

Bridging the Gap: Assessment of Knowledge, Attitude, and Practice Toward Antenatal Physiotherapy Among Postpartum Women in Urban India: A Cross-Sectional Study

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Critical Review.

Abstract: Context: Assessment of awareness, knowledge, attitude, and practice regarding antenatal physiotherapy among postpartum women

Aims: Antenatal physiotherapy is available to improve maternal health and safe pregnancy outcomes but there is a lack of awareness and uptake. This is a cross-sectional study which aimed to assess the awareness, knowledge, attitude and practices of antenatal physiotherapy exercises among the postpartum women of Sangli, Maharashtra, India.

Settings and Design: Cross-sectional survey among postpartum women in Sangli, Maharashtra, India.

Methods and Material: They were 306 postpartum women (aged 19-45 years) who were recruited from government and private hospitals as part of this cross-sectional study. The questionnaire was developed and validated to find the awareness, knowledge, attitude and practice of antenatal physiotherapy.

Statistical analysis used: SPSS version 26.0 software was used for statistical analysis. Descriptive statistics and Chi-square tests were used, $p < 0.05$ were considered statistically significant.

Results: The knowledge was poor (36.3%), awareness was inadequate (46.5%), practice of exercise was inadequate (27.4%), and attitudes were positive for antenatal exercise (60.1%). The major problems were unawareness and tiredness due to pregnancy. The level of higher educational status was significantly correlated with the KAP scores ($p < 0.05$).

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Conclusions: The study showed that it is important to include antenatal physiotherapy education and counselling as a part of routine care of the mother in order to increase awareness, maternal health and pregnancy outcomes particularly in mothers with low educational status.

Keywords: Antenatal physiotherapy, Attitude and Practice, Knowledge, Postpartum women, Urban India.

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Introduction or background: Antenatal care aims to provide routine examinations that enable physicians to treat and prevent possible health issues throughout the duration of pregnancy while encouraging wholesome habits that are advantageous to both the mother and child. [1] Most nations' public health promotion and prevention initiatives include antenatal care. Appropriate antenatal healthcare services are the foundation for safe maternity through better neonatal outcomes.[2] Pregnancy induces multiple anatomical and physiological adaptations that commonly produce musculoskeletal and pelvic floor symptoms low back pain, pelvic girdle pain, lower limb edema, unsteady gait, and urinary incontinence. These all have an immediate negative impact on a woman's health that adversely affects physical activity levels and overall wellbeing. [3-5] Reported prevalences are substantial: over two thirds of women experience back pain during a first pregnancy, about one fifth report pelvic pain, and more than 40% report urinary incontinence, with approximately half remaining incontinent eight weeks postpartum. Reduced activity and consequent weakening of abdominal and pelvic muscles may increase the risk of diastasis recti, lumbopelvic instability, and persistent pelvic floor dysfunction.[4] Evidence shows antenatal exercise decreases risks of gestational diabetes and excessive gestational weight gain, lowers the incidence of preeclampsia, shortens labour and operative delivery rates, and improves maternal fitness, endurance, and psychological wellbeing.[6-11] Physical therapy promotes health and well-being by emphasizing the benefits of physical activity and exercise for everyone, including pregnant women.[12] The American College of Obstetricians and Gynecologists advocated exercise as a crucial component of prenatal care in the 1990s.[13] "Research indicates that regular physical activity during pregnancy is safe for both the mother and fetus and has multiple positive effects on the body and mind.[6] Evidence shows that antenatal exercise decreases the risk of gestational diabetes and excessive gestational weight gain, lowers the incidence of preeclampsia, shortens labor and operative delivery rates, and improves maternal fitness, endurance, and psychological wellbeing.[6-11] Moreover, the significance of exercise during pregnancy includes pain relief, maintenance of strengthened muscles and loosened joints for labor

management, better circulation, increased flexibility, increased capacity(endurance), resistance to exhaustion, increased energy, decreased muscle tension, improved relaxation, and positive self-respect. [14]

Physiotherapy interventions commonly used during pregnancy include aerobic and strengthening exercises, pelvic floor muscle training, abdominal muscle conditioning, postural education, relaxation techniques, and pain management strategies; these interventions can reduce symptoms, enhance functional capacity, and facilitate postpartum recovery., awareness, and attitudes among women. While there is a clear advantage for the use of antenatal physiotherapy, the uptake is dependent on provider knowledge, awareness, and attitude in obstetrics and gynaecology teams, which shows appreciable awareness and attitudes towards physiotherapy, with a significant gap in provider education to ensure optimal utilization of antenatal physiotherapy. Information on women's knowledge and attitude towards antenatal physiotherapy in India is scarce especially in urban areas with varying backgrounds of educational levels and access to healthcare. This knowledge, awareness and attitudes of women is vital to the design of targeted education and integration of physiotherapy into antenatal services. Hence, the aim of this study was to assess the awareness, knowledge, attitudes and practice of physiotherapy exercises among the postpartum women in the healthcare centres.

• **Material and Methods:**

The study is reported according to STROBE guidelines. [15] Ethical Approval was obtained from the Institutional ethics committee [BV(DU)MC&H/Sangli/IEC/Phys-41/25]. The study's purpose and procedures were explained to all eligible participants, and informed consent was obtained prior to data collection.

Study design, duration and area

This cross-sectional survey study was conducted over the duration 6 months from December 2024 through May 2025 in tertiary health care hospitals in Sangli city, Maharashtra, India. The city of Sangli is located in the western region of Maharashtra and has extensive healthcare

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infrastructure in the city, including government hospitals, private hospitals.

Study participants

All the tertiary care hospitals providing specialized OB GY care were stratified into two groups, Private and Government hospitals. To minimise selection bias, computer generated random number, three hospitals from each stratum i.e total of six hospitals were chosen. All women who were admitted post delivery or who attended outpatient department during the study period were assessed for eligibility.

Criteria. Females aged between 19-45 who were able to read and comprehend English & Marathi language, and who had undergone childbirth within last 6 months and were willing to participate were included in the study.

Sample size determination

The sample size was determined using a single population proportion formula, with standard normal value corresponding to a 95% confidence level, estimated population proportion of 80%, and margin of error of 5%. Based on these assumptions, the calculated sample size was 246 participants. After accounting for an anticipated non-response rate of approximately 25%, the final sample size was increased to 306 participants.

Data Collection

The questionnaire was developed by physiotherapists, peer-reviewed, and content validated by five senior physiotherapists using a 4-point ordinal scale. Item Content Validity Index (I-CVI) scores ≥ 0.78 and Scale Content Validity Index (S-CVI) ≥ 0.8 indicated good validity. Test-retest reliability was not performed.

The questionnaire comprised of basic demographic details and four parts:

Domain 1: Awareness. (5 Questions)

Scoring: 1 point for Yes and 0 points for No. Question A5 is descriptive (source of information) and is not scored for the overall domain level.

Maximum Score: 4

Operational Definition: Participants scoring 3-4 are classified as having Adequate Awareness, while those scoring 0-2 are classified as having Inadequate Awareness.

Domain 2: Knowledge (14 Questions)

Scoring: 1 point for Yes and 0 points for No or Unsure. Question A5 is descriptive (source of information) and is not scored for the overall domain level.

Maximum Score: 14

Operational Definition:

- Good Knowledge: $> 50\%$ correct (7-14 points)

- Poor Knowledge: $< 50\%$ correct (0-6 points)

Domain 3: Attitude (5 Questions):

Scoring: This domain used a 5-point Likert scale. Assign scores from 1 (Strongly Disagree) to 5 (Strongly Agree).

Maximum Score: 25

Operational Definition:

- Positive Attitude: Score of 15 or above (Average response of Neutral to Strongly Agree).
- Negative Attitude: Score below 15 (Average response leaning toward Disagree).

Domain 4: Practice (3 questions)

Scoring: P1 evaluates if they practiced (Yes/No), and P2 evaluates frequency. P3 assesses barriers.

Operational Definition:

- Adequate Practice: Answered Yes to P1 AND ≥ 3 times / week to P2.
- Inadequate Practice: Answered No to P1

There were no losses or exclusions following enrollment because every eligible participant who gave their consent finished the questionnaire.

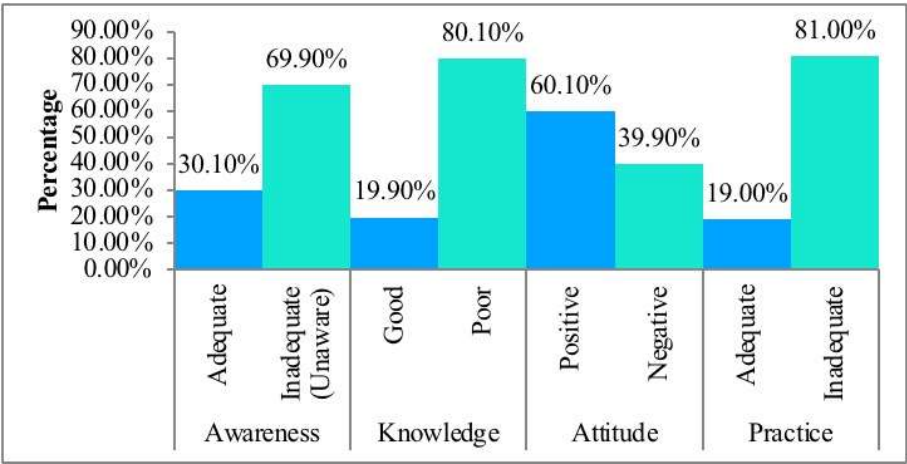
Statistical Analysis

Data were systematically coded, inputted into a spreadsheet and analysed using statistical software (e.g., SPSS version 26.0). Demographic parameters such as age, education, occupation, BMI, medical and obstetric history were summarized using descriptive statistics. All continuous variables were presented as mean and SD and all categorical variables were presented in frequencies and percentages. There were no missing values for all of the variables used in the final analysis. Descriptive frequency tables were created for each question and each domain score to assess level of awareness, knowledge, attitude and practice (AKAP) of the participants about doing exercises during pregnancy. The factors associated with AKAP level were assessed with Chi-square test of independence. The p value < 0.05 was considered significant.

Tables and Figures:

FIGURE 1: Domain wise analysis of all the participants (N=306)

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TABLE 1: Demographic variables of the participants (N=306)

Demograph ic Variable	Category	Frequen cy (n = 306)	Percenta ge (%)
Age Group	18-25 years	95	31.0%
	26-35 years	165	53.9%
	> 35 years	46	15.1%
Education Level	High School or below	88	28.8%
	Undergradua te / Diploma	148	48.3%
	Postgraduate	70	22.9%

Occupatio n	Employed	142	46.4%
	Homemaker	164	53.6%
\$BMI Classificati on	Underweight	18	5.9%
	Normal	172	56.2%
	Overweight / Obese	116	37.9%
Medical History	None	185	60.5%
	Gestational Diabetes	42	13.7%
	Hypertension	35	11.4%
	Thyroid / *PCOS/#PC OD	44	14.4%

\$ Body mass index * Polycystic Ovary Syndrome # Polycystic Ovary Disease

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TABLE 2: Question wise analysis for Awareness domain(N=306)

ID	Awareness Question	Yes (%)	n	No (%)	n
A1	Have you ever heard the term Physiotherapy?	146 (47.7%)		160 (52.3%)	
A2	Have you ever heard of Physiotherapy specifically for Women's Health?	85 (27.8%)		221 (72.2%)	
A3	Have you ever heard of exercises done during pregnancy?	122 (39.9%)		184 (60.1%)	
A4	Do you know where to access physiotherapy services for women's health issues?	46 (15.0%)		260 (85.0%)	

TABLE 3: Question wise analysis for Knowledge domain(N=306)

	Benefits of Physiotherapy during pregnancy	Yes	No	Unsure
K1	Help in normal vaginal delivery	95 (31.0%)	88 (28.8%)	123 (40.2%)
K2	Relieve low back pain	115 (37.6%)	60 (19.6%)	131 (42.8%)
K3	Help to maintain flexibility	102 (33.3%)	75 (24.5%)	129 (42.2%)
K4	Boost mood	86 (28.1%)	90 (29.4%)	130 (42.5%)
K5	Reduce pain during labour	75 (24.5%)	100 (32.7%)	131 (42.8%)
	Types of exercises performed during pregnancy			
K7	Mindfulness and Relaxation	98 (32.0%)	82 (26.8%)	126 (41.2%)

K8	Aerobic exercises	55 (18.0%)	135 (44.1%)	116 (37.9%)
K9	Yoga	125 (40.8%)	65 (21.2%)	116 (37.9%)
K10	Stretching	92 (30.1%)	94 (30.7%)	120 (39.2%)
K11	Light resistance strengthening	42 (13.7%)	150 (49.0%)	114 (37.3%)
K12	Breathing exercises	132 (43.1%)	55 (18.0%)	119 (38.9%)
	Contraindications for exercise			
K13	Poorly controlled gestational diabetes	52 (17.0%)	110 (35.9%)	144 (47.1%)
K14	Uncontrolled hypertension	68 (22.2%)	102 (33.3%)	136 (44.4%)
K15	Uterine contractions during pregnancy	78 (25.5%)	88 (28.8%)	140 (45.7%)

TABLE 4: Question wise analysis for Attitude domain (N=306)

ID	Attitude Statement	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
A1	I believe doing exercises during pregnancy should be a high priority.	22 (7.2%)	40 (13.1%)	45 (14.7%)	105 (34.3%)	94 (30.7%)
A2	I believe exercises during pregnancy are essential	18 (5.9%)	38 (12.4%)	50 (16.3%)	112 (36.6%)	88 (28.8%)

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	and beneficial.					
A t 3	I believe exercises during pregnancy are safe.	28 (9.2%)	48 (15.7%)	55 (18.0%)	102 (33.3%)	73 (23.9%)
A t 4	I would recommend gynaecological/obstetrical physiotherapy...	15 (4.9%)	32 (10.5%)	60 (19.6%)	120 (39.2%)	79 (25.8%)
A t 5	In future pregnancy, I am willing to dedicate at least 30 minutes a day...	25 (8.2%)	42 (13.7%)	52 (17.0%)	108 (35.3%)	79 (25.8%)

TABLE 5: Question wise analysis for Practice domain(N=306)

I D	Practice Question	Response	Frequency (n)	Percentage (%)
P 1	Did you practice any type of Exercise during your last pregnancy?	Yes	72	23.5%
		No	234	76.5%
P 2	How many times per week do you exercise?	≥3 times / week	58	19.0%
		<3 times / week	248	81.0%

TABLE 6: Barriers to exercise practice during pregnancy (N=234)

Identified Barrier	Percentage (%)
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Lack of information	53.9%
Feel too tired to exercise	46.4%
Lack of motivation	37.6%
Lack of time	32.0%
Lack of feasibility (transport/financial)	24.2%
Lack of family support	20.3%
Contraindicated (Not advised by specialist)	14.7%
Don't like exercises	12.4%

TABLE 7: Association between demographics and all the three domains calculated using Chi square test”

Demographic Variable	Adequate Awareness (%)	p-value	Good Knowledge (%)	p-value	Positive Attitude (%)	p-value
Age Group		0.412		0.388		0.655
18-25 years	28.4%		17.8%		58.9%	
26-35 years	31.5%		21.2%		61.2%	
> 35 years	28.2%		17.3%		58.6%	
Education Level		0.014		0.003		0.022
High School/ Below	15.9%		9.0%		48.8%	
Undergraduate	31.0%		18.2%		61.4%	
Postgraduate	46.3%		32.8%		71.4%	
Occupation		0.580		0.710		0.490
Employed	32.3%		21.1%		62.6%	

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Homemaker	28.0%		18.9%		57.9%
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• Results and Discussion:

Demographic Profile

Details of the 306 participants at the current baseline are given in Table 1. The majority (53.9%) of the participants were in the 26 to 35 age range. The majority were able to undertake pre-natal exercise safely as most of them had a normal BMI (56.2%) with no complicating medical history (60.5%). Over 70% of the cohort possessed at least an undergraduate diploma, and there was an even balance between those that were employed and homemakers (46.4%). None of the variables that were part of the analysis had any missing data.

Domain-Wise Analysis

The overall metrics were pulled, and it was discovered that the domains were not balanced (Fig. 1). The vast majority of the 306 participants were found to have poor knowledge (80.1%), poor exercise practices (81.0%) and poor level of awareness (69.9%) through the presentation. However, 60.1% of the females had a positive or favorable attitude towards prenatal exercise and low awareness and knowledge has a direct effect on reducing the ability to exercise regularly even when females are positive.

Question-Wise Performance

- **Awareness (Table 2):** 47.7% reported hearing about general 'Physiotherapy', while 27.8% were aware of its sub-specialty, 'Women's Health' and a shocking 85.0% reported being unaware of where these services are available.
- **Knowledge (Table 3):** Women had a superficial knowledge of prenatal exercise (just knowing about Yoga and Breathing exercise) and no deep knowledge of physiology. Less than a third knew physical therapy can help them have a normal vaginal delivery (31.0%) or make labor less painful (24.5%). The majority were Unsure in the case of medical contraindications such as poorly controlled gestational diabetes (47.1%) or poorly controlled hypertension (44.4%).
- **Attitude (Table 4):** Over 65% agreed or strongly agreed that exercise should be a high priority and that it is very beneficial to them and that they are very motivated to take 30 minutes of exercise in future pregnancies.
- **Practice & Barriers (Table 5 & 6):** Only 72 women (23.5%) actively exercised in their last

pregnancy; 58 of these women performed the exercises three times a week. Lack of information/knowledge (53.9%) and feeling too tired to exercise (46.4%) were the top two reported barriers to exercise.

Demographic Associations

Table 7 shows that there was a strong association between maternal educational attainment and all clinical domains ($p < 0.05$) as determined by Chi square test of independence. The postgraduates showed significantly higher scores than high school and lower education levels for adequate awareness (46.3%), good knowledge (32.8%) and positive attitudes (71.4%). There was no significant association ($p > 0.05$) between any other demographic variables (age or occupation) and any domain.

Discussion

The aim of the present study was to assess the knowledge, attitude and practice of pregnant and postpartum women about physical exercise during pregnancy in urban environment of India.

Awareness and Knowledge regarding Prenatal Exercises

In our study, the antenatal exercise awareness was good among only 30.1% of women. This low rate is similar to those reported in Ethiopia where awareness was 30.2%. Besides, the knowledge of women regarding prenatal exercises was only good in 19.9%. This is much lower than what has been reported for Dessie, Ethiopia (56.3 %), Asaba, Nigeria (53.7 %) and Kuala Selangor, Malaysia (53 %). However, these findings are similar to a regional PNC study conducted in Goa in India where more than 50% of the participants were not aware of any prenatal exercises. The very limited knowledge identified suggests that it remains a significant concern in many developing nations, potentially due to lower public health promotion exposure, lower amount of health media exposure, varying counselling time during routine prenatal appointments, and socioeconomic disparities. [16-19]

Attitude toward Physical Exercise during Pregnancy

A positive attitude towards physical exercise was evidenced even by those women who had large gaps in their structural knowledge, a promising 60.1% of the postpartum women showed this. This is slightly higher than what is reported in Ethiopia (51.5%) [16] and Nigeria (44.0%) [17]. On the other hand, it is lower than the positive attitudes found in Malaysia (65.5%) [17] and Goa, India (~90%). This positive attitude could be the result of nearly a half (47.7%)

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of the female participants knowing the general physiotherapy. In addition, the general wording of the questions regarding the benefits of exercise might have fostered a positive attitude towards exercise, which could be an intrinsic motivation, as women are naturally inclined to appreciate exercise when talked about.

Practice of Physical Exercise during Pregnancy

Attitudes tended to be positive, but implementation was indeed very low with only 19.0% of women doing sufficient amounts of physical activity during gestation. This participation rate is more than the 10% reported in Nigeria but less than that reported from Ethiopia (32.2%) and Malaysia (38.9%). This gap between attitude and practice is similar to what was found in Goa, India, where 66.67% of women said they are active in informal activity (such as walking), but only 2% were involved in formal prenatal exercise classes. The main barriers to practice in this study were: insufficient knowledge and very fatigued by pregnancy. Early, individual antenatal counseling is key to promoting safe and regular physical activity at a time when these practical issues are likely to be foremost.

Association with Demographic Domains

Regarding the demographic parameters, there was only one parameter (educational status) which had a significant correlation with the awareness, knowledge and attitude towards prenatal exercise ($p < 0.05$). The knowledge scores of the women with post-graduate education were significantly higher than those with high school education or less (32.8%) and their attitudes were more positive (71.4%). Such results have been demonstrated in previous studies in Ethiopia, Malaysia and Goa, which found that people with a higher education level were more likely to use health services, to be able to critically evaluate health advice and to have fewer cultural barriers to the safety of exercise. [16-18]

- **Conclusion:** The study showed that it is important to include antenatal physiotherapy education and counselling as a part of routine care of the mother in order to increase awareness, maternal health and pregnancy outcomes particularly in mothers with low educational status.

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