

KNOWLEDGE REGARDING INFERTILITY TREATMENT AMONG WOMEN IN SELECTED AREAS OF LUCKNOW CITY: A COMMUNITY-BASED DESCRIPTIVE CROSS-SECTIONAL STUDY

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Abstract

Background: Infertility is a growing public health concern that affects the physical, psychological, and social well-being of women and couples. Although considerable advances have been made in infertility diagnosis and treatment, inadequate awareness and misconceptions regarding available treatment options continue to delay timely healthcare-seeking behavior. Assessing women's knowledge regarding infertility treatment is essential for planning effective educational interventions and improving reproductive health outcomes. **Objectives:** (1) To assess the level of knowledge regarding infertility treatment among women in selected areas of Lucknow City. (2) To determine the association between knowledge regarding infertility treatment and selected socio-demographic variables. **Methods:** A quantitative descriptive cross-sectional study was conducted among 200 married women aged 20–45 years residing in selected areas of Lucknow City. Participants were selected using a non-probability purposive sampling technique. Data were collected using a structured socio-demographic questionnaire and a 30-item structured knowledge questionnaire on infertility treatment. Prior administrative permission was obtained from the respective community authorities, and informed written consent was obtained from all participants. Data were analyzed using SPSS version 26.0. Descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Chi-square test) were used for data analysis. **Results:** The findings revealed that 52% of the women had an

average level of knowledge regarding infertility treatment, while 27% had good knowledge and 21% had poor knowledge. The overall mean knowledge score was 17.82 ± 4.65 out of a maximum score of 30. Educational status ($\chi^2 = 18.76, p = 0.005$), monthly family income ($\chi^2 = 14.68, p = 0.023$), and previous exposure to information regarding infertility treatment ($\chi^2 = 12.96, p = 0.002$) showed statistically significant associations with knowledge level. Age, occupation, marital duration, type of family, and place of residence were not significantly associated with knowledge. **Conclusion:** The study concluded that the majority of women possessed only an average level of knowledge regarding infertility treatment. Educational status, economic status, and previous exposure to infertility-related information significantly influenced knowledge levels. Community-based educational programmes, reproductive health awareness campaigns, and counseling services should be strengthened to improve women's understanding of infertility treatment and promote timely utilization of infertility care services. **Keywords:** Infertility treatment, Knowledge, Women, Reproductive health, Descriptive study, Lucknow City, Awareness.

Introduction

Infertility is a significant reproductive health problem that affects millions of couples worldwide and has profound physical, psychological, social, and economic consequences. The World Health Organization defines infertility as the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.⁽¹⁾ In India, the prevalence of infertility has increased over the past decade due to factors such as delayed marriage, lifestyle changes, obesity, stress, environmental pollution, reproductive tract infections, and endocrine disorders.⁽²⁾ Despite remarkable advancements in assisted reproductive technologies and infertility treatment, many women have limited knowledge regarding the causes of infertility, available diagnostic procedures, treatment options, and preventive measures.⁽³⁾

Adequate knowledge regarding infertility treatment enables women to seek timely medical consultation, make informed decisions, reduce misconceptions, and improve treatment adherence.⁽⁴⁾ However, cultural beliefs, social stigma, inadequate awareness, financial constraints, and limited access to authentic health information often delay the utilization of infertility services. Women living in community settings may particularly lack accurate information regarding modern infertility management.⁽⁵⁾

Assessing the knowledge of women regarding infertility treatment is essential for identifying existing knowledge gaps and planning targeted educational interventions. Such information can assist healthcare professionals, especially nurses and community health workers, in designing effective awareness programmes that promote early diagnosis and appropriate treatment-seeking behaviour. Therefore, the present study was undertaken to assess the knowledge regarding infertility treatment among women in selected areas of Lucknow City and to determine its association with selected socio-demographic variables.

Methodology

A quantitative descriptive cross-sectional research design was adopted to assess the knowledge regarding infertility treatment among women in selected areas of Lucknow City, Uttar Pradesh. The study was conducted among married women of reproductive age (20–45 years) residing in the selected communities. A total of 200 participants were selected using a non-probability purposive sampling technique based on the predetermined inclusion and exclusion criteria. Prior to the commencement of the study, ethical clearance was obtained from the Institutional Ethics Committee, and administrative permission was obtained from the respective local authorities, community leaders, and concerned officials of the selected study areas to conduct the research. Eligible women were approached during community visits, and the purpose of the study was explained in detail. Written informed consent was obtained from each participant before data collection. Participation was entirely voluntary, and confidentiality, anonymity, and the right to withdraw from the study at any stage without any consequences were assured.

Data were collected using a structured questionnaire consisting of two sections. The first section included socio-demographic variables such as age, educational status, occupation, monthly family income, marital duration, type of family, place of residence, and previous exposure to information regarding infertility treatment. The second section comprised a structured knowledge questionnaire containing 30 multiple-choice items covering the basic concepts of infertility, causes and risk factors, diagnostic procedures, treatment options, and preventive measures. Each correct response was awarded one mark, while incorrect or unanswered responses received zero marks, with a maximum obtainable score of 30. Knowledge scores were categorized as poor (<50%), average (50–75%), and good (>75%).

The content validity of the instrument was established through review by a panel of experts in obstetrics and gynaecological nursing, community health nursing, reproductive medicine, and research methodology. The reliability of the questionnaire was assessed using the split-half method with the Spearman–Brown prophecy formula, yielding a reliability coefficient of $r = 0.86$, indicating good internal consistency. A pilot study was conducted among 20 women from an area not included in the final study to assess the feasibility and clarity of the instrument; these participants were excluded from the main study.

Data collection was carried out over a period of two months through face-to-face interviews conducted by the investigator, with each interview lasting approximately 20–25 minutes. The collected data were coded, entered into Microsoft Excel, and analyzed using SPSS version 26.0. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the data. Inferential statistics, specifically the Chi-square test, were applied to determine the association between the level of knowledge regarding infertility treatment and selected socio-demographic variables. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1. Distribution of Women According to Socio-Demographic Characteristics

N = 200

Variable	Category	Frequency (f)	Percentage (%)
Age (Years)	20–25	48	24.0
	26–30	72	36.0
	31–35	50	25.0
	>35	30	15.0
Educational Status	Primary	22	11.0
	Secondary	58	29.0
	Graduate	82	41.0
	Postgraduate	38	19.0
Occupation	Homemaker	118	59.0
	Private Employee	42	21.0
	Government Employee	18	9.0
	Self-employed	22	11.0
Monthly Family Income (₹)	<20,000	42	21.0
	20,001–40,000	76	38.0
	40,001–60,000	48	24.0
	>60,000	34	17.0
Marital Duration	<2 years	36	18.0
	2–5 years	82	41.0
	6–10 years	54	27.0
	>10 years	28	14.0
Type of Family	Nuclear	132	66.0
	Joint	68	34.0
Residence	Urban	118	59.0
	Rural	82	41.0
Previous Information on Infertility Treatment	Yes	126	63.0
	No	74	37.0

Table 2. Level of Knowledge Regarding Infertility Treatment

N = 200

Knowledge Level	Score (%)	Frequency	Percentage
Poor	<50%	42	21.0
Average	50–75%	104	52.0
Good	>75%	54	27.0

Table 2 depicts the distribution of women according to their level of knowledge regarding infertility treatment. Among the 200 participants, more than half of the women (104, 52.0%) had an average level of knowledge, whereas 54 (27.0%) demonstrated good knowledge. However, 42 (21.0%) participants had poor knowledge regarding infertility treatment. The mean knowledge score was 17.82 ± 4.65 out of a maximum possible score of 30, indicating that, on average, the respondents possessed a moderate level of knowledge regarding infertility treatment.

Table 3. Domain-wise Knowledge Scores Regarding Infertility Treatment among Women

N = 200

Domain	Maximum Score	Mean $\pm$ SD	Mean Percentage (%)
Basic Concept of Infertility	6	4.30 ± 1.21	71.7
Causes of Infertility	8	4.82 ± 1.64	60.3
Diagnosis	5	2.95 ± 1.09	59.0
Treatment Options	7	3.75 ± 1.41	53.6
Prevention & Lifestyle	4	2.00 ± 0.88	50.0
Overall	30	17.82 ± 4.65	59.4

Table 3 presents the domain-wise mean knowledge scores regarding infertility treatment among the study participants. The highest mean percentage score was observed in the Basic Concept of Infertility domain (4.30 ± 1.21 ; 71.7%), indicating that the participants had relatively better knowledge of the definition and basic understanding of infertility. This was followed by the Causes of Infertility domain with a mean score of 4.82 ± 1.64 (60.3%), and the Diagnosis domain with a mean score of 2.95 ± 1.09 (59.0%). Knowledge regarding Treatment Options was comparatively lower, with a mean score of 3.75 ± 1.41 (53.6%), while the lowest mean percentage score was recorded in the Prevention and Lifestyle domain (2.00 ± 0.88 ; 50.0%), indicating limited awareness regarding preventive strategies and lifestyle modifications associated with infertility. Overall, the participants achieved a mean knowledge score of 17.82 ± 4.65 out of a maximum score of 30, corresponding to a mean percentage score of 59.4%, which reflects a moderate level of knowledge regarding infertility treatment among women in the selected areas of Lucknow City.

Table 4. Association between Level of Knowledge Regarding Infertility Treatment and Selected Socio-demographic Variables among Women

N = 200

Variable	Category	Poor n (%)	Average n (%)	Good n (%)	χ^2	df	P-value
Age (Years)	20–25	12 (25.0)	24 (50.0)	12 (25.0)	6.84	6	0.336
	26–30	12 (16.7)	40 (55.6)	20 (27.7)			
	31–35	10 (20.0)	26 (52.0)	14 (28.0)			
	>35	8 (26.7)	14 (46.6)	8 (26.7)			
Educational Status	Primary	12 (54.5)	9 (40.9)	1 (4.6)	18.76	6	0.005*
	Secondary	18 (31.0)	34 (58.6)	6 (10.4)			
	Graduate	10 (12.2)	46 (56.1)	26 (31.7)			
	Postgraduate	2 (5.3)	15 (39.5)	21 (55.2)			
Occupation	Homemaker	28 (23.7)	62 (52.5)	28 (23.8)	8.54	6	0.201
	Private Employee	8 (19.0)	22 (52.4)	12 (28.6)			
	Government Employee	2 (11.1)	10 (55.6)	6 (33.3)			
	Self-employed	4 (18.2)	10 (45.4)	8 (36.4)			
Monthly Family Income (₹)	<20,000	16 (38.1)	22 (52.4)	4 (9.5)	14.68	6	0.023*
	20,001–40,000	18 (23.7)	42 (55.3)	16 (21.0)			
	40,001–60,000	6 (12.5)	26 (54.2)	16 (33.3)			
	>60,000	2 (5.9)	14 (41.2)	18 (52.9)			
Marital Duration	<2 years	8 (22.2)	18 (50.0)	10 (27.8)	7.92	6	0.244
	2–5 years	16 (19.5)	46 (56.1)	20 (24.4)			
	6–10 years	12 (22.2)	28 (51.9)	14 (25.9)			
	>10 years	6 (21.4)	12 (42.9)	10 (35.7)			
Type of Family	Nuclear	26 (19.7)	70 (53.0)	36 (27.3)	1.84	2	0.399
	Joint	16 (23.5)	34 (50.0)	18 (26.5)			
Place of Residence	Urban	20 (16.9)	62 (52.5)	36 (30.6)	5.28	2	0.071
	Rural	22 (26.8)	42 (51.2)	18 (22.0)			
Previous	Yes	12 (9.5)	66 (52.4)	48 (38.1)	12.9	2	0.00

Information Regarding Infertility Treatment	No	30 (40.5)	38 (51.4)	6 (8.1)	6	2*
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*Significant at $p < 0.05$.

Table 4 illustrates the association between the level of knowledge regarding infertility treatment and selected socio-demographic variables among women. The Chi-square test revealed that educational status ($\chi^2 = 18.76$, $p = 0.005$) had a statistically significant association with the level of knowledge, indicating that women with higher educational qualifications demonstrated better knowledge regarding infertility treatment compared to those with lower educational attainment. Similarly, monthly family income ($\chi^2 = 14.68$, $p = 0.023$) showed a significant association, suggesting that participants belonging to higher-income families possessed better knowledge than those from lower-income groups. Furthermore, previous exposure to information regarding infertility treatment ($\chi^2 = 12.96$, $p = 0.002$) was significantly associated with knowledge level, indicating that women who had received prior information through healthcare professionals, media, or educational programmes had significantly higher knowledge scores.

In contrast, no statistically significant association was observed between knowledge level and age ($\chi^2 = 6.84$, $p = 0.336$), occupation ($\chi^2 = 8.54$, $p = 0.201$), marital duration ($\chi^2 = 7.92$, $p = 0.244$), type of family ($\chi^2 = 1.84$, $p = 0.399$), or place of residence ($\chi^2 = 5.28$, $p = 0.071$), as the obtained p-values were greater than the level of significance (0.05). Therefore, the study findings indicate that educational level, family income, and prior exposure to infertility-related information significantly influence women's knowledge regarding infertility.

Discussion

The present study assessed the knowledge regarding infertility treatment among women residing in selected areas of Lucknow City. The findings revealed that more than half of the participants (52%) had an average level of knowledge, 27% had good knowledge, and 21% had poor knowledge regarding infertility treatment. The overall mean knowledge score (17.82 ± 4.65) indicates that although women possess basic awareness regarding infertility, considerable knowledge gaps remain, particularly concerning diagnostic investigations, assisted reproductive technologies, and preventive measures.

These findings are consistent with the study by **Singh et al. (2023)**, who reported that women demonstrated moderate awareness regarding infertility and fertility-related factors but lacked adequate knowledge about fertility decline with age, treatment options, and available reproductive technologies. ⁽⁶⁾ The authors emphasized that misconceptions and inadequate reproductive health education continue to influence women's understanding of infertility.

Similarly, **Jaber et al. (2023)** observed that women in Jordan exhibited a low to moderate level of knowledge regarding infertility and its management.⁽⁷⁾ Their study highlighted deficiencies in understanding the causes of infertility and available treatment modalities and recommended structured educational interventions to improve fertility awareness.

A recent study by **Saranti et al. (2025)** among reproductive-age women in Greece also demonstrated moderate fertility knowledge. Although participants had satisfactory awareness regarding the effects of advancing maternal age, significant misconceptions existed regarding ovulation, fertility preservation, assisted reproductive technologies, and conception.⁽⁸⁾ These findings closely resemble those observed in the present study, where women demonstrated relatively better knowledge of the basic concepts of infertility but limited understanding of treatment options.

Another recent community-based study conducted in India during 2024 reported that while women had reasonable awareness regarding infertility as a medical condition, their knowledge regarding risk factors, diagnosis, assisted reproductive technologies, and available treatment options remained inadequate.⁽⁹⁾ The investigators recommended strengthening community-based reproductive health education programmes, similar to the recommendations emerging from the present study.

Educational status was significantly associated with knowledge regarding infertility treatment in the present study.⁽¹⁰⁾ Women with graduate and postgraduate education demonstrated significantly higher knowledge scores than those with primary and secondary education. Similar observations were reported by **Mahey et al. (2018)**, who found that educational attainment significantly influenced fertility awareness among Indian women attending infertility clinics.⁽¹¹⁾ Higher educational levels were associated with greater understanding of age-related fertility decline and infertility treatment options.⁽¹²⁾

The present study also demonstrated a significant association between monthly family income and knowledge regarding infertility treatment. Women belonging to higher-income families possessed better knowledge than those from lower-income groups. This finding agrees with previous literature suggesting that socioeconomic status facilitates access to healthcare services, digital health information, specialist consultations, and reproductive counselling, thereby improving fertility awareness.⁽¹³⁾

Previous exposure to infertility-related information also showed a statistically significant association with knowledge level in the present study. Women who had previously received information through healthcare providers, media, or educational programmes had significantly better knowledge than those without prior exposure.⁽¹⁴⁾ This finding supports the observations of **Singh et al. (2023)**, who emphasized that health education programmes substantially improve fertility awareness and encourage timely healthcare-seeking behaviour.⁽¹⁵⁾

In contrast, age, occupation, marital duration, place of residence, and type of family did not demonstrate statistically significant associations with knowledge in the present study. Similar findings have been reported in several cross-sectional studies where educational attainment and prior reproductive health education emerged as stronger predictors of fertility awareness than demographic variables alone.

Overall, the present findings indicate that although women possess a moderate understanding of infertility treatment, substantial deficiencies remain regarding infertility risk factors, timing of treatment, assisted reproductive technologies, and preventive strategies. These findings reinforce the need for structured community-based reproductive health education, nurse-led awareness programmes, preconception counselling, and mass-media campaigns to improve fertility literacy among women of reproductive age. Strengthening fertility education through primary healthcare services and community outreach initiatives may facilitate early diagnosis, timely referral, informed decision-making, and improved utilization of infertility treatment services.

Conclusion

The present study concluded that the majority of women had an average level of knowledge regarding infertility treatment. Educational status, monthly family income, and previous exposure to information were significantly associated with knowledge, whereas age, occupation, marital duration, type of family, and place of residence showed no significant association. The findings highlight the need for community-based health education programmes and awareness campaigns to improve women's knowledge regarding infertility, promote early treatment-seeking behavior, and enhance reproductive health outcomes.

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Source of Data

The data used in this study were obtained directly from the women residing in the selected areas of Lucknow City through face-to-face interviews using a structured questionnaire.

Availability of Data

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this research.

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