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Research Article

Effectiveness of Prenatal Yoga in Reducing Minor Physical Discomforts Among Antenatal Mothers at Vijayapur PHC

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A B S T R A C T

Introduction: Pregnancy often leads to physical discomforts, such as back pain, swelling (oedema), fatigue, and leg cramps, which can negatively affect the quality of life for expectant mothers. Prenatal yoga, which incorporates physical postures, breathing techniques, and relaxation exercises, has become a complementary therapy. However, evidence supporting its effectiveness in alleviating these specific discomforts is limited. This study aims to investigate the impact of prenatal yoga on reducing these minor physical issues and enhancing maternal well-being.

Method:The study utilized a pre-experimental pre-test/post-test design conducted at a primary health centre (PHC) in Vijayapur. It involved 130 antenatal mothers experiencing minor discomforts, selected through convenience sampling. Data collection included socio-demographic surveys and validated discomfort scales, with a reliability coefficient of 0.72 to 0.78. Prenatal yoga interventions were conducted over six weeks, followed by post-test assessments. Statistical analyses were performed, using significance testing with p-values of ≤ 0.05 considered significant.

Results: Statistical analyses revealed significant reductions in discomfort scores post-intervention. Mean pain scores decreased from 3.32 (pre-test) to 1.79 (post-test, $t = 10.71$, $p < 0.0001$). Oedema scores decreased to 1.09 ($t = 67.7$, $p < 0.001$), and there was a significant improvement in leg cramps (pre-test mean 0.88, post-test mean 1.86, $t = -16.7$, $p < 0.0001$). Additionally, researchers identified associations between pain scores and socio-demographic factors, such as family type and income (chi-square < 0.05).

Conclusion:The study concludes that prenatal yoga significantly alleviates discomfort among antenatal mothers, promoting improved maternal well-being and supporting a healthier pregnancy experience.

Keywords: Back Pain, Physical Discomforts, Pregnancy Outcomes, Prenatal Yoga

Introduction

For thousand years ago, yoga has been a basic activity in India; now, its tremendous health advantages are well-known. Pregnancy and childbirth bring a range of psychological and emotional changes that yoga helps women with; it helps improve well-being and significantly mitigates psychosocial concerns, reducing the chances of anxiety and depression in women after childbirth.[1-3] In the past, pain relief in advanced phases of labour mainly depended on the use of drugs, including analgesics and anaesthesia. Though these methods could help a lot with discomfort, they seriously compromise the health and development of the mother and the child. This overdependence on medications reveals the lack of non-pharmaceutical resorting to non-pharmaceutical options like antenatal exercises warrants further investigation to support clinical practice.[4]

A series of physical postures are used in yoga with a meditative focus, promoting a mindful state of being present and aware without judgment.[5] Because of their health advantages, yoga and other mindfulness techniques are becoming increasingly accepted in prenatal care. Among these advantages include notable drops in stress, alleviation of pain, and changes in mental health problems.[6] Recent studies indicate that prenatal yoga can improve psychological well-being and boost immune function in pregnant women.[7] Yoga is crucial since both yoga and meditation have been demonstrated to drastically lower pain and anxiety during labour, boost self-efficacy, and increase the possibility of vaginal delivery in childbirth.[8] Maternal worry about labour pain often shapes the increasing prevalence of cesarean sections. Therefore, understanding and exploring the role of yoga in empowering mothers during delivery is essential.

Many pregnant women also have low back pain (LBP), which emphasizes the significance of having good alleviation techniques. According to a thorough review of non-pharmaceutical therapies, several can help to control LBP rather successfully. These studies show that compared to conventional treatment, workouts and complementary therapies including transcutaneous electrical nerve stimulation (TENS) considerably help to reduce pain.[9] Studies show how important physical exercise is for lowering pregnant depression symptoms.

Yoga is especially beneficial and a perfect fit for pregnant women because of its low intensity and all-encompassing approach.[10,11] Improving maternal health is critical for fetal growth and well-being. As a result, implementing wellness-promoting strategies during pregnancy is essential for enhancing health outcomes for mothers. And their children.[12,13] While prenatal care promotes yoga for expectant mothers, specialists have not yet fully understood the key factors contributing to its success.

Thus, there is an urgent need for prospective, large-scale, high-quality, randomized controlled studies of excellent quality to reach clear answers on the impact of yoga on different pregnancy outcomes.[14,15] This study aims to address important knowledge gaps by systematically evaluating the effectiveness of prenatal yoga in alleviating minor physical discomforts experienced by expectant mothers at the Vijayapura Primary Health Centre (PHC). A woman's pregnancy is natural, and it represents a turning point that could lead to tension and anxiety in her life. During this period, women could experience a wide range of complex emotions, including anxiety over birth.[16,17]

Objectives

- To assess the level of selected minor physical discomforts (low back pain, leg oedema, and leg cramps) among antenatal mothers attending the selected Primary Health Centre (PHC), Vijayapur.
- To evaluate the effectiveness of prenatal yoga in reducing selected minor physical discomforts among antenatal mothers.
- To determine the association between selected minor physical discomforts and selected socio-demographic variables of antenatal mothers.

Subject & Methods

Study Design

It was a descriptive and evaluative research methods with a one-group pre-test and post-test design to find out how well prenatal yoga helped with small physical problems.

Study Setting

This study was conducted at the Honnatagi, Primary Health Centre (PHC) in Vijayapur district and the participants belong to this village.

Study Duration The study duration is 6 weeks, starting from 01/03/2024 and concluding on 11/04/2024.

Participants

One hundred thirty (130) antenatal mothers experiencing minor physical discomforts were selected through convenience sampling.

Sample size estimation

The sample size for the present study was calculated using a finite population formula.

$$n' = \frac{n}{1 + \left[\frac{z^2 pq}{E^2 N}\right]}$$

Where

- n= finite population (385)
- z=critical value for SNV (1.96)

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- E= allowable error (5%)
- N= 168, P= 50%

The necessary sample size, accounting for a 10% dropout rate, was 130. Sample size (n)=130

Sampling Method

The samples are selected using a convenient sampling technique.

Inclusion and Exclusion Criteria

- Inclusion: Antenatal mothers in the 13–30 weeks of gestation with discomforts such as low back pain and cramps may be ideal for a 6-week yoga intervention.
- Exclusion: High-risk mothers, those nearing term, practicing yoga, or having physical deformities.

Delimitation

- The study delimited the antenatal mothers attending outpatient departments in PHC at Vijayapur.
- The period of study was delimited to 6 weeks.
- The study is limited to teaching specific yoga-like calf stretch, leg side split, sitting on the heel, leg cross, leg straight, leg sideward, chair twist, and triangle posture
- The study is limited to minor physical discomforts like back pain, leg oedema, and leg cramps.

Data Collection Tool

The study utilized the following validated instruments to assess physical discomforts in antenatal mothers:

- Williamson Pain Scale for low back pain.
- Ruchiegal Edema Scale for leg edema.
- Robert Henderson Leg Cramps Grading Scale for leg cramps.

A demographic variable proforma was also employed, collecting data on age, religion, education, family type, income, marital status, source of information, gravida, gestational age, and pregnancy complications.

Tool Validation

Consultations with OBG Nursing and statistics specialists and a review of the literature helped to ascertain content validity. The tools' reliability was assessed using Cronbach's alpha, yielding coefficients of 0.72 (demographics), 0.78 (pain), 0.71 (oedema), and 0.74 (cramps), signifying acceptable reliability.

Study Variables

The primary study variables are Pain, Edema and Leg Cramps

Data Collection Procedure

The intervention entailed weekly sessions teaching specific yoga postures, led by a certified instructor, across six weeks. Assessments were performed at pre-test and post-test.

Ethical Considerations

The Institutional Ethics Committee (IEC) of Shri B.M. Patil Institute of Nursing Sciences has issued approval (approval number: 39/2023-24) and all participants provided informed consent, and measures were established confidentiality.

Statistical Analysis

Descriptive and inferential statistics were implemented in accordance with the objectives and hypotheses of the investigation. SPSS software (IBM Statistics version 26.0) was used to conduct statistical analyses. The severity of minor physical discomforts among antenatal mothers was assessed using mean, median, frequency, percentage, and standard deviation. The effectiveness of prenatal yoga on minor physical discomforts was analyzed using paired t-tests. The relationship between socio-demographic characteristics and pre-test scores of mild bodily discomforts was examined using the chi-square test. A p-value below 0.05 was considered significant. Data were displayed graphically and in tabular forms.

Results

This study evaluated how prenatal yoga helped expecting women visiting the Vijayapura Primary Health Center (PHC) relieve minor physical discomforts. 130 expectant mothers participated in the study, and the research team documented their demographic characteristics to provide context for the findings.

Demographic Characteristics of Antenatal Mothers

The demographic information for the antenatal mothers is outlined as follows:

- **Age**: Most participants were between 19 and 25 years old, comprising 54.6% (n=71) of the group. This was followed by those aged 25 to 31, who represented 38.5% (n=50). Only a small percentage, 6.9% (n=9), were aged between 31 and 37 years.
- **Religion**: The majority of participants identified as Hindu (60%, n=78), followed by Muslims at 38.5% (n=50) and others at 1.5% (n=2).
- **Education**: A significant portion of the mothers had completed secondary education (39.2%, n=51), followed by graduates (29.2%, n=38). Those with postgraduate degrees or higher accounted for 13.1% (n=17), while 10.8% (n=14) had completed primary education, and 7.7% (n=10) were illiterate.
- **Family Structure**: Most participants lived in nuclear families (66.9%, n=87), whereas a smaller percentage resided in joint families (33.1%, n=43).
- **Residence**: Most lived in urban areas (63.1%, n=82), with the remainder residing in rural locations (36.9%, n=48).

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- **Family Income**: Most participants reported a monthly family income ranging from Rs. 10,000 to 15,000 (63.8%, n=83). This was followed by 11.5% (n=15) who reported incomes between Rs. 5,000 and 10,000 and 24.6% (n=32) with incomes exceeding Rs. 15,000.
- **Marital Status**: Most participants were married (97.7%, n=127), while only 2.3% (n=3) were widowed.
- **Source of Information**: Most mothers reported obtaining information from mass media (44.6%, n=58), followed by family and friends (31.5%, n=41). Other sources were identified by 13.1% (n=17), and 10.8% (n=14) were unsure where they got their information.
- **Gravida Status**: Most participants were multigravida (57.7%, n=75), whereas primigravida mothers made up 42.3% (n=55).
- **Gestational Age**: The majority of mothers were in the gestational age range of 13 to 21 weeks (68.5%, n=89), followed by those at 22 to 29 weeks (26.9%, n=35) and 30 to 38 weeks (4.6%, n=6).

Following this demographic assessment, we evaluated the levels of physical discomfort experienced by antenatal mothers, focusing specifically on pain, oedema, and leg cramps. Various assessment tools were utilized, including the Williamson Pain Scale for evaluating low back pain, the Ruchiegal Edema Scale for assessing leg oedema, and the Robert Henderson Leg Cramps Grading Scale for evaluating leg cramps. The results were evaluated employing a paired t-test with a significance threshold of $p < 0.05$.

Analysis of Pain Levels Before and After the Intervention

The objective was to assess the impact of prenatal yoga on pain levels experienced by expectant mothers. With compiled results in Table 1, a comparison was made between measurements taken before and after the intervention.

Pain levels dropped according to the paired t-test study. Before the intervention, the mean pain score was 3.32 (SD = 2.47); it dropped to 1.79 (SD = 1.66) later. This modification was important, with a t-value of 10.71 and a p-value less than 0.001.

Comparison of Pre- and Post-Test Edema Levels.

The table below shows that the researchers also measured how prenatal yoga affected oedema levels.

The paired t-test resulted in a notable drop in oedema scores. Before the intervention, the mean score was 2.12 (SD = 0.41; then, it dropped to 1.09 (SD = 0.29). This produced a p-value below 0.001 and a t-value of 67.7.

Table 1.Pain Levels Pre- and Post-Test

Pain Level	Pre-Test Count [n=130]	Pre-Test Percentage	Post-Test Count [n=130]	Post-Test Percentage
No Pain	15	11.5%	34	26.2%
Mild Pain	62	47.7%	78	60.0%
Moderate Pain	36	27.7%	17	13.1%
Severe Pain	17	13.1%	1	0.8%

Table 2.Edema Levels Pre- and Post-Test

Edema Level	Pre-Test Count [n=130]	Pre-Test Percentage	Post-Test Count [n=130]	Post-Test Percentage
Mild	0	0%	118	90.8%
Moderate	118	90.8%	12	9.2%
Severe	8	6.2%	0	0.0%
Very Severe	4	3.1%	0	0.0%

Comparison of Pre- and Post-Test Cramps Levels

At last, we looked at the variations in leg cramps before and after the intervention. Table 3 displays the outcomes.

The mean score for leg cramps showed a notable increase, with a pre-test mean of 0.88 (SD = 0.87) and a post-test mean of 1.86 (SD = 1.29). With a t-value of -16.7 and a p-value of 0.0001, the paired t-test study was produced.

Based on statistical analyses of the pre-and post-intervention data, prenatal yoga improved the frequency of leg cramps among pregnant women and significantly reduced discomfort and oedema levels.

Table 3.Cramps Levels Pre- and Post-Test

Cramp Level	Pre-Test Count [n=130]	Pre-Test Percentage	Post-Test Count [n=130]	Post-Test Percentage
No Leg Cramps	0	0.0%	19	14.6%
Mild	5	3.8%	20	15.4%

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Cramp Level	Pre-Test Count [n=130]	Pre-Test Percentage	Post-Test Count [n=130]	Post-Test Percentage
Moderate	28	21.5%	39	30.0%
Severe	44	33.8%	28	21.5%
Worst Cramp	53	40.8%	24	18.5%

Relationship among Physical Discomforts and Selected Socio-demographic Variables

The researchers assessed the correlations as follows in order to understand how socio-demographic variables affect physical discomfort:

- Pain: Significant correlations were seen with family type [chi-square=6.02, p=0.014] and income levels [chi-square=7.75, p=0.021], showing socioeconomic factors on pain experiences.
- Oedema: Income levels [chi-square=6.46, p=0.040] indicated a notable correlation; other socio-demographic indicators showed no such correlation [$p > 0.05$].
- Leg cramps exhibited no appreciable correlation with socio-demographic factors [$p > 0.05$].

The findings highlight how prenatal yoga helps pregnant women avoid physical discomfort using its relaxation properties, including oedema and pain. Although pain levels showed clear links with family structure and affluence, other factors, including oedema and leg cramps, did not show the same trends. These results imply that social factors may affect the perception of physical discomfort during pregnancy.

Discussion

- **Demographic differences**: Our study indicated that 54.6% of participants were aged 19 to 25 years; Jafaru's research revealed that 42.1% were aged 20 to 24 years. Moreover, demonstrating disparities in reproductive experience, 57.7% of our patients were multigravida, in contrast to 37.6% in Jafaru's group.Jafaru's study shows that although 62.4% of participants gained tertiary education, 39.2% of participants attained secondary education, suggesting that Jafaru's population most certainly has better access to educational resources. Although Jafaru's group mostly comprised of civil servants, most of the participants in our study lived in nuclear homes (66.9%). While Jafaru's educated population most likely used a range of sources, our respondents relied on mass media for health information (44.6%). These demographic differences highlight the need of tailored prenatal health campaigns that meet the different needs and backgrounds of different societies.[18]
- **Prevalence of Minor Physical Discomforts**: Investigation into minor physical discomforts revealed that 31.1% of participants reported severe low back pain, consistent with existing literature indicating that 25% to 90% of pregnant women experience this discomfort.[19] Many times reported causes of low back discomfort are the architectural and physiological changes brought on by pregnancy, including weight increase and hormone changes influencing ligaments.Regarding oedema, 3.1% of our participants experienced severe oedema, while 19.8% reported moderate leg oedema. This is lower than the findings from Mori K et al. (2025), where up to 80% of pregnant women reported experiencing oedema.[20] The reduced severity in our study may reflect geographical differences or variations in healthcare access that influence perceptions of discomfort severity. Leg cramps were reported as severe by 40.8% of participants, supported by the study by Abandeh A et al., which indicated that 47.8% to 64.6% of pregnant women experience this condition.[21] Variations in physical activity, hydration status, and nutritional factors may contribute to the differing prevalence rates of leg cramps during pregnancy.
- **Effectiveness of Prenatal Yoga**: Our study showed a notable drop in pain levels following prenatal yoga; mean scores dropped from 3.32 (SD = 2.47) to 1.79 (SD = 1.66) ($t = 10.71$, $p < 0.001$). Similarly, another study reported decreased back pain scores from 4.69 to 2.50 ($p = 0.000$). Despite a higher baseline pain in that comparison, our observed reduction of 1.53 points indicates meaningful pain relief.[22] Results also showed a significant decrease in oedema scores from 2.12 (SD = 0.41) to 1.09 (SD = 0.29) ($p < 0.001$, $t = 67.7$), supporting the effectiveness of prenatal yoga in mitigating fluid retention. But it's important to note that leg cramps raised post-prenatal yoga from 0.88 (SD = 0.87) to 1.86 (SD = 1.29) ($p = 0.0001$, $t = -16.7$), implying a possible negative impact linked with muscular activity during practice. This is consistent with research by Holden et al. (2012), which shows that prenatal yoga could aggravate leg cramps even if it greatly helps back discomfort.[23] These results highlight the importance of doctors properly explaining the advantages of prenatal yoga for pain and oedema reduction as well as the risk of more leg cramps. More study is needed to assess the particular elements of prenatal yoga that help pregnant women manage their discomfort.

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Conclusion

This study assessed the effectiveness of prenatal yoga in reducing minor physical discomforts among antenatal mothers at the PHC in Vijayapur. After a month of yoga, participants reported notable decreases in low back discomfort, leg oedema, and leg cramps

These findings support the effectiveness of prenatal yoga in relieving pregnancy-related discomfort, therefore improving mother's health and lowering the problems. The study emphasizes the need of teaching nursing staff prenatal yoga and advises more investigation on the psychological impacts of yoga and its comparability with conventional prenatal workouts. The study supports assessing and evaluating yoga's impact on antenatal discomfort.

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