



Dissecting the knowledge and myths of infertile women in a rural area of Bihar and to making aware the value of hysterosalpingography in the diagnosis of infertility

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Abstract

Background: Infertility is defined as being unable to get pregnant after one year of unprotected sex. According to World Health Organization (WHO), Infertility is classified as a disease, which is considered a condition that should be treated. Many women have little awareness regarding knowledge of infertility and when to seek treatment. People in developing countries when faced with fertility resort to popular medicine, Tantric practices and take advantage of the help from Quacks instead of seeking medical care. In our society, the word Infertility has become Generic to women only, but it is biologically incorrect because Men and Women both are almost equally responsible for it. Infertility in Men is considered Taboo and so it remains always hidden. The primary role of HSG (hysterosalpingography) is to evaluate the morphology and the patency of the fallopian tubes. The fallopian tube will appear as a thin and smooth line that widens in the ampullary section.

Aim

A descriptive study to assess the Knowledge, myths, and attitude towards infertility and to make aware the value of hysterosalpingography in the diagnosis of infertile patients.

Objective

- To assess the level of knowledge and compare the level of knowledge between educated and uneducated women regarding infertility.
- To assess the level of myths and compare the level of myths between educated and uneducated women regarding infertility.
- To make aware of the diagnostic accuracy of hysterosalpingography in the diagnosis of infertile patients.

Material and Method: This study were prospective, comparative questionnaire-based designed and carried out among women of Barahpura, Islamnagar, and Bhikhnpur of district Bhagalpur, Bihar. A total 100 of infertile women were included in the study. The investigator was given brief information about self and the purpose of the study to the women and obtaining their verbal and written informed consent for willingness to participate in the study and data collection was carried out by using structured interview questioners to assess the knowledge, myths, and awareness of HSG regarding infertility. The questionnaire was divided into four sections which consisting demographic, knowledge, myths, and awareness-related question.

Result: A Cross-sectional Prospective and Questionnaire-based study was carried out with the size of 100 infertile women on the topic "Dissecting the knowledge and myths of infertile women in a rural area of Bihar and to make aware the value of hysterosalpingography in the diagnosis of infertility". The study showed that majority 61.30% had no knowledge and 38.70% had adequate knowledge regarding infertility, With regard to myths women majority 48% of women had a strong belief in myths, 11% had no belief in myths and 41% had a poor belief about the myths of infertility and With regard to the level of awareness of women, 44.80% had good awareness level and, 55.20% had no awareness regarding infertility.

Conclusion: The present study assessed the knowledge, myths, and awareness regarding infertility among women. The study findings revealed that there was a significant difference in the level of knowledge and myths of women and concluded that education on infertility was an effective method to improve the knowledge, myths, and awareness of infertile couples.

Introduction

Infertility is defined as unable to get pregnant after one year of unprotected sex. According to **World Health Organization (WHO)**,¹ Infertility is classified as a disease, which is considered a condition that should be treated. Because it is known that fertility in women decreased constantly with age, some providers evaluate and treat women of 35 years or more after 6 months of unprotected sex. There are two types of infertility. Primary infertility means that the couple has never produced a pregnancy, and secondary infertility means that women have been pregnant, but now it cannot conceive. According to the World Health Organization, the estimate of the general prevalence of primary infertility in India is between 3.9 to 16.8%. Medical professionals consider intervention needed against infertile couples because of high loads on the infertile couples, especially for women.

Infertility prevails, which affects 80 million couples of Reproductive age around the world. Infertility currently affects around 10 to 14 percent of the Indian population by the Indian society of associated reproduction², with higher rates in urban areas where one out of every six couples is affected. The prevalence of Indian infertility varies from state to states such as 3.7 percent in Uttar Pradesh, Himachal Pradesh, and Maharashtra, up to 5 percent in Andhra Pradesh, and 15 percent in Kashmir, and prevalence vary in the same region across tribes and caste.³ **An Ernst and Young report in 2015** estimated that 27.5 million couples in India wanted to conceive children but were unable to do so naturally.

A global survey of nearly 17,500 women (mostly Age of childbirth) of 10 countries reveals that knowledge of infertility and reproductive biology is poor. The failure to achieve pregnancy affects couples and causes emotional and psychological distress in men and women. Apart from various social, psychological, economic, and physical implications, infertility prevention and treatment is often ignored by public health problems, or at least they rank low on a list of priorities,

especially for low-income countries that have been under population pressure.

According to the **National Statistics Office (NSO)** of the Indian report, Bihar stands third from the bottom among the states with low literacy rates in India. Bihar is a multi-cultural state with societies having different religious beliefs, education, social and economic backgrounds. Many women have little awareness of the menstrual cycle where they are most fertile and when to seek treatment. Knowledge about specific risk factors for lower fertility is limited (for example, smoking and drinking, obesity, increasing age, irregular period, history of STDs) and the erroneous when it comes to factors that do not have an impact on the potential of Fertility (for example, birth control pills, mental illness, and sex position). This knowledge can also help society broader to understand the infertile couple, which can lead to a decrease in psychological burden for those affected. Furthermore, patient education has been found as the main aspect of patient satisfaction with infertility treatment.

Infertility poses not only a medical problem but also Social stigma. Some studies have shown the Famous effect of infertility from a social standpoint, there is no formal education in India considering infertility. This perpetuates the bait-down perception of infertility, including myth, wrong information, and negative attitude. Known modifiable risk factors have been well-reviewed, with equivalent contributing variables from every sexual orientation. Whether this knowledge has been well distributed in the population remains a mystery.⁴

Women who are deemed to be infertile often have to face difficulties within the family and even on a societal level. Most of the time infertility leads to domestic violence and becomes the cause of divorce. In our society, the word Infertility has become Generic to women only, but it is biologically incorrect because Men and Women both are almost equally responsible for it. Even if the couple Searching treatment, women are often blamed for infection and it is only expected that

she is submitted to the diagnostic procedures to know the cause of infertility. Infertility in Male is considered Taboo and so it remains always hidden.

People in developing countries when faced with infertility they go for popular medicine, Tantric practices and take help from Quacks instead of seeking medical care. Hence it becomes important to understand the perceptions of these couples regarding infertility and its management in order to be able to provide more effective solutions. Infertility in Men is considered Taboo and so it remains always hidden.⁵

Although the incidence of infertility is increasing, no study to date has evaluated the awareness of fertility among Indian women. Determining the level of knowledge and awareness of fertility practices between Indian women has important implications for public health.⁶ Education for targeted fertility and public lighting programs can help reduce the number of women who experienced infertility related to age and also allow timely remission for the treatment of assisted fertility.

Hysterosalpingography (HSG) is a radiological investigation in which we evaluate abnormalities associated with the uterus and Fallopian tubes.⁷ The primary role of HSG is to evaluate the morphology and the patency of the fallopian tubes. The fallopian tube will appear as a thin and smooth line that widens in the ampullary section. Tubal abnormalities observed with HSG can be congenital, or because of seizures, occlusion or infection. The present study was conducted to evaluate the knowledge of women in Bihar regarding factors affecting fertility and spread awareness of facts related to infertility, availability of radiological investigation like HSG, and advanced infertility treatment options.



Fig:- 1 Normal and abnormal HSG⁸

Anatomy

The female reproductive tract is present in the pelvis. It is formed the by vulva, vagina, cervix, uterus, fallopian tubes, and ovaries. These organs are supported by ligaments in the pelvis. Vulva refers to external women genitalia.

Vagina

The vagina is the most external internal sexual organ. It extends from the uterus to the vulva (external genitals).⁹ Functionally, it facilitates menstruation, sex, and childbirth. The vagina is posterior to the urinary bladder and urethra, and prior to the rectum.

Female Reproductive System

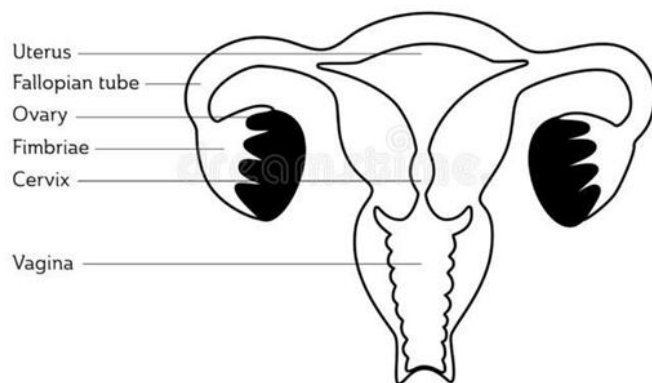


Fig 2 Female reproductive system¹⁰

Uterus

The uterus is a hollow muscular organ of approximately 8 cm long in the female pelvis and is dorsocranially in the bladder. The uterus includes several anatomical parts such as the isthmus, body, and cervix. The isthmus is a narrow passage of approximately 1 cm that connects the cervix and corpus (body). Corpus (body) is located intraperitoneal and has a "triangle" lumen through its connection to the isthmus and both fallopian tubes. The fundus is the base of the uterus. The cervix is present subperitoneal and consists of a part that is projected in the vagina and a part fixed in the parametrium (supravaginal part).

Fallopian Tube

The fallopian tubes (salpinges) are the important part of the female reproductive tract, which provide a site for fertilization and are involved in Ovum transportation from ovaries to the uterine body. It is located within the mesosalpinx, projecting from the superior body of the uterus. The part of the fallopian tubes is intramural, isthmus, ampulla, infundibulum (containing fimbriae).

The fallopian tubes consist isthmus, ampulla, and infundibulum. Isthmus is a lateral continuation of the intramural part. It is 1 to 5 mm wide and 3 cm long. The ampulla is the longest part of the fallopian tube. It is 5 cm long and 1cm in diameter. It has a thin wall, a folded luminal

surface, and fertilization is generally carried out within its lumen.

The infundibulum is the distal part of the fallopian tube. It is a funnel in shape and opens in the peritoneal cavity in the abdominal ostium. The fingers such as the projections of the mucosa are joined at the distal end of the infundibulum and are called Fimbriae.

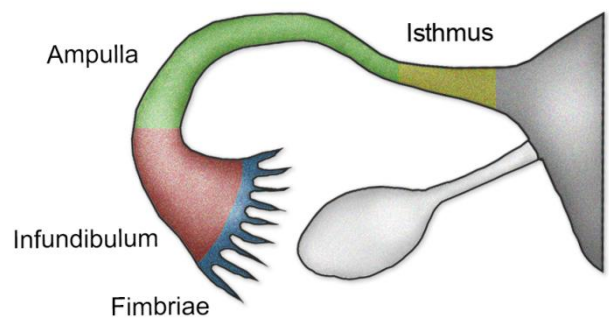


Fig: 3 Parts of fallopian tube¹¹

Ovaries

The ovaries are female gonads that are present on both sides of the uterus. They release an egg (ovum) for fertilization with the sperm. Ovaries are endocrine glands that secrete several hormones for fertility, menstruation and sexual maturation of the female.

Aim

A descriptive study to assess the Knowledge and myths towards infertility and to make aware the value of radiological investigation HSG (hysterosalpingography) in the diagnosis of infertile women.

Objective

- To assess the level of knowledge of women regarding infertility.
- To assess the level of myths of women regarding infertility.
- To assess the level of awareness of women regarding infertility.
- To compare the level of knowledge between educated and uneducated women regarding infertility.
- To compare the level of myths between

educated and uneducated women regarding infertility.

- To compare the level of awareness between educated and uneducated women regarding infertility.
- To make aware of the diagnostic accuracy of hysterosalpingography in the diagnosis of infertile patients.

Need for the Study

Childbirth is the most joyous event in every woman's life. Parenthood is viewed in most cultures as an entry into adulthood, and also an important part of status.¹² Some couple delays pregnancy due to the changing lifestyle and career involvement. At the same time, many couples experience difficulty in conceiving and carrying a child. Infertility may be perceived as a tragedy in the lives of many women in developing countries. It is considered the responsibility of the females to give birth to their own children. Women without children may be stigmatized and isolated from society. Childlessness leads to an increased incidence of domestic violence in female partners and remarriage in male partners.

Many researchers feel that knowledge is a key factor associated with fertility self-care, that is, knowing its own potential for fertility and the beginning of treatment when it is necessary. To avoid fear and unnecessary delay in seeking help when faced with problems in conceiving. I personally feel that the present study raises awareness and improves their Knowledge, removes myths, understands the facts of risk factors, and develops a positive attitude towards infertility and treatment.

Method

This chapter describes the methodology adopted in this study to assess the knowledge, attitude, and myths regarding infertility, and spread awareness of radiological investigation like HSG (hysterosalpingography) among women at selected area, Bhagalpur District.

This phase of the study included selecting a

research design, variables, setting of the study, population, sample, criteria for sample selection, sample size, sampling technique, development and description of the tool, content validity, pilot study, and reliability of the tool, the procedure for data collection and plan for data analysis.

Research Design

This study was prospective, comparative & questionnaire-based designed and carried out among women of Barahpura, Islamnagar, and Bhikhnpur of district Bhagalpur, Bihar. The project was approved by the college review committee.

Study Duration

This questionnaire-based study was carried out for the time period of two months from July 2021 to August 2021 at Bhagalpur district in Bihar.

Sample Size

The sample size of the population was 100 women who fulfilled the sample selection criteria were selected for the study.

Sampling Technique

The samples were selected by the purposive sampling technique. The investigator informed the selected samples about the study and obtained their written consent to participate in the study.

Sample

The couples who fulfilled the sample selection criteria formed the samples for the study.

Criteria for Sample Selection

Inclusion Criteria

1. Infertile women
2. Women who can understand Hindi or English.
3. Women who are willing to participate in the study

Exclusive Criteria

1. Those who are not willing to participate and not present at the time of study
2. All men are not included
3. All women who had children and unmarried women

Development and Description of the tool

The tool was constructed after an extensive review of literature and guidance from medical and nursing experts and with the investigator’s personal and professional experience, a structured questioner was developed to assess the knowledge and myths of women regarding infertility and to make awareness of the value of HSG in the diagnosis of infertility.

The tool constructed in this study was divided into four sections.

Table 1 Categories of the questionnaire

Section	Items	No. of Question
A	Demographic data	4
B	Knowledge-based	10
C	Myths based	5
D	Awareness based	5
	Total	24

Section A: Demographic Variables

The demographic variables for women were age, education, occupation, and yearly family income.

Section B: Tool to assess the level of knowledge

It consisted of a structured interview schedule to assess the knowledge regarding infertility among women.

Table 2 – Categories of the level of knowledge

S No.	Items	No. of Question
1.	General information	3
2.	Causes	1
3.	Risk factor	6
	TOTAL	10

Coding Key

Each item was a Likert scale question with options yes, no, and don’t know. Every Yes answer was given a code of “1”, No answer was given code “2” and Do not know the answer was given a code of “0”.

The level of knowledge was categorized as:

Table 3 – Scoring keys of the level of knowledge

SCORE	LEVEL OF KNOWLEDGE
<50% Correct answer	Inadequate knowledge
50-75% Correct answer	Moderately adequate knowledge
>75% Correct answer	Adequate knowledge

Section C: Tool to assess the level of belief on myths regarding infertility

It consisted of Modified Likert Scale to assess the myths of women regarding infertility.

Coding Key

Each item was a Likert scale question with options yes, no, and don’t know. Every Yes answer was given a code of “1” means they believe in myths, No answer was given code “2” means they believe in facts, and Do not know the answer was given code of “0” means they don’t aware of this myths.

The level of belief on myths was categorized as:

Table 4 – Scoring keys of the level of belief on myths

SCORE	LEVEL OF BELIEVE
<50% correct answer	Poor believe
50-75% correct answer	Moderately believe
>75% correct answer	Strong believe

Section D: Tool to spread Awareness of infertility and HSG

It consisted of multiple-choice questions to assess the level of awareness of infertility and HSG.

Coding Key

Each item was multiple-choice questions with option correct answer and wrong answer. Every correct answer was given a code of “1” and the wrong answer was given code “2”.

The level of awareness was categorized as:

Table 5 – Scoring keys of level awareness

RANGES	LEVEL OF AWARENESS
0-30	Lack of awareness
31-50	Low level of awareness
51-80	High level of awareness
81-100	Complete awareness

Method of Data Collection

The study obtained permission from the ETHICAL committee JAMIA HAMDARD. Formal permission was obtained from the Assistant Professor, Department of Paramedical Sciences Jamia Hamdard New Delhi. The investigator gave brief information about self and

the purpose of the study to the women. The women were made to sit comfortably in a well-ventilated room and confidentiality regarding the data was assured. After obtaining their verbal and written informed consent for willingness to participate in the study, the investigator sat face to face with women, and data collection was carried out, by using a structured interview schedule to assess the knowledge, myths, and awareness of HSG regarding infertility.

The investigator conducted the test for all women who fulfilled the sample selection criteria from one residential area on the same day from 10 am – 4 pm which took 10-15 minutes each to assess the knowledge, myths, and attitude regarding infertility. The doubts of the women were clarified and a pamphlet on infertility was given to sustain the knowledge of the women.

Plan for Data Analysis

Data were analyzed by descriptive statistics. The data collected was compiled, tabulated, and analyzed. Analysis was done using the mean value at the end of the study.

Descriptive Statistics

- 1) Frequency and percentage distribution were used to analyze the demographic variables of women.
- 2) Mean and standard deviation was used to assess the level of knowledge and myths of the women.

Result

Section A: Description of the Demographic Variables of Women

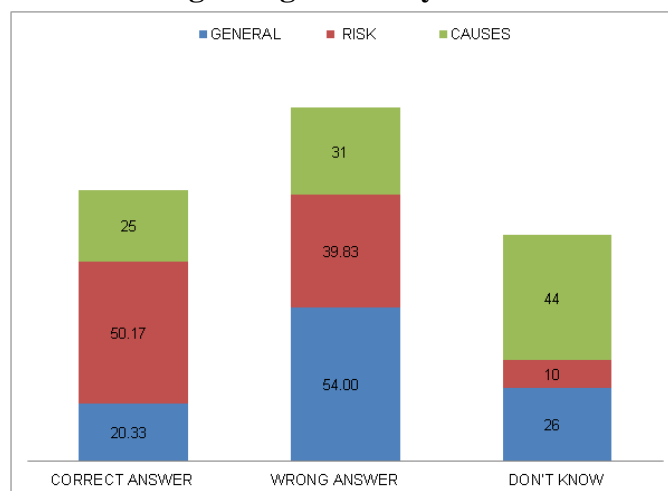
Table 1. Shows the frequency and percentage distribution of demographic variables like age, marital status, education, occupation, and yearly family income of women

Sno.	Demographic variable	Percentage of women (%)
1	Age in years	
	18-20	10
	21-25	14
	26-30	34
	31-35	9
	36-40	16
	41-45	8

	46-50	8
	51-55	1
2	Education	
	None	46
	Under graduate	20
	Graduate	34
3	Occupation	
	Working	81
	Housewife	19
4	Yearly family income	
	Low	41
	Middle	33
	High	26

With regard to the demographic variables of the women, the majority 34% were in the age group of 26-30 years and 16% were in the age group of 36-40 years, 34% were highly educated (graduate or postgraduate) while 20% were undergraduate (matric to graduate) and 46% were uneducated, majority 81% of women perform skilled and unskilled worked and 19% women were housewife, 26% women had high yearly family income (50000 – 150000Rs.), 33% were middle family income (150000 – 350000Rs.) and 41% belonged to low family income (above 350000Rs.)

Section B: Assessment of Level of Knowledge of Women Regarding Infertility



Graph 1: Percentage distribution of overall level of knowledge of women regarding infertility.

With regard to knowledge of women, 20.33% were given the correct answers, 54.00% were given the wrong answers and 26% did not know about the general information of infertility. 50.17% of women were given the correct answer, 39.83% were given wrong answers and 10% did

not know about the risk factor of infertility. 25% of women gave the correct answers, 43.20% gave wrong answers and 18.10% of women did not know about the causes of infertility.

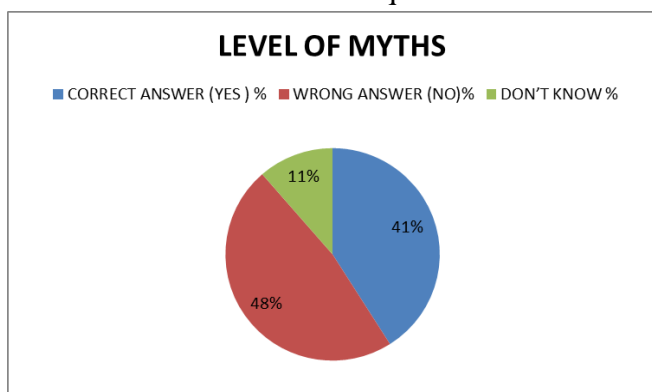
With regard to the level of knowledge of infertility majority 61.30% had no knowledge and 38.70% had adequate knowledge regarding infertility.

Section C: Assessment of Level of Myths of Women Regarding Infertility

Table 2: Frequency distribution of level of awareness of women regarding infertility

	Q.11	Q.12	Q.13	Q.14	Q.15
YES	29	37	35	53	51
NO	65	59	56	30	28
DON'T KNOW	6	4	9	17	21

With regard to myths of women regarding infertility, 29% were given correct answers, 65% given the wrong answer and 6 % were did not know about the question 11, 37% were given the correct answer, 59% given the wrong answer and 4 % did not know about the question 12, 35% were given the correct answer, 56 % given the wrong answer and 9 % did not know about the question 13, 53% were given the correct answer, 30% given the wrong answer and 17 % did not know about the question 14, 51% were given the correct answer, 28% given the wrong answer and 21 % did not know about the question 15.



Graph 2: Percentage distribution of overall level of myths of women regarding infertility.

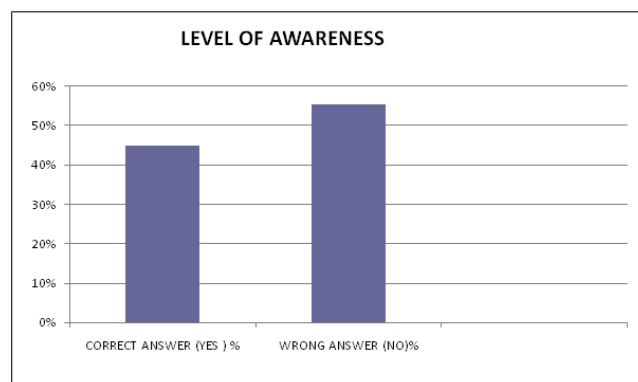
With regard to myths of women majority, 48% of women had strong beliefs in myths, 11% had no belief in myths and 41% had poor belief in the myths of infertility.

Section D: Assessment of Level of Awareness of Women Regarding Infertility

Table 3: Frequency distribution of level of awareness of women regarding infertility

	Q.16	Q.17	Q.18	Q.19	Q.20
YES	38	55	53	37	41
NO	62	45	47	63	59

With regard to awareness of women, 38% were given correct answers and 62 % were given the wrong answer to Question16, 55% were given the correct answer and 45 % were given the wrong answer to Question17, 53% were given the correct answer, and 47 % were given the wrong answer of Question18, 37% were given the correct answer and 63 % were given the wrong answer of Question19 and 41% were given the correct answer and 59 % were given the wrong answer of Question 20.



Graph 3: Percentage distribution of overall level of awareness of women regarding infertility.

With regard to the level of awareness of women, 44.80% had a good awareness level and, 55.20% had no awareness regarding infertility.

Section E: Comparison of Level of Knowledge between Educated and Uneducated Women Regarding Infertility

Table 4: Comparison of the level of knowledge between educated and uneducated women

	Educated		Uneducated		Mean Difference	t value (unpaired)
	Mean	S.D	Mean	S.D		
knowledge	23.67	11.16	12.56	7.94	11.11	0.02

When comparing the level of knowledge between educated and uneducated women, the educated mean value was 23.67 with a standard deviation of 11.16. The uneducated mean value was 12.56 with a standard deviation of 7.94. The calculated value was 0.02, which was greater than the table value and this indicated that there was a statistically highly significant difference at the $P < 0.05$ level.

Section F: Comparison of Level of Myths between Educated and Uneducated Women Regarding Infertility

Table 5: Comparison of the level of myths between educated and uneducated women regarding infertility

	Educated		Uneducated		Mean Difference	t value (unpaired)
	Mean	S.D	Mean	S.D		
Myths	25.25	3.1	19.75	5.67	5.5	0.15

When comparing the educated and uneducated levels of myths of women, the educated mean value was 25.25 with a standard deviation of 3.1. The uneducated mean value was 19.75 with a standard deviation of 5.5. The calculated value was 0.15, which was greater than the table value and this indicated that there was a statistically highly significant difference at the $P < 0.05$ level.

Section G: Comparison of Level of Awareness between Educated and Uneducated women regarding Infertility

Table 5: Comparison of the level of awareness between educated and uneducated women regarding infertility

	Educated		Uneducated		Mean Difference	t value (unpaired)
	Mean	S.D	Mean	S.D		
Awareness	28.5	8.85	20.5	3.42	8	0.16

When comparing the educated and uneducated level of awareness of women, the educated mean value was 28.5 with a standard deviation of 8.85. The uneducated mean value was 20.5 with a standard deviation of 3.42. The calculated value was 0.16, which was greater than the table value and this indicated that there was a statistically highly significant difference the $P < 0.05$ level.

Discussion

Infertility is one of the major reproductive health problems among couples, which has a lot of physical, mental, and social consequences. Though various modern treatment modalities are available, lack of fertility awareness and knowledge about infertility and lifestyle modification have an impact on the problem of being childless. These fertility issues pertaining to infertile couples can be preventable by utilizing proper knowledge. Education and awareness should focus on the needs of infertile couples and should improve the level of knowledge and awareness regarding infertility. The research shows that the treatment-seeking behavior of infertile women is affected due to poor education and unfavorable attitude towards fertility issues. Infertile women should be supported by education and should be made aware of the services available in order to enhance fertility and to achieve the goal of parenthood.

The purpose of the study was to assess the knowledge, myths, and awareness of HSG (hysterosalpingography) among women in a cost-effective way.

The major findings of the study revealed that

The mean level of knowledge of women showed that the educated mean value was 23.67 with a standard deviation of 11.16. The uneducated mean value was 12.56 with a standard deviation of 7.94. The calculated ‘t’ value was 0.02, which was greater than the table value and this indicated that there was a statistically highly significant difference at $P < 0.05$ level. The finding revealed that education is a very important key to improving the level of knowledge in women.

The mean level of knowledge of women showed that the educated mean value was 25.25 with a standard deviation of 3.1. The uneducated mean value was 19.75 with a standard deviation of 5.5. The calculated ‘t’ value was 0.15, which was greater than the table value and this indicated that there was a statistically highly significant difference at the $P < 0.05$ level. The finding

revealed that education is very important to improve the level of facts on fertility myths related to infertility.

The mean level of knowledge of women showed that the educated mean value was 28.5 with a standard deviation of 8.85. The uneducated mean value was 20.5 with a standard deviation of 3.42. The calculated 't' value was 0.16, which was greater than the table value and this indicated that there was a statistically highly significant difference at the $P < 0.05$ level. The finding revealed that fertility awareness is associated with time to seek treatment, ethnicity, and level of education among women seeking medical treatment.

Conclusion

The present study assessed the knowledge, myths, and awareness regarding infertility among women. The study findings revealed that there was a significant difference in the level of knowledge and myths of women and concluded that education on infertility was an effective method to improve the knowledge, myths, and awareness of infertile couples.

Recommendations

- 1) From the findings of the study the researcher identified that there was an influence of education in the level of knowledge of women. Hence the investigator recommends compulsory education in the rural areas to improve their health status.
- 2) Educational programs regarding fertility awareness can be implemented in all societies, colleges, and maternity hospitals.

The study recommends the following for future research

- 1) Similar study can be replicated on a larger sample to increase the validity and generalizability of findings.
- 2) A comparative study regarding the

knowledge and attitude of infertile couples between urban and rural communities can be conducted.

- 3) A qualitative approach can be done to explore the lived-in experience of women with permanent childlessness
- 4) A prevalence study on infertility can be conducted in a larger setting.
- 5) A prospective study can be conducted to assess the treatment-seeking behavior of women after the training program on infertility.

Limitations

- 1) Non-availability of women at the same time to conduct the study.
- 2) Studies on the effectiveness of educational programs on infertility were limited.
- 3) Identifying the women with primary infertility was difficult.

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