants, while Group 2 represents late adulthood participants. The data shows notable differences between the two groups in terms of age, weight, height, and BMI, reflecting the distinct age ranges and potential physiological variations between the groups. Table 2 focuses on the comparison between the two groups, specifically evaluating mean values for pain intensity and duration. This comparison is conducted using the Mann-Whitney test, a non-parametric test designed to assess differences between two independent groups. The results indicate non-significant differences between the groups, as evidenced by p-values greater than 0.005. This suggests that there is no significant variation in pain intensity and duration between the early adulthood and late adulthood participants. Table 3, on the other hand, delves into a comparison within each group, examining the mean values and standard deviations for variables. This comparison is achieved through the Wilcoxon test, another non-parametric test used to test hypotheses within populations. In this case, the results show significance, with p-values less than 0.005. This suggests that there are significant changes in pain intensity and duration within both Group 1 and Group 2 following the intervention. Specifically, pain intensity (NPRS) and duration (WaLLID) show significant improvements within each group after the intervention, as indicated by the lower p-values.

TABLE NO1 - DEMOGRAPHIC DATA DETAIL GROUP-1 AND GROUP-2

VARIABLES	GROUP 1	GROUP 2
AGE	21.733±2.2509	45.133±2.0307
WEIGHT	57.933±11.7014	69.600±6.6740
HEIGHT	158.500±161.687	161.687±12.0908
BMI	23.140±4.5494	27.020±4.6637

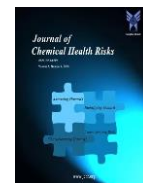


TABLE NO 2 - COMPARISON BETWEEN THE GROUPS IS BY COMPARING THE MEAN FOR PAIN INTENSITY AND DURATION BETWEEN BOTH GROUPS

VARIABLES	MEAN±SD		P-VALUE
	GROUP 1	GROUP 2	
NPRS (PRE)	15.37±2.057	15.63±	0.933
NPRS (POST)	15.23±1.985	15.77±	0.866
WALLID(PRE)	15.77±1.985	14.18±	0.612
WALLID(POST)	15.50±1.421	14.46±	0.722

TABLE NO.3 - COMPARISON WITHIN THE GROUP IS DONE BY COMPARING THE MEAN AND STANDARD DEVIATION OF VARIABLE

VARIABLES	MEAN±SD	Z-SCORE
NPRS(PRE)	6.67±2.057	0.004
NPRS(POST)	4.70±1.985	
WALLID(PRE)	4.70±1.985	0.000
WALLID(POST)	5.66±1.421	

Discussion

This study aimed to investigate the effectiveness of yoga in alleviating pain associated with dysmenorrhea. The study involved a review of five articles, which collectively demonstrated a positive relationship between practising yoga and its efficacy in managing dysmenorrhea. The findings of the study revealed that yoga asanas when performed regularly, were effective in reducing the severity of dysmenorrhea and improving both the physical and mental components of pain and quality of life. The group that practised all yoga techniques showed greater improvement, and these changes were statistically significant.

Dysmenorrhea, characterized by menstrual pain and cramps, is directly linked to uterine muscle contractions.

These contractions can be exacerbated by stress and the release of hormones like prostaglandin, which further activates the sympathetic nervous system. Any yoga pose or activity that reduces sympathetic nervous system activity or stress can help alleviate the pain associated with dysmenorrhea. Yoga poses are known to increase the secretion of endorphins from the brain, raising the body's pain threshold and improving blood flow with increased uterine metabolism. Many young females use various conservative management techniques to alleviate dysmenorrhea symptoms, including stretching exercises, pilates, meditation, and yoga. Specific yogic poses offer significant benefits, such as Balasana, which relaxes the buttock area and upper legs, and Bhujangasana (Cobra Pose), which strengthens spinal muscles, enhances core stability and promotes spinal flexibility. Bitilasana, a



simple pose, improves focus, coordination, and mental stability while stretching the neck and front torso. Matsyasana (Fish pose) promotes cervical flexibility and reduces neck and shoulder stiffness. Overall, yoga helps maintain physiological balance in the body and enhances mental health by inducing relaxation and promoting mind-body coordination. In the study, two groups, Group 1 and Group 2, were analyzed. Within-group analysis using the Wilcoxon test indicated significance ($p < 0.005$) for variables like NPRS (pre/post) and WaLLID (pre/post), suggesting that yoga had a significant impact within each group. However, between-group analysis using the Mann-Whitney test showed non-significant differences ($p > 0.005$) for the same variables, indicating that the differences in pain relief between the two groups were not statistically significant. Statistical analysis was conducted using SPSS software, and various statistical tests, including U Mann-Whitney, Student's t-test, and Wilcoxon test, were employed to examine the data. The significance level was set at $p < 0.05$, with corresponding results indicating significance. Overall, this study supports the role of yoga in relieving dysmenorrhea-related pain and improving the overall well-being of individuals affected by this condition.

4. Conclusion

In conclusion, this study has provided valuable insights into the effectiveness of yoga in relieving pain associated with dysmenorrhea. The findings suggest that practising yoga, particularly yoga asanas, can significantly reduce the severity of dysmenorrhea and improve both the physical and mental aspects of pain and quality of life. The positive relationship between yoga and dysmenorrhea management was evident in the reviewed articles and the results of this study. Dysmenorrhea, characterized by menstrual pain and cramps, is closely related to uterine muscle contractions, which can be exacerbated by stress and hormonal factors. Yoga poses and activities that reduce sympathetic nervous system activity and stress have been shown to alleviate the pain experienced in dysmenorrhea. Yoga's ability to increase endorphin secretion, raise pain thresholds, and improve blood flow contributes to its effectiveness in managing dysmenorrhea symptoms.

Specific yogic poses, such as Balasana, Bhujangasana, Bitilasana, and Matsyasana, offer unique benefits in terms of relaxation, strength building, core stability, and

flexibility. These poses, when incorporated into a regular yoga practice, can have a positive impact on pain relief and overall well-being. The study analyzed two groups, Group 1 and Group 2, and found significant improvements in pain relief within each group after the yoga intervention. However, there were no statistically significant differences in pain relief between the two groups.

Overall, this study underscores the potential of yoga as a non-pharmacological approach to managing dysmenorrhea-related pain and enhancing the quality of life for individuals affected by this condition. Further research and exploration of yoga's therapeutic benefits in the context of dysmenorrhea are warranted to better understand its mechanisms and long-term effects.

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