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Research Article

A Study To Assess Effectiveness Of Self Instruction Module Regarding Knowledge And Attitude Of Antenatal Exercise Among Antenatal Mothers In Selected Hospital At Gwalior, Madhya Pradesh

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Abstract
Antenatal exercise plays a crucial role in promoting maternal and fetal health during pregnancy. This study assessed the effectiveness of a self-instructional module (SIM) on knowledge and attitudes regarding antenatal exercise among antenatal mothers attending a clinic in Gwalior, Madhya Pradesh. Using a pre-experimental one-group pre-test-post-test design, data were collected from 30 participants through structured questionnaires. The pre-test revealed that most participants had inadequate knowledge and moderate attitudes toward antenatal exercises. Following the intervention with SIM, a significant improvement was observed in both knowledge and attitudes. Post-intervention results showed that 82.5% of participants achieved adequate knowledge levels, and favorable attitudes increased. The study highlighted the importance of education in improving awareness and practices related to antenatal exercises, which contribute to better physical and mental health outcomes for mothers and their newborns. The findings support the integration of structured educational tools like SIM in antenatal care programs to bridge knowledge gaps and foster positive health behaviors.

Keywords: antenatal exercise, self-instructional module, maternal health, knowledge improvement, prenatal care

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Introduction

Pregnancy is a transformative period marked by extensive physiological, psychological, and emotional changes. These changes, encompassing hormonal fluctuations, musculoskeletal adjustments, and cardiovascular adaptations, necessitate careful management to ensure the well-being of both the mother and the developing fetus (Welch, n.d.). Antenatal exercises have emerged as an integral component of prenatal care, aiming to improve maternal health and facilitate smoother labor and delivery outcomes. Despite global advocacy by health organizations, awareness and

practice of antenatal exercises remain inconsistent, particularly in developing regions like India (Gade et al., 2016).

In developing nations, antenatal care often focuses on medical interventions, leaving gaps in educating mothers about the benefits of physical activity. Studies have demonstrated that antenatal exercises can alleviate common discomforts such as back pain, varicose veins, and edema while enhancing posture, circulation, and overall physical fitness (American Pregnancy Association, n.d.). These exercises also help reduce the risk of gestational diabetes and pregnancy-induced hypertension, further highlighting their preventive health value.

Definition and Scope of Antenatal Exercises

Antenatal exercises refer to physical activities specifically designed for pregnant women to support their physical and mental well-being during pregnancy. These exercises include low-impact aerobic activities, pelvic floor strengthening, and relaxation techniques. According to the American College of Obstetricians and Gynecologists (ACOG), pregnant women without medical contraindications should engage in at least 30 minutes of moderate-intensity exercise most days of the week (ACOG, 2015).

Globally, various studies have emphasized the multifaceted benefits of antenatal exercises. These include improved cardiovascular health, reduced labor duration, and better postpartum recovery. Exercises such as pelvic tilts, squats, and Kegel exercises are particularly effective in strengthening the pelvic floor muscles, thus reducing complications during childbirth (Mitra et al., 2016).

Importance of Antenatal Exercises in Maternal Health

The importance of antenatal exercises extends beyond physical health, positively influencing mental well-being and self-perception. Regular exercise during pregnancy has been linked to improved mood, reduced anxiety, and enhanced sleep quality (American Pregnancy Association, n.d.). Additionally, antenatal exercises foster better energy levels, helping women cope with the demands of pregnancy more effectively.

A cross-sectional study conducted among pregnant women in Pune, India, revealed a significant knowledge gap regarding antenatal exercises. While 41% of participants were aware of such exercises, only a small fraction could identify their specific benefits or the need for professional guidance (Gade et al., 2016). This underscores the critical need for educational interventions, such as self-instructional modules (SIMs), to enhance knowledge and practices.

Benefits of Antenatal Exercises for Mother and Fetus

Antenatal exercises contribute to a range of maternal and fetal health benefits. Improved circulation from regular physical activity helps prevent common pregnancy-related issues such as constipation, hemorrhoids, and leg cramps. Additionally, these exercises prepare the body for labor by enhancing muscular strength and flexibility, reducing the likelihood of complications (Zambia Study, n.d.).

Fetal health also benefits from maternal exercise, with studies indicating better cardiovascular outcomes and reduced risks of macrosomia and preterm birth. A study conducted in Zambia highlighted the positive association between higher educational levels and better knowledge and attitudes toward antenatal exercises (Zambia Study, n.d.). However, the same study revealed that despite favorable attitudes, actual exercise practices were low, emphasizing the need for structured guidance and support.

Current State of Knowledge and Practices

The global and regional literature consistently highlights inadequate knowledge and suboptimal practices regarding antenatal exercises among pregnant women. A descriptive study conducted in Karnataka, India, revealed that 65% of participants had poor knowledge, despite demonstrating a generally positive attitude toward antenatal exercises (KLE Study, n.d.). Factors such as education, socioeconomic status, and occupation significantly influence knowledge and attitudes, indicating the need for tailored educational programs.

In another study conducted in Nigeria, pregnant women demonstrated inadequate knowledge but a positive attitude toward antenatal exercises. The study found that sources of information, such as healthcare providers and media, played a crucial role in shaping perceptions and practices (Nigeria Study, n.d.). This aligns with findings from Sri Lanka, where job status and district of residence significantly influenced knowledge and practice levels (Sri Lanka Study, n.d.).

Educational Interventions and Their Impact

Educational interventions, particularly those involving SIMs, have shown promising results in improving knowledge and attitudes toward antenatal exercises. A pre-experimental study conducted in Gwalior, Madhya Pradesh, utilized a SIM to educate antenatal mothers about exercise benefits and proper techniques. The study reported significant improvements in knowledge and attitudes post-intervention, with a marked increase in the number of participants achieving adequate knowledge levels (Present Study, 2023).

The success of such interventions highlights the potential of SIMs in bridging knowledge gaps and fostering positive health behaviors among pregnant women. By providing structured, accessible, and easily comprehensible information, SIMs empower women to take proactive steps toward better health during pregnancy.

Research Methodology

Research methodology serves as the foundation for any study, detailing the systematic processes and techniques utilized to achieve research objectives. This section describes the research design, setting, population, sample size, sampling techniques, tools, data collection procedures, and data analysis strategies employed in this

study on the effectiveness of self-instructional modules (SIMs) regarding antenatal exercises.

Research Design

This study employed a **pre-experimental one-group pre-test-post-test design**. This design is appropriate for measuring changes in participants' knowledge and attitudes following an intervention, allowing a comparison of pre- and post-intervention results (Polit & Beck, 2017). The pre-test assessed baseline knowledge and attitudes toward antenatal exercises, followed by an intervention using the SIM, and a post-test measured changes in these variables.

Setting of the Study

The study was conducted at the **antenatal clinic of District Hospital Morar, Gwalior, Madhya Pradesh**. The clinic serves a diverse population and was chosen for its accessibility and high patient volume, providing an ideal environment to recruit participants and implement the study.

Population and Sample

The target population included **antenatal mothers** attending the antenatal clinic. The inclusion criteria were:

- Pregnant women aged 18–45 years.
- Women in their second or third trimesters without medical complications.
- Those able to understand English or Hindi and willing to provide informed consent.

Exclusion criteria included medical or nursing professionals and women with contraindications to physical activity.

A total of **30 participants** were selected using **convenience sampling**, a non-probability sampling method chosen for its practicality and ease of participant recruitment (Creswell & Creswell, 2018).

Research Variables

Independent Variable:

The **self-instructional module (SIM)** on antenatal exercises was the independent variable. This module contained detailed information on various exercises, their benefits, contraindications, and practical guidance for performing them safely.

Dependent Variables:

The dependent variables were the **knowledge** and **attitudes** of antenatal mothers regarding antenatal exercises. These variables were measured before and after the intervention using structured questionnaires.

Development of the Tool

The data collection tool was a **structured questionnaire**, developed after an extensive review of literature and expert consultation. It consisted of the following sections:

1. **Demographic Information:** Age, education level, occupation, family income, and place of residence.
2. **Maternal Variables:** Gestational age, parity, and type of pregnancy (planned/unplanned).
3. **Knowledge Assessment:** 22 multiple-choice questions covering types of antenatal exercises, benefits, and contraindications.
4. **Attitude Assessment:** 10 Likert-scale items measuring positive, neutral, and negative attitudes toward antenatal exercises.

The tool was validated by five nursing and medical experts. Modifications were made based on their feedback to enhance clarity and relevance.

Reliability and Validity

- **Reliability:** The reliability of the tool was tested using the **test-retest method**, yielding a reliability coefficient (r) of **0.9**, indicating high consistency.
- **Validity:** Content validity was established through expert review. The tool was deemed to effectively measure the constructs of knowledge and attitude related to antenatal exercises.

Data Collection Procedure

The data collection spanned October to November 2023. The process was carried out in the following phases:

Pre-test:

Participants were briefed about the study's objectives and provided informed consent.

The structured questionnaire was administered to assess baseline knowledge and attitudes.

Intervention:

The SIM was distributed to participants immediately after the pre-test.

Participants were instructed to study the module over a week, focusing on safe exercise practices, benefits, and guidelines.

Post-test:

After seven days, the same structured questionnaire was administered to assess changes in knowledge and attitudes.

Throughout the data collection period, participants were assured of confidentiality and encouraged to seek clarification if needed.

Limitations

This study had several limitations, including:

- **Sample Size:** The small sample size may limit the generalizability of findings.
- **Sampling Technique:** Convenience sampling may introduce selection bias.
- **Short Duration:** The post-test was conducted after a week, limiting the assessment of long-term retention of knowledge and changes in attitudes.

Results

Data were coded and entered into a statistical software package for analysis. The following statistical methods were employed:

1. **Descriptive Statistics:**
   - Frequency and percentage distributions were used to summarize demographic and maternal variables.
   - Mean and standard deviation (SD) were calculated for pre-test and post-test knowledge and attitude scores.
2. **Inferential Statistics:**

- **Paired t-test:** Used to compare pre-test and post-test scores, evaluating the effectiveness of the SIM intervention.
- **Chi-square Test:** Examined associations between demographic/maternal variables and knowledge/attitude levels.

The results were interpreted at a **95% confidence level** with a significance threshold of **$p < 0.05$**.

The analyzed data were organization under the following headings:

Section I: Frequency and percentage distribution of demographic and maternal variables of antenatal mothers.

Section II: Comparison of pre-test and post test scores of knowledge among antenatal mothers regarding antenatal exercise

Section III: Comparison of pre-test and post test scores of attitude among antenatal mothers regarding antenatal exercise

Section IV: Association between pre test scores of knowledge and attitude of antenatal mothers with demographic and maternal variables of antenatal mothers.

SECTION I: FREQUENCY AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC AND MATERNAL VARIABLES OF ANTENATAL MOTHERS.

Table 1 – Frequency and percentage distribution of antenatal mothers by socio demographic variables N=30

Sl. No	Demographic variables	Frequency (f)	Percentage (%)
1.	Age in years 18 - 21		
	22 - 25	04	13.3
	26 - 30	16	53.3
	30 and above	05	16.7
		05	16.7
2	Religion		
	a. Hindu	13	43.3
	b. Muslim	9	30
	c. Christian d.Others	6	20
		2	6.7
3.	Educational status No formal education Primary school High school		
	Pre-degree Graduate and Post	03	10.0
	Graduate	05	16.7
		07	23.3
		07	23.3
		08	26.7
4.	**Occupation**		
	Housewife	07	23.3
	Daily wager	08	26.7
	Government employee		
	Business	08	26.7
		07	23.3
5.	Family Income in Rs. a.>10000		
	b.10001 to 20000	07	23.3
	c.20001 to 30000	08	26.7
	d.30001 and above	09	30
		06	20
6.	Place of living		
	a. Urban	13	43.3
	Rural	17	56.7
7.	Are you having habit of doing exercise regularly		
	a. Yes	24	80
	No	6	20

SECTION II: COMPARISON OF PRE AND POST TEST SCORES OF KNOWLEDGE AMONG ANTENATAL MOTHERS REGARDING ANTENATAL EXERCISE

Table: 2 – Over all Frequency and percentage distribution of Pre and post test knowledge scores among antenatal mothers regarding antenatal exercise N=30

Overall knowledge score of the antenatal mothers	pre-test		Post test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)

Inadequate (less or equal 50%)	10	42.5	0	00.0
Moderate (51-75%)	12	57.5	7	17.5
Adequate (>75%)	0	0.0	18	82.5

Table: 3- reveal that 42.5% of the antenatal mothers have inadequate knowledge, 57.5% have Moderate knowledge & no antenatal mothers have adequate knowledge in Pre-test. But in post test none of the antenatal mothers have inadequate knowledge, 17.5% have Moderate knowledge & 82.5% antenatal mothers have adequate knowledge

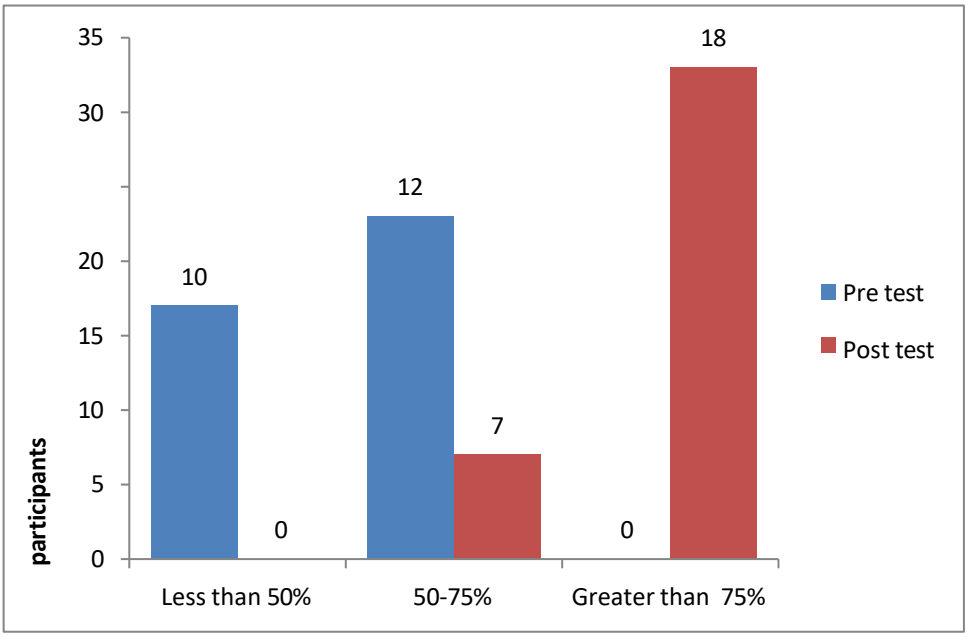

Figure .1 Distribution of Overall knowledge scores of Pre & Post-test score of antenatal mothers regarding antenatal exercise.

Figure: 1-reveals that 42.5% of the antenatal mothers have inadequate knowledge, 57.5% have Moderate knowledge & no antenatal mothers have adequate knowledge in Pre-test. But in post test none of the antenatal mothers have inadequate knowledge, 17.5% have Moderate knowledge and 82.5% antenatal mothers have adequate knowledge.

Table: 3 – Aspect wise Mean, Standard deviation and Mean percentage of pre and post test Knowledge scores among antenatal mothers regarding antenatal exercise.N=30

S.No	item	items	Mean		SD		Mean percentage	
			pre- test	Post test	pre- test	Post test	pre-test	Post test
1.	Types of exercise	7	3.90	6.10	2.61	2.80	55.71	85.71
2.	Benefits of antenatal exercise	5	2.80	4.20	1.99	1.97	56	80.00
3.	Contraindications of antenatal exercise	8	3.92	6.50	1.98	1.21	48.75	81.25
4.	Over all	20	10.62	16.80	3.14	2.79	49.58	81.32

Table:3- shows area wise analysis post test scores of knowledge among antenatal mothers regarding meaning, purposes, timing and duration , types of exercise antenatal exercise has highest mean % (85.17), with a S.D of 2.80 & mean score were 6.10. And the lowest Mean % (80.00), with a S.D of 1.97and mean were score 4.20 is in the aspect of types and steps of antenatal exercises. The overall mean percentage obtained by the antenatal mothers in post test was 81.32 with a S.D of 2.79.

Table: 4 – Aspect wise mean SD 't' and p values inferences of pre-test and post-test Knowledge scores of antenatal mothers regarding antenatal exercises.N=30

Aspects of knowledge	Pre test		Post test		t value	P value inferences
	Mean	SD	Mean	SD		
Types of exercise	3.90	2.61	6.10	2.80	6.70	S
Benefits of antenatal exercise	2.80	1.99	4.20	1.97	7.34	S
Contraindications of antenatl exercise	3.92	1.98	6.50	1.21	11.11	S
Over all	10.62	3.14	16.80	2.79	23.21	S

P<0.01

S= significant ; NS = not significant

Table: 4 - denote the area wise higher value of mean in post-test mean scores were (16.80) with the SD 2.79 is higher than the Pre-test mean score (10.62) with SD 3.14. The obtained' value of overall knowledge score (23.21) is greater than the table values both at 0.01 level of significance with 39 degrees of freedom. So research hypothesis is accepted. This shows that self instruction module is effective in improving the knowledge of antenatal mothers regarding antenatal exercise regarding

Section III: Comparison of pre-test and post test scores of attitude among antenatal mothers regarding antenatal exercise

Table: 5- Percentage and frequency distribution of attitude among antenatal mothers regarding antenatal exercise N=30

Attitude on antenatal exercise	Pre test		Post test	
	f	%	f	%
Positive attitude	18	60	24	80
Favorable attitude	3	10	-	-
Negative attitude	9	27	6	20

Table: 5- shows that the percentage and frequency distribution of positive attitude score is 18(60%) and post test score is 24(80%)

IV. MEAN SD AND MEAN PERCENTAGE OF ATTITUDE OF THE ANTENATL MOTHERS REGARDING ANTENATL EXERCISE

Table 6- Mean, SD and 't' p values of attitude scores among antenatal mothers regarding antenatal exercise

Attitude on antenatal exercise	Mean		SD		't' value	P value Inference
	Pre test	Post test	pre- test			
Attitude of antenatal mothers	15.50	25.81	2.67	2.52	8.50	S

P<0.01 S = significant ; NS = not significant

Table:6 - denote that over all post-test mean score (25.81) is higher than the Pre-test mean score (15.50). The obtained 't' value of overall attitude score (8.50.21) is greater than the table value at 0.01 level of significance with 39 degrees of freedom. So research hypothesis is accepted. This shows that self instructional module is effective in improving the attitude of antenatal mothers regarding antenatal exercise.

SECTION IV: ASSOCIATION BETWEEN PRE TEST SCORES OF KNOWLEDGE AND ATTITUDE WITH DEMOGRAPHIC AND MATERNAL VARIABLES OF ANTENATAL MOTHERS.

Table: 7 – Association of pre-test scores of knowledge among antenatal mothers regarding antenatal exercise with demographic Variables. N=30

Sl.No	Demographic variables	Level of Knowledge			X^2 Value
		Inadequate	Moderately Adequate	Adequate	
		f	f	f	
1.	**Age in years**				
	a. 18 - 21	2	1	1	
	b. 22 - 25	13	1	2	1.84
	c. 26- 30	3	2	-	df=3 NS
	d. 30 and above	4	1	-	
2	**Religion**				
	a. Hindu	10	3	- 3	1.45
	b. Muslim	4	5	-	df=1 NS
	c. Christian	2	3	-	
	d. Others	-	-		
3.	**Educational status**				
	a. No formal education	5	2	2	2.14
	b. Primary	3	1	1	df=4 NS
	c. Secondary	6	-	-	
	d. Pre degree	6	-	-	
	e. Graduate and Post Graduate	4	-	-	
4	**Occupation**				
	a.Housewife b.Daily wages	6	2	-	
	c.Government	8	1	-	1.43
	c.Business	5	1	- 1	df=3 NS
		5	1		
5	**Income in Rs.** Family Income				
	in Rs. a.>10000	4	3	-	2.45
	b.10001 to 20000	6	2	-	df=3 NS
	c.20001 to 30000	4	5	-	
	d.30001 and above	2	4	-	
6	**Place of living**				2.45
	a. Urban	13	1	2	df=1 NS
	b. Rural	12	1	1	
7	**Are you having habit of doing exercise regularly**	11	4	2	1.626
	a. Yes	10	-	3	df=2 NS
	b. No				

NS – Not Significant.

Table :7-depicts the $\chi 2$ values between the pre-test scores of knowledge among antenatal mothers regarding antenatal exercise with demographic variables such as age, religion, educational status , occupation, monthly income, place of living and habit of doing regular exercise were not found to be significant

Table: 8 – Association of pre-test scores of knowledge among antenatal mothers regarding antenatal exercise with maternal Variables. N=30

Sl.No	Maternal variables	Level of Knowledge			X^2 Value
		Inadequate	Moderately Adequate	Adequate	
		F	f	f	
01.	**Gestational Weeks** a. 20 – 23 weeks b. 24 – 27 weeks c. 28 – 30 weeks d. 31 – 34 weeks	 3 5 3 4	 4 5 3 1	 - 2 - -	4.57 df=3 NS
2	**Parity** a.primipara b.multipara	 9 5	 10 6	 - -	1.58 df=1 NS
02.	**Type of pregnancy** a. Planned pregnancy b.Unplanned pregnancy	 2 5	 3 20	 - -	1.96 df=1 NS
03.	**Do you have any sex preferences** Yes or No Yes no	 7 4	 18 2	 - -	2.64 df=1 NS

NS – Not Significant.

Table: 8-shows that the calculated $\chi 2$ values of pre-test scores of knowledge among antenatal mothers regarding antenatal exercise with maternal variables such as Gestational Weeks, parity, Type of pregnancy, Do you have any sex preferences were not significant

Table: 9 – Association of pre-test scores of attitude among antenatal mothers regarding antenatal exercise with demographic Variables. N=30

Sl.No	Demographic variables	Level of Knowledge			X^2 Value
		positive	neutral	negative	
		F	f	f	
1.	**Age in years** e. 18 - 21 f. 22 - 25 g. 26- 30 h. 30 and above	 1 2 2 2	 1 2 2 -	 3 5 5 5	 1.84 df=3 NS
2	**Religion** e. Hindu f. Muslim g. Christian h. Others	 - - - -	 3 5 4 -	 6 6 3 3	 1.45 df=1 NS
3.	**Educational status** f. No formal education g. Primary h. Secondary i. Pre degree j. Graduate and Post Graduate	 - 1 1 - -	 1 1 1 1 1	 5 5 4 3 6	 2.14 df=4 NS
4	**Occupation** a. House wife b.Daily wages c.Government c.Business	 - - - -	 2 2 3 3	 5 4 5 6	 1.43 df=3 NS
5	**Income in Rs.** Family Income in Rs. a.>10000 b.10001 to 20000 c.20001 to 30000 d.30001 and above	 - - - -	 1 1 1 1	 4 6 8 8	 2.45 df=3 NS
6	**Place of living** a. Urban b. Rural	 - -	 3 2	 10 15	2.45 df=1 NS
7	**Are you having habit of doing exercise regularly** a. Yes b. No	 - -	 10 4	 5 10	1.626 df=2 NS

NS – Not Significant.

Table :9-depicts the $\chi 2$ values between the pre-test scores of attitude among antenatal mothers regarding antenatal exercise with demographic variables such as age, religion, educational status , occupation, monthly income, place of living and habit of doing regular exercise were not found to be significant

Table: 10 – Association of pre-test scores of attitude among antenatal mothers regarding antenatal exercise with maternal Variables. N=30

Sl.No	Maternal variables	Level of Knowledge			X^2 Value
		positive	neutral	negative	
		f	f	f	
01.	**Gestational Weeks**				
	20 – 23 weeks	-	1	5	4.57
	24 – 27 weeks	-	- 1	10	df=3 NS
	28 – 30 weeks	-	-	6	
	31 – 34 weeks	-		7	
2	**Parity** a.primipara b.multipara				1.58
		2	5	10	df=1 NS
		-	6	7	
02.	**Type of pregnancy**				1.96
	a. Planned pregnancy b.Unplanned	-	3	6	df=1 NS
	pregnancy	-	1	20	
03.	**Do you have any sex preferences**				2.64
	Yes or No Yes	1	3	18	df=1 NS
	no	1	2	5	

NS – Not Significant.

Table: 10-shows that the calculated $\chi 2$ values of pre-test scores of knowledge among antenatal mothers regarding antenatal exercise with maternal variables such as Gestational Weeks, parity, Type of pregnancy, Do you have any sex preferences were not found to be significant

Discussion

The findings of this study demonstrate the significant impact of a self-instructional module (SIM) on improving antenatal mothers' knowledge and attitudes regarding antenatal exercises. Before the intervention, the majority of participants exhibited inadequate knowledge and moderate attitudes, consistent with existing literature that highlights limited awareness of antenatal exercises among pregnant women in developing regions (Gade et al., 2016). Post-intervention, there was a notable improvement in both knowledge and attitudes, emphasizing the effectiveness of structured educational tools in antenatal care.

A key finding of this study was the significant increase in knowledge scores post-intervention. This aligns with similar studies, such as one conducted in Karnataka, where antenatal education improved knowledge levels significantly (KLE Study, n.d.). The pre-test results revealed a knowledge deficit, with only 57.5% of participants demonstrating moderate knowledge. However, after exposure to the SIM, 82.5% of participants achieved adequate knowledge, indicating that SIMs are effective in addressing information gaps. This finding supports the assertion that targeted educational interventions can bridge knowledge gaps in healthcare (Polit & Beck, 2017).

The study also observed an enhancement in participants' attitudes towards antenatal exercises. Pre-intervention, many participants held neutral attitudes, which shifted towards more positive perspectives post-intervention. This improvement mirrors findings from studies conducted in Zambia and Sri Lanka, where educational programs positively influenced attitudes towards exercise during pregnancy (Zambia Study, n.d.; Sri Lanka Study, n.d.). Positive attitudes are crucial as they often translate into better adherence to recommended health practices, ultimately improving maternal and fetal outcomes.

Despite the success of the intervention, the study highlighted certain challenges. For instance, the participants' initial lack of awareness about specific exercises and their benefits underscores the need for continuous education. Studies from Nigeria and Pune similarly report that even when antenatal mothers demonstrate a positive attitude, they often lack comprehensive knowledge of safe and beneficial exercise routines (Nigeria Study, n.d.; Gade et al., 2016). This points to a broader issue of inconsistent information dissemination in antenatal care settings.

Another significant aspect was the role of demographic variables such as education and occupation in influencing knowledge and attitudes. Participants with higher educational levels showed better initial knowledge, a finding consistent with other studies that highlight the positive correlation between education and health literacy (Creswell & Creswell, 2018). This suggests that educational interventions should be tailored to meet the needs of less-educated populations to ensure equitable health outcomes.

The study's results align with global guidelines that advocate for moderate-intensity physical activity during pregnancy to improve maternal and neonatal health outcomes (ACOG, 2015). Regular exercise helps mitigate risks such as gestational diabetes and

hypertension while promoting better physical and mental health (American Pregnancy Association, n.d.).

In conclusion, this study highlights the importance of structured educational interventions like SIMs in antenatal care. The significant improvements in knowledge and attitudes suggest that similar strategies should be integrated into routine prenatal education programs to optimize maternal health outcomes. Further research could explore the long-term retention of knowledge and adherence to exercise routines post-delivery.

Implications for Nursing Practice

This study highlights the need for incorporating structured educational tools like SIMs into routine antenatal care. Nurses play a pivotal role in promoting antenatal exercises by educating mothers about their benefits, thus improving maternal and fetal health outcomes. Continuous training of nursing personnel ensures effective communication and guidance.

Limitations of the Study

The study was limited by its small sample size and the use of convenience sampling, which may affect the generalizability of the findings. Additionally, the short duration between the intervention and post-test did not allow for assessment of long-term knowledge retention or behavior change among participants.

Recommendations for Future Research

Future studies should focus on larger, more diverse populations to validate the findings. Longitudinal research is recommended to assess the long-term impact of antenatal exercise education on maternal and neonatal health outcomes. Exploring the role of technology, such as mobile applications, in delivering antenatal exercise education is also suggested.

Recommendations

Healthcare providers should integrate self-instructional modules into routine antenatal education. Hospitals should offer regular workshops on antenatal exercises, emphasizing their benefits and proper techniques. Policies supporting antenatal exercise education should be developed to ensure consistent and widespread implementation across healthcare settings.

Conclusion

This study underscores the effectiveness of a self-instructional module (SIM) in enhancing antenatal mothers' knowledge and attitudes toward antenatal exercises. Significant improvements in post-test scores highlight the module's role in bridging critical knowledge gaps and fostering positive attitudes. These findings align with global health recommendations advocating antenatal exercise to improve maternal and neonatal outcomes. Educational interventions like SIMs should be integrated into routine antenatal care to ensure widespread awareness and adoption of safe exercise practices during pregnancy. Further research could explore the long-term benefits and adherence to these practices for sustained maternal and child health.

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Conflict of Interest Statement

The authors declare no conflict of interest in conducting this study.

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