Research Article

A Pre-Experimental Study to Assess the Effectiveness of Self-Instructional Module on Knowledge Regarding Female Contraceptives Among Eligible Females in Selected Rural Areas of Burhanpur Madhya Pradesh

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A B S T R A C T

Introduction: Contraceptive knowledge among women plays a vital role in promoting reproductive health and family planning. In rural areas, awareness levels are often inadequate due to limited access to health education. This study aimed to evaluate the effectiveness of a Self-Instructional Module (SIM) on knowledge regarding female contraceptives among eligible women in selected rural areas of Burhanpur, Madhya Pradesh.

Aim: To assess the effectiveness of a self-instructional module in improving knowledge about female contraceptives among eligible females.

Materials and Methods: A pre-experimental one group pre-test post-test design was used. Thirty eligible females were selected through purposive sampling. A structured knowledge questionnaire developed and validated by experts was used for data collection. The reliability of the tool was established using Karl Pearson's correlation coefficient (r = 0.8). A pre-test was conducted, followed by administration of the SIM. A post-test was administered after 7 days.

Results: The mean pre-test knowledge score was 13, while the post-test score increased to 18. The paired 't' test value (t = 16.28, p < 0.0005) showed a highly significant improvement in knowledge, indicating the effectiveness of the SIM. Demographic variables were also analysed in relation to pre-test scores.

Conclusion: The study concluded that eligible females had inadequate knowledge regarding female contraceptives. The Self-Instructional Module proved to be an effective educational strategy to enhance their knowledge. The findings suggest implications for nursing practice, education, administration, and research in promoting reproductive health awareness in rural communities.

Keywords: Female Contraceptives, Self Instructional Module (SIM), Knowledge Assessment, Pre-Experimental Study, Rural Women, Reproductive Health

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Introduction

India, with a population exceeding 1.4 billion as of 2023, has emerged as the most populous country in the world. Women in the reproductive age group (15–49 years) constitute a significant portion of this population, estimated at over 350 million. The Government of India promotes responsible and planned parenthood through the Reproductive and Child Health (RCH) Programme and the National Family Welfare Programme, advocating for the voluntary use of contraceptive methods with informed choice and access to a range of options.

Contraception refers to methods used to prevent or delay pregnancy, enabling couples to plan their families by choice rather than chance. While motherhood is an essential aspect of many women's lives, not all pregnancies are planned or desired.[1]

According to the National Family Health Survey-5 (NFHS-5):

- The total contraceptive prevalence rate (CPR) in India has increased to 66.7%, with modern methods accounting for 56.4% of usage.
- Female sterilization remains the most widely used method (37.9%), followed by condoms (9.5%) and oral contraceptive pills (5.1%).
- The unmet need for family planning has declined to 9.4%, indicating progress in awareness and access.[2]
- Despite improvements, disparities remain across regions and among adolescents and rural populations, where knowledge and access to contraception are still limited.

High fertility rates in certain states continue to be influenced by early marriage, low literacy, gender inequality, and inadequate use of contraception.[3] Alarmingly, a significant proportion of pregnancies are still unplanned, and unsafe abortions contribute to maternal morbidity and mortality. Adolescent girls remain particularly vulnerable due to limited awareness and access to reproductive health services.

Hence, improving contraceptive literacy, ensuring availability of safe and effective methods, and strengthening community outreach remain essential components of India's reproductive health strategy.

Need of the Study

A woman is considered to have an "unmet need" for family planning when she wishes to delay or avoid pregnancy but is not using any contraceptive method. This need is not self-reported but is identified by researchers based on a mismatch between a woman's reproductive intentions and her contraceptive behaviour.

According to the National Family Health Survey-5 (NFHS-5, 2019–21), although the national contraceptive prevalence rate (CPR) among currently married women aged 15–49 has increased to 66.7%, significant regional and social disparities remain. The modern method uses stands at 56.4%, with female sterilization continuing to dominate at 37.9%, while male sterilization remains extremely low at 0.3%.

The unmet need for family planning has declined nationally to 9.4%, a positive development compared to earlier rounds. However, this rate remains higher among women in rural areas, among younger age groups, and particularly within socially disadvantaged groups such as Scheduled Castes (SC), Scheduled Tribes (ST), and Other Backward Classes (OBCs). In Madhya Pradesh, where this study is situated, the CPR is 64.6%, while the unmet need remains at 9.9%—slightly above the national average. The uptake of modern contraceptive methods is notably lower among SC and ST women compared to women from other social groups, reflecting persistent inequities in access and awareness.

This study was conducted to assess the need for female contraceptive education among eligible women in rural Burhanpur district, Madhya Pradesh. Increasing knowledge and awareness in this population is essential to reduce fertility rates, prevent unintended pregnancies, and promote healthy spacing between births—ideally, a minimum of two years as per national guidelines. Enhancing contraceptive literacy is especially important in rural and marginalized settings where reproductive health services are underutilized.[4]

This issue is also highly relevant to nursing education, aligning with curriculum objectives that emphasize community health, reproductive health promotion, and family welfare. Nurses play a critical role in counselling, education, and delivering primary-level family planning services, especially in underserved rural areas.

Objectives of the Study

- To assess the pre-intervention knowledge on female contraceptives among eligible women.
- To assess the post-intervention knowledge on female contraceptives among eligible women.
- To compare the pre- and post-intervention knowledge on female contraceptives among eligible women.
- To associate the pre-intervention knowledge scores with selected demographic variables.

Theoretical Framework

This study is based on Imogene M. King's Goal Attainment Model (1981), which emphasizes the importance of perception, goal setting, actions, interaction, and transaction in achieving health-related goals. The model provides a

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suitable foundation for understanding how knowledge transfer leads to behavioural change in individuals. Fig. 1

- **Perception:** Investigator perceives that eligible females lack knowledge about female contraceptives, which is evident from the low usage in rural areas.
- **Goal Setting:** The investigator sets the goal to improve knowledge on contraceptives among the target population.
- **Action:** The researcher prepares and administers a structured knowledge questionnaire and delivers the self-instructional module.[5]
- **Interaction:** The process involves communication between the investigator and participants during pre- and post-assessments.
- **Transaction (Goal Attainment):** Successful knowledge gain among participants indicates goal achievement, demonstrating the effectiveness of the self-instructional module.

Methodology

The present study adopted a pre-experimental one-group pre-test post-test design to assess the effectiveness of a self-instructional module on knowledge regarding female contraceptives among eligible females.

This design involves observing a single group at two different time points—before (pre-intervention) and after (post-intervention) the implementation of the intervention. While this design follows the basic structure of experimental research, it does not include a control or comparison group, limiting the ability to rule out extraneous variables that might influence the outcome.

The schematic representation of the study design shows that the study was conducted in three phase and is deputed in figure 2.

Study location: The study was conducted at PHC Nimbola, Burhanpur district, Madhya Pradesh, serving a population of around 6,000. During the planning stage, the eligible couple register and digital records were reviewed to understand the area's demographics and contraceptive trends.

Due to the small-scale and academic nature of the study, a non-probability purposive sampling method was used. Thirty eligible women were selected based on their willingness, availability, and informed consent.[6]

Sample: The sample size comprised of 30 eligible females living in Nimbola at Burhanpur (M.P.). Eligible females who fulfilled the inclusion criteria and living at the Nimbola, selected for study 30 eligible females are selected as sample by non-probability convenient sampling technique because of the availability of subject according to the inclusive sampling criteria within the limited time period.
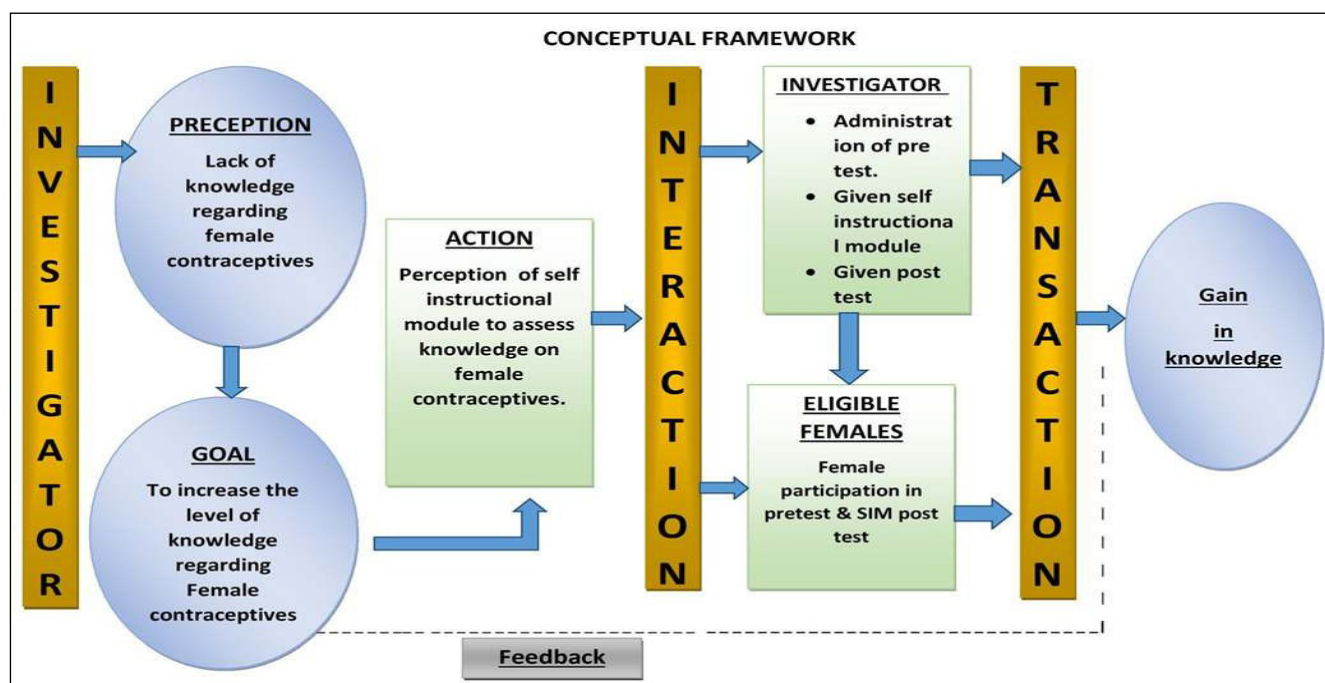

Figure 1.Conceptual framework based on modified Imogene mr.king's goal attianment model 1981 showing the effect of SIM regarding female contraceptives among eligible females,
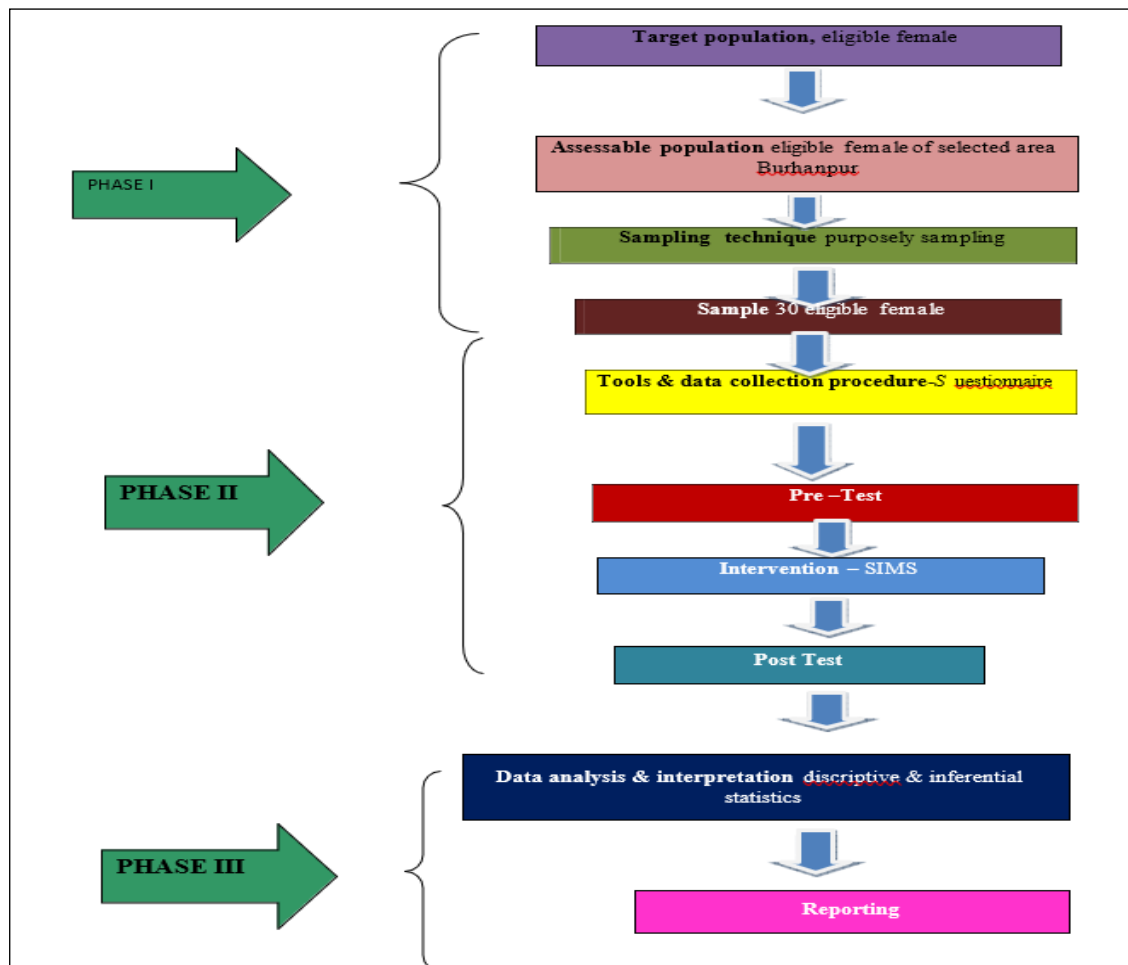
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Figure 2.Flowchart Depicting the Research Design for Assessing Knowledge on Female Contraceptives

Criteria for Sample Selection

Inclusive criteria

- Eligible female who are willing to participate in study.
- Eligible female who are available at the time of data collection.
- Eligible female who comes under age of 18-30 year.

Exclusive criteria

- Who are not willing to participate in the study.
- Those who are of age group less than 18 year and more than 30 years.

Development of tool

Based on the objectives of the study and a comprehensive review of the literature, tools were developed to assess the knowledge of eligible females regarding female contraceptives. The tools used in the study were:

- Self-instructional module on female contraceptives
- Close-ended questionnaire to assess knowledge regarding female contraceptives among eligible females.

Steps for the Preparation of the Tool

- **Review of Related Literature:** Books, journals, reports, articles, and published research studies in the field of nursing were referred to during tool development.[7]
- **Preparation of a Blueprint:** A blueprint was created outlining the items pertaining to the knowledge of eligible females regarding female contraceptives.
- **Preparation of the Tool:** The tool was developed based on the blueprint and in consultation with the research guide.
- **Organization of Content in the Tool:** The content of the tool was structured according to various knowledge domains.

Description of Tool

- **Self-Instructional Module:** The self-instructional module was designed to enhance the knowledge of eligible females. It includes detailed content on female contraceptives.
- **Close-Ended Questionnaire:** The questionnaire was developed to assess the knowledge of eligible females regarding female contraceptives and consists of two parts:

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- **Part 1 – Demographic Data:** This section collects demographic information including age, years of experience, residential area, experience in family planning, prior education on female contraceptives, religion, marital status, educational background, monthly income, and level of confidence or awareness regarding female contraceptives.[8]
- **Part 2 – Knowledge Assessment:** This section includes 30 multiple-choice questions focusing on various aspects of female contraceptives such as introduction, definition, types, advantages, disadvantages, and methods.
- **Scoring:** The knowledge questionnaire comprises 30 questions. Each correct answer is awarded 1 mark, while incorrect responses receive 0 marks. Each question has three distractors and one correct option. {table 1} To assess the knowledge level of the eligible females, scores were categorized into three levels:

1. Poor Knowledge: 0–10
2. Moderate Knowledge: 11–20
3. Good Knowledge: 21–30

Table 1.Scoring for the level of knowledge regarding female contraceptives

Level of knowledge	Percentage of scores	Actual scores
Inadequate	0 -33	00 - 10
Satisfactory	36- 67	11 - 20
Adequate	70-100	21 - 30

Content Validity of the Tool

In consultation with the Head of the Department of the specialty, the prepared tool—along with the study's statements, objectives, hypotheses, setting, population, sampling strategy, research approach and design, blueprint, and structured criteria checklist—was submitted to several experts to establish content validity.[9]

The Self-Instructional Module was submitted to three experts, and appropriate revisions were made in accordance with their suggestions. Additionally, Tool I and Tool III were translated into Hindi and validated by a language expert to ensure linguistic accuracy and conceptual clarity.

Reliability

The tool was tested for reliability on 10 eligible females who met the inclusion criteria. Although this exceeds the standard 5–10% recommendation, a larger group was selected to ensure sufficient data for statistical analysis in this small-scale study (total sample size = 30).

Reliability was assessed using the split-half method and Karl Pearson's correlation, yielding a coefficient of 0.8, indicating high reliability. These participants were not included in the final intervention sample. This approach will be refined in future studies with larger samples.

Pilot Study

The pilot study was conducted at Nimbola, Burhanpur, from February 18 to 27, 2013. Prior written permission was obtained from local authorities, and informed consent was taken from all participants, ensuring confidentiality and adherence to ethical standards.

Data were collected from 10% of eligible respondents who met the inclusion criteria. The purpose of the study was clearly explained, and the questionnaire took approximately 20 minutes to complete. A Self-Instructional Module was then provided, followed by a post-test using the same tool on the seventh day to assess knowledge gain.[10-19]

The pilot study confirmed the feasibility of the study design, and based on the findings, the investigator proceeded with the main data collection.

Data Interpretation

The purpose of statistical analysis is to reduce data into an intelligible and interpretable form so that the relationship between the research problem and the findings can be studied and hypotheses can be tested. The analysis was based on the data collected through pre-test and post-test assessments and the implementation of a structured teaching program.

For hypothesis testing, the analysis and interpretation of the collected data were carried out using both descriptive and inferential statistics, in alignment with the predetermined objectives of the study.

Statistical analysis involved the translation of data collected during the research into clear, meaningful, and descriptive terms, enabling the drawing of inferences. Various statistical methods such as mean and standard deviation were employed for this purpose.[11]

Results

The data were edited, tabulated, analysed, interpreted, and the findings were presented using tables and diagrams. The results were organized according to the objectives of the study and are presented under the following sections:

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Table 2.Distribution of eligible females according to their demographic variables

Characteristics	Category	Respondents	
		Frequency	Percentage
Age in year	18-25	22	73
	26-32	7	24
	33-40	0	0
	41-47	1	3
Basic qualification	Primary school	16	53
	High school	8	27
	Higher secondary	3	10
	Graduation	3	10
Religion	Hindu	29	97
	Muslim	0	0
	Christian	1	3
	Other	0	0
Marital status	Married	1	3
	Unmarried	27	91
	Divorced	2	6
	Widow	0	0
Occupation	Farmer	2	6
	worker	9	30
	House wife	16	54
	Other	3	10
Family monthly income	Below 5000	12	40
	5000-10,000	16	53
	11,000-15,000	0	0
	Above 15,000	2	7
Family type	Nuclear family	23	77
	Joint family	7	23
	Big family	0	0
	Other type family	0	0
No. of members in family	2-4	20	67
	5-8	9	30
	9-12	1	3
	Above 12	0	0
Available qualification in village	Anganwadi	5	17
	Middle school	20	67
	High school	5	16
	High secondary	0	0
Source of health care	PHC	2	7
	CHC	0	0
	Govt. Dist. Hospital	0	0
	Private hospitals	28	93

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Table 2 presents the demographic profile of 30 eligible female participants.

Most respondents (73%) were aged 18–25 years, followed by 24% aged 26–32, and 3% aged 41–47. Educationally, 53% had primary education, 27% high school, and 10% each had higher secondary and graduation. Nearly all were Hindu (97%), with 3% Christian.[12]

A majority (91%) were unmarried, 6% divorced, and 3% married. In terms of occupation, 54% were housewives, 30% workers, 10% categorized as 'other', and 6% farmers.

Family income ranged mostly between ₹5,000–₹10,000 (53%), with 40% earning below ₹5,000. Most (77%) lived in nuclear families, and 67% had 2–4 family members.

Village-level education facilities were mostly up to middle school (67%), with limited access to high school (16%) or Anganwadi centres (17%). Healthcare access was primarily through private hospitals (93%), with only 7% using Primary Health Centres.

Table 3 presents the distribution of pre-test knowledge scores among the 30 eligible females regarding female contraceptives.

A majority of participants (87%) had satisfactory knowledge, 10% had inadequate knowledge, and only 3.3% demonstrated adequate knowledge. The mean knowledge score was 13, with a standard deviation of 2.52, indicating moderate variability in baseline knowledge levels.[13]

Table 4 displays the post-test knowledge scores of the 30 eligible female participants.

Following the intervention, 80% of respondents demonstrated satisfactory knowledge, while 20% achieved adequate knowledge. Notably, none of the participants scored in the inadequate category. The mean post-test score was 18, with a standard deviation of 3.69, indicating a marked improvement in knowledge compared to the pre-test.[14]

Table 5 presents a comparison of knowledge scores before and after the intervention. The mean pre-test score was 13 (43.3%), which increased to 18 (60%) in the post-test, showing a mean difference of 5. The standard deviations were 2.52 for the pre-test and 3.69 for the post-test. The calculated t-value of 16.28 indicates a statistically significant improvement in knowledge following the intervention.[15]

Table 3.Assessment of pre- test knowledge score of eligible females regarding female Contraceptives

Grade	Pre test			
	Frequency	Percentage	Mean	S.D.
Inadequate	3	10		
Satisfactory	26	87	13	2.52
Adequate	1	3.3		

Table 4.Assessment of post-test knowledge score of eligible females regarding female Contraceptives

Grade	Post test			
	Frequency	Percentage	Mean	S.D.
Inadequate	0	0		
Satisfactory	24	80	18	3.69
Adequate	6	20		

Table 5.Comparison between the pre and post intervention knowledge score of Eligible females regarding female contraceptives

Group	Mean	Mean Difference	Mean percentage	Standard deviation	't' value
Pre test	13		43.3	2.52	
Post test	18	5	60	3.69	16.28

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Table 6.Association of pre interventional knowledge scores with selected demographic variables

Demographic Variables	Inadequate 0-10		Satisfactory 11-20		DF	Chi- Square value
	No.	%	No.	%		
Age in year						
18-25	4	13.33	18	60	3	33.58 S
26-32	0	0	7	23.33		
33-40	0	0	0	0		
41-47	0	0	0	0		
Basic qualification						
Primary school	4	13.33	12	40	3	0.08 NS
High school	0	0	8	26.67		
Higher secondary	0	0	3	10		
Graduation	0	0	3	10		
Religion						
Hindu	4	13.33	25	83.33	3	-2.45 NS
Muslim	0	0	0	0		
Christian	0	0	1	3.33		
Other	0	0	0	0		
Marital status						
Married	0	0	1	3.33	3	-3.94 NS
Unmarried	4	13.33	23	76.67		
Divorced	0	0	2	6.67		
Widow	0	0	0	0		
Occupation						
Farmer	0	0	2	6.67	3	1.62 NS
Worker	2	6.67	7	23.33		
House wife	2	6.67	14	46.67		
Other	0	0	3	10		
Family monthly income						
Below 5000	2	6.67	10	33.33	3	10.9 NS
5000-10,000	2	6.67	14	46.67		
11,000-15,000	0	0	0	0		
Above 15,000	0	0	2	2		
Family type						
Nuclear family	3	10	20	66.67	3	0.54 S
Joint family	1	3.33	6	20		
Big family	0	0	0	0		
Other type family	0	0	0	0		
No. of members in family						
2-4	3	10	17	56.67	3	3.78 S
5-8	0	0	9	30		
9-12	1	3.33	0	0		
Above 12	0	0	0	0		

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Available qualification in village					
Anganwadi	0	0	5	16.67	
Middle school	3	10	17	56.67	3	8.94 NS
High school	1	3.33	4	13.33	
High secondary	0	0	0	0	
Source of health care					
PHC	1	3.33	S1	3.33	
CHC	0	0	0	0	3	0.89 NS
Govt. Dist. Hospital	0	0	0	0	
Private hospitals	3	10	25	83.33	

Table 6 explores the association between pre-intervention knowledge scores and selected demographic variables among eligible females.

- A statistically significant association ($p<0.05$) was found between pre-test knowledge scores and age, family type, and number of family members, suggesting these variables influenced participants' baseline knowledge.[16]
- Other variables such as educational qualification, religion, marital status, occupation, monthly family income, educational facilities in the village, and source of healthcare showed no significant association with knowledge levels ($p>0.05$).

These findings indicate that certain social and familial factors may affect awareness levels regarding contraceptives prior to educational interventions.

Discussion

This study aimed to evaluate the effectiveness of a Self-Instructional Module (SIM) in improving knowledge about female contraceptives among eligible women residing in rural areas.

In the pre-intervention phase, over half of the participants (53%) had inadequate knowledge, and only 20% demonstrated satisfactory understanding, highlighting the need for educational support in this population.[17-18]

Following the intervention, post-test results showed a marked improvement—80% of participants attained adequate knowledge, indicating the effectiveness of the SIM. The mean knowledge score increased from 13 (43%) in the pre-test to 18 (60%) in the post-test, with a mean difference of 5. This improvement was statistically significant ($t = 16.28$).

Additionally, no significant association was found between pre-intervention knowledge scores and selected demographic variables.

Overall, the study concludes that the Self-Instructional Module was effective in enhancing knowledge regarding female contraceptives among eligible rural women.

Conclusion

The pre-intervention knowledge of eligible females regarding female contraceptives was found to be inadequate. However, after the implementation of the Self-Instructional Module (SIM), there was a marked improvement in their knowledge levels.

The post-intervention data demonstrated a significant increase in knowledge scores, indicating that the SIM was effective in enhancing awareness about female contraceptives. Statistical analysis using the t-test confirmed a significant difference between pre- and post-intervention knowledge scores.

The mean pre-intervention knowledge score was 2.52, while the post-intervention mean score increased to 3.69, reflecting a mean difference of 5. This substantial improvement highlights the effectiveness of the Self-Instructional Module as a valuable educational tool for promoting contraceptive awareness among eligible females.

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