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Factors associated with depression among infertile women attending at the selected tertiary level hospitals in Bangladesh

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Abstract

Eight to twelve percent of couples who are of reproductive age experience infertility, which is a significant issue in reproductive health globally. Reproductive health is critically dependent on infertility, which has frequently been overlooked in these attempts. Globally, both men and women are impacted by not being able to have children. Discrimination, exclusion, and sadness are all possible outcomes of infertility.

Methods: From February to July of 2024, 320 infertile women who were attending two hospitals-Bangabandhu Sheikh Mujib Medical University and Mohammadpur Fertility Services and Training Centre (MFSTC)-participated in this descriptive cross-sectional study. The data collection tool utilized was a semi-structured questionnaire. A commonly used BDI scale was employed to assess depression in women who were infertile.

Results: The mean age of the study participants was 32.04 (±7.515) years. According to the BDI scale, 9.4% of infertile women had severe depression, 14.4% had moderate depression, 32.8% had mild depression, and 43.4% had no depression. According to the study's findings, women who have been infertile for longer than five years are statistically more likely to experience depression (P-Value<0.05). According to the results of the chi-square test, sociocultural factors such as the pressure from in-laws to have a child, physical abuse suffered by the infertile woman, the death of a significant other, socioeconomic difficulties (difficulty in meeting daily needs), inadequate health care and social support, social withdrawal or experience with social stigma related to infertility, and lack of confidence in treatment success were found to be significantly contributing factors for depression (P-Value<0.05).

Conclusion: These research findings concentrated on the causes of sadness in women experiencing infertility and how to treat their melancholy.

Keywords: Bangladesh, depression, infertility, women, public health

Introduction

About 10% to 15% of couples worldwide struggle with infertility, which is a serious public health concern (J Boivin *et al*., 2007) [28]. The global incidence of infertility varies significantly by country, ranging from 15% to >30% in certain underdeveloped nations 17-28% in developed nations. A global evaluation of infertility from the World Fertility Survey and other estimated comparable rates in other South Asian settings, including Bangladesh (4%), Nepal (6%), Pakistan (5%), and Sri Lanka (4%), was published in 2007 by Kumar D *et al*. 2007 [19].

According to F. Zegers-Hochschild *et al*. (2009) [7], the World Health Organization (WHO) defined infertility as "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse". About 40% of infertile women have primary infertility, which is defined as no prior pregnancy, and approximately 60% of infertile women have secondary infertility, which is defined as a prior pregnancy with any kind of outcome [Marcus *et al*., 2013]. The inability of a sexually active, non-contraceptive-using woman who has given birth before to conceive a child, even after cohabitation and a desire to become pregnant for at least a year, is known as secondary infertility (Mascarenhas MN *et al*., 2012) [13].

Issues that could lead to infertility can affect both men and women. According to prevalence rates, female factors (such as tubal factors and endometriosis) account for 40% of infertility, male factors (such as low sperm count and impotence) account for 40%, and partner interaction accounts for the remaining 20% of infertility. Being infertile is seen as a medical illness that has a substantial effect on one's physical and emotional health as well as one's quality of life. Both men and women find it quite upsetting to be

unable to have children. Patients who are infertile, for instance, feel more anxious, Many writers have emphasized the detrimental effects of infertility and its therapies on depression and stress in their lives (JR Chachamovich *et al*., 2010) [27]. Couples who are childless frequently have severe difficulties, particularly for the women who are typically held responsible for the infertility of the relationship. Infertile women suffer from sexual dysfunction, domestic violence, partner violence, and are frequently forced into divorce because infertility is such a stigmatized condition in some societies.

Both the cause and the effect of infertility are thought to be associated with depression. It is a prevalent health issue among women who are infertile. Women have a lifetime major depression prevalence of between 14% and 21%. Depressed mood, loss of interest or pleasure, low energy, guilt or low self-worth, trouble sleeping or eating, and difficulty concentrating are all signs of depression. It is believed that depression is a significant public health issue linked to infertility, especially in developing nations, where having children is highly valued for sociocultural, religious, and economic reasons. Between 8% to 54% of infertile women have depression. According to projections by the World Health Organization, depression is currently the fourth most common cause of disability globally. By 2020, it is expected to rise to the second position, and by 2030, it will take the top spot. The primary risk factors for depression were age over thirty, the length of infertility, low educational attainment, and a lack of social support.

Research Objectives

General objective

To determine the level of depression and investigate the factors associated with it among infertile women attending at selected tertiary level hospitals in Bangladesh.

Specific objectives

- To determine the sociodemographic information of the participants.
- To measure the level of depression among infertile women.
- To identify the predisposing factors leading to depressive symptoms among women with infertility.
- To explore the association between depression and socio-demographic characteristics.

List of variables

The following variables were used at the time of preparing instruments for data collection:

- **Socio-demographic variables:** Age, educational, occupation, husband's education, husband's profession, monthly family income, current residence, type of family, number of family member, religion.
- **Background characteristics of infertility:** Age at marriage, duration of marriage, type of marriage, duration of infertility, ` menstrual history, Infertility status, history of childbirth/abortion/child death and other complicated pregnancy, causes of infertility, treatment history.
- **Familial and socio-cultural factors for infertile depression:** Family history of depression, medication history, antenatal history, history of physical and mental violence, family support, financial support, social support, role and relationship status.
- **Prevalence of depression:** Used Beck's Depression Inventory.

Methodology

- **Study design:** This research applied descriptive cross-sectional study design to serve different objectives.
- **Study area & period:** This study was conducted in Bangabandhu Sheikh Mujib Medical University and Mohammadpur Fertility Services and Training Centre (MFSTC) this is the tertiary level Hospitals. The study was conducted from February to July, 2024.
- **Study population and sample size:** Participants was the women suffering from infertility both primary and secondary and getting treatment from Bangabandhu Sheikh Mujib Medical University and Mohammadpur Fertility Services and Training Centre (MFSTC).

Sample was calculated by following formula-$N=z^2pq/d^2$

Where,
N=Desired sample size
Z=1.96 (95% confidence interval)
P=(In previous research prevalence of depression among infertile women was 30.32%.) = 0.30 Q=1-P=1-0.30= 0.69
D=5%
So, $N=(1.96)^2$ (0.30 X 0.69)/ $(0.05)^2$
= 319.08

We selected total 320 sample for interview.

Sampling Technique: Data was collected through purposive random sampling technique from selected hospitals in Bangladesh.

Selection Criteria

Inclusion criteria

- Females having an infertility diagnosis.
- Maximum age: 18 to 40 years old.
- Giving permission to take part in the research.
- Able to engage and willing in physical activities.

Exclusion criterion

- Being over 40 years old.
- Not wanting to take part in the study.
- Having been diagnosed with any other mental illness.

Survey Instruments and quality control

- **Consent form:** This form was provided to all study participants and formatted in Bangla.
- **Questionnaire:** Participants' answers to a semi-structured questionnaire were gathered. A variety of questionnaires were pretested to gather input on the questions' appropriateness and applicability.

Data collection methods

Survey data was gathered using a semi-structured interview questionnaire for the in-person interview. Interviewers gave participants a brief explanation of the study's aims prior to beginning data collection so they would be psychologically

prepared for the particular inquiry. Participants signed an informed written consent form prior to the interview, which guaranteed that no personal information about them would be disclosed.

Data processing and Analysis

Every piece of information was double-checked, validated, and revised to remove any mistakes or discrepancies. After that, data were coded and added to a database using SPSS-V26, a statistical program. The focus of the analysis was on the indicators and the goals of the study. Utilizing metrics of central tendency, dispersion, confidence interval, etc., a descriptive analysis of all pertinent variables was conducted. Using the Chi-square test, associations and differences between and within variables were examined. A significance level of $p<0.05$ will be applied to all statistical tests. Furthermore, group differences were examined using the Chi-Square test.

We included women who were infertile in both primary and secondary groups. The primary goal of include these two groups was to investigate if the Beck Depression Inventory might distinguish between women based on the status of their infertility. A modified and verified Persian version of Beck's Depression Inventory was the exam that was administered. The BDI was administered with all 21 items. This scale is a commonly used indicator of depression severity. Every item delineates a distinct behavioral expression of depression. Each item's score can vary from 0, which denotes no depressed symptoms, to 3, which denotes severe depression symptoms. As a result, total scale scores can vary from 0 to 63. Depression that is clinically significant is indicated by a score of 17 or higher. The process of categorizing depression scores includes:

- 0-16 (without depression)
- 17-27 (mild depression)
- 28-34 (moderate depression)
- 35-63 (severe depression)

Findings of the study

Socio-demographic information of the respondents

Table 1 presents sociodemographic data indicating that 39.7% of infertile women were between the ages of 26 and 35, and 21.6% were between the ages of 36 and 40. Their average age, however, was 32.04 (±7.515) years. Among the participants, Muslims made up the majority (82.6%), and 147 (45.9%) were housewives. 38.1% of participants' husbands had completed the SSC-HSC level of schooling; 33.1% had a service holder job; and 31.3% owned a company. Of the participants, 47.2% lived in an urban location, 64.1% belonged to a nuclear family, and 55.0% had fewer than three family members.

Table 1: Distribution of respondents by socio-demographic characteristics (N=320)

Participants' characteristics		Frequency	% Distribution
Age	18-25 years	80	25.0
	26-35 years	127	39.7
	36-40 years	69	21.6
	>40 years	44	13.8
	Mean ± SD	32.04±7.515	
Husbands Education	No education	54	16.9
	Primary	72	22.5
	SSC-HSC	122	38.1
	Graduate and above	72	22.5
Profession	Housewife	147	45.9
	Day labor	30	9.4
	Business	21	6.6
	Service	72	22.5
	others	50	15.6
Husbandprofession	Day labor	48	15.0
	Business	100	31.3
	Service	106	33.1
	Others	66	20.6
Current residence	Urban	151	47.2
	Urban slum	62	19.4
	Suburban	44	13.8
	Rural	63	19.7
Types of family	Nuclear Family	141	64.1
	Joint family	179	35.9
Number of family members	<3 members	176	55.0
	3 and more	144	45.0
Religion	Muslim	149	82.6
	Hindu	65	11.3
	Christian	36	2.3
	Others	70	3.9

Figure 1 shows the members' monthly household income. The participants' monthly family income ranged from 16,000 to 30,000 Taka for the majority (35.9%), from up to 15,000 Taka for 23.8%, and from 31,000 to 40,000 Taka for 22.5%.

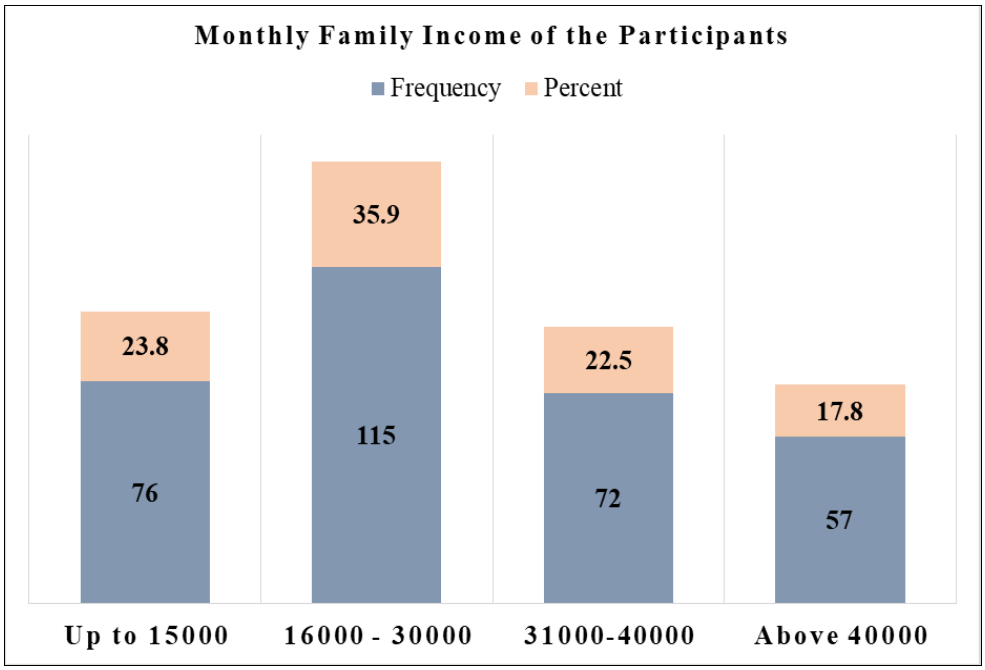


Fig 1: Monthly family income of the participants

Figure 2 displays the infertile women's educational attainment. It is evident that 26.6% of people have completed elementary school, 39.7% have completed SSC-HSC education, and 20.9% have achieved graduation or above.

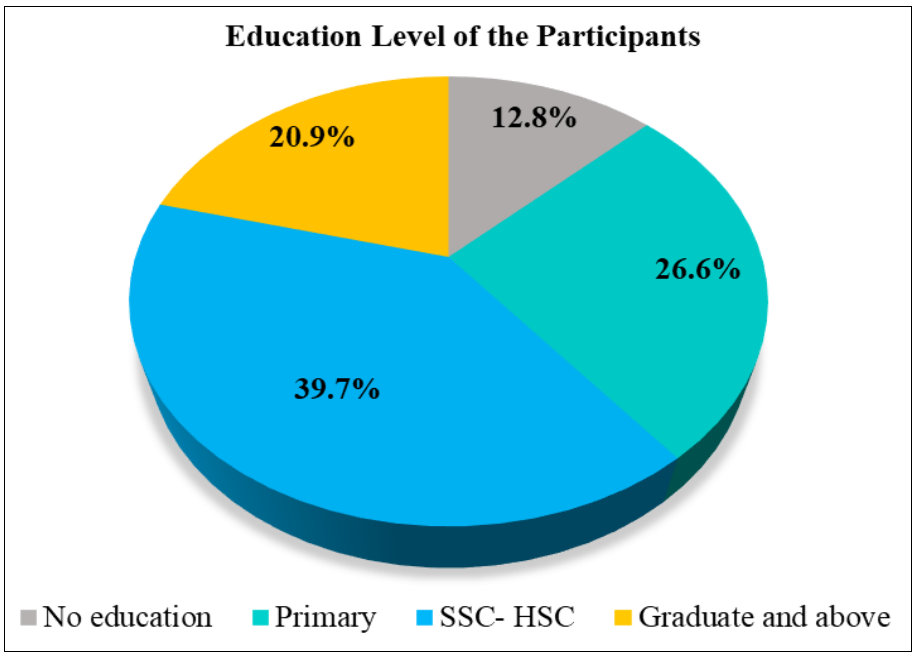


Fig 2: Education level of the participants

Infertility information of the participants

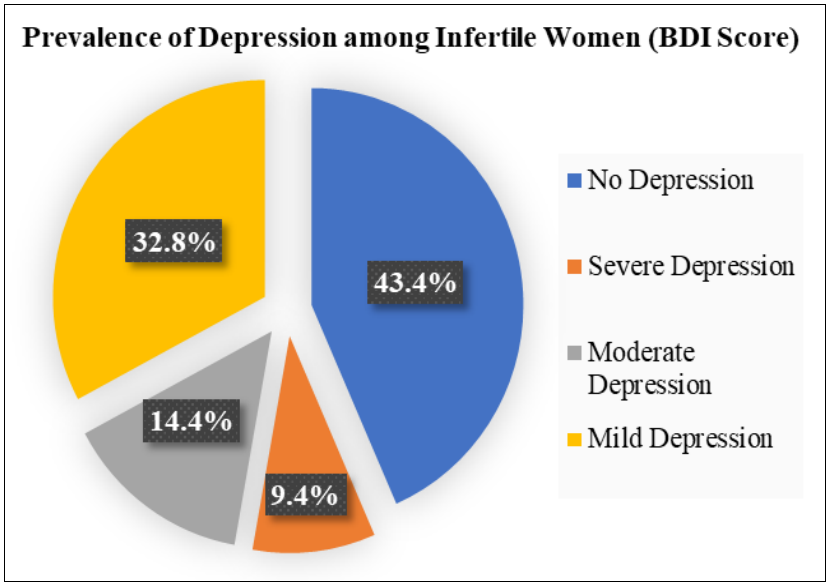
Table 2 provides information about female infertility. Over half (55.0%) of the women were between the ages of 18 and 24 when they got married, and more participants (65.9%) had been married for more than five years, while 83.1% had not been related by marriage. Twenty.6% of the 320 women who were infertile had irregular menstrual cycles. Sixty-four percent of the infertile women had not conceived in five to ten years of the participants, 40.3% had no explanation for their infertility, and only 9.1% of infertile women were enrolled in trials using assisted reproductive technologies.

Table 2: Distribution of respondents by their infertility information (N=320)

Participants' characteristics		Frequency	% Distribution
Age at the time of marriage	18-24 years	176	55.0
	25-30 years	99	30.9
	More than 30 years	45	14.1
Duration of marriage	<5years	109	34.1
	≥ 5 years	211	65.9
Type of marriage	Consanguineous	54	16.9
	Non-consanguineous	266	83.1
Menstrual cycle	Regular	254	79.4
	Irregular	66	20.6
Infertility type	Primary	186	58.1
	Secondary	134	41.9
Duration of infertility in years	<5 years	58	18.1
	5-10 years	206	64.4
	>10 years	56	17.5
History of abortion/stillbirth	Yes	91	28.4
	No	229	71.6
Causes of infertility	Male factor	94	29.4
	Female factor	55	17.2
	Both	42	13.1
	Unexplained	129	40.3
Trails for assisted reproductive technology	Yes	29	9.1
	No	291	90.9

Prevalence of depression among infertile women

A pie chart in Figure 3 represents prevalence of depression among infertile women. It is demonstrated that 9.4% infertile women were severely depressed, 14.4% were moderately depressed, 32.8% were suffering from mild depression and 43.4% had no depression.



* Beck Depression Inventory (BDI)

Fig 3: Prevalence of depression among infertile women

Information regarding association between sociodemographic, familial and sociocultural factors with depression among infertile women

Table 3 illustrates the relationship between depression and sociodemographic traits in infertile women. Infertile women's depression was substantially correlated with their education level and length of marriage (≥ 5 years) (P-Value<0.05). Individuals who have been infertile for more than five years and belong to a joint family were statistically more likely to experience depression (P-Value<0.05). However, it was observed that certain characteristics, such as age, age at marriage, and monthly family income, had no significant relationship with depression in infertile women. Once more, Table 4 lists the different familial and societal factors that influence sadness in women experiencing infertility. To determine the relationship between these variables and infertile women, a chi-square test analysis was performed. Table 3 illustrates how the following factors were found to be significantly contributing factors to depression: infertile women experiencing pressure from their in-laws for a child, experiencing multiple physical abuse, losing a significant other, socioeconomic problems (difficulty meeting daily needs), inadequate health care and social support, experiencing social withdrawal or social

stigma due to infertility, and lack of confidence about treatment success (P-value<0.05). In addition to these, some other factors include a history of depression in the past, threats from the husband regarding a divorce or another marriage, and illnesses of oneself or close ones, Lack of family support and opportunities to learn new treatment-related information and skills were not shown to be statistically significant factors in the participants' depression.

Table 3: Association between sociodemographic factors with depression among infertile women

Risk factors		Depression among infertile women			
		No depression (%)	Depression (%)	x2	P-Value
Age	< 30 years	60(38.5)	96(61.5)	3.068	0.080
	≥ 30 years	79(48.2)	85(51.8)		
Monthly family income	≤ 30,000 taka	79(41.4)	112(58.6)	0.831	0.362
	>30,000 taka	60(46.5)	69(53.5)		
Marriage duration	< 5 years	75(68.8)	34(31.2)	43.305	.000
	≥ 5 years	64(30.3)	147(69.7)		
Age at marriage	18-24 years	56(31.8)	120(68.2)	2.908	.089
	25-30 years	73(73.7)	26(26.3)		
	> 30 years	10(22.2)	35(77.8)		
Duration of infertility	< 5 years	58(100.0)	0(0.0)	92.739	.000
	5-10 years	66(32.0)	140(68.0)		
	≥ 10 years	15(26.8)	41(73.2)		
Level of education	Illiterate	10(24.4)	31(75.6)	42.038	.000
	Primary	41(48.2)	44(51.8)		
	SSC-HSC	77(60.6)	50(39.4)		
	Graduate and above	11(16.4)	56(83.6)		
Type of family	Nuclear family	75(53.2)	66(46.8)	9.761	.002
	Joint family	64(35.8)	115(64.2)		

Table 4: Association between familial and sociocultural factors with depression among infertile women

Risk factors		Depression among infertile women			
		No depression (%)	Depression (%)	x2	P-Value
Family history of depression	Yes	44(37.0)	75(63.0)	3.221	0.073
	No	95(47.3)	106(52.7)		
Previous history of depression	Yes	44(47.3)	49(52.7)	0.801	0.371
	No	95(41.9)	132(58.1)		
In-laws pressure for a child	Yes	44(37.0)	75(63.0)	7.192	0.001
	No	95(52.8)	85(47.2)		
Husband threats for divorce/ another marriage	Yes	65(46.4)	75(53.6)	0.000	0.984
	No	74(46.5)	85(53.5)		
Experience multiple physical violence	Yes	29(32.6)	60(67.4)	9.848	0.002
	No	110(52.4)	100(47.6)		
Death of significant one	Yes	54(41.0)	85(66.0)	8.192	0.004
	No	85(48.8)	75(44.2)		
Sickness of own or significant others	Yes	66(46.8)	75(53.2)	0.011	0.916
	No	73(46.2)	85(53.8)		
Socioeconomic problems (difficulty in meeting daily needs)	Yes	44(32.8)	90(67.2)	18.194	0.000
	No	95(57.6)	70(42.4)		
Lack of family support	Yes	44(49.4)	45(50.6)	0.443	0.506
	No	95(45.2)	115(54.8)		
Inadequate health care and social support	Yes	44(37.0)	75(63.0)	9.392	0.003
	No	95(52.8)	85(47.2)		
Lack of opportunity for acquiring new information & skills about treatment	Yes	59(44.0)	75(56.0)	0.590	0.442
	No	80(48.5)	85(51.5)		
Experience with social stigma or social withdrawal for infertility	Yes	64(37.0)	85(63.0)	11.89	0.002
	No	75(52.8)	75(47.2)		
Lack of confidence about success of treatment	Yes	44(34.1)	85(65.9)	13.978	0.000
	No	95(55.9)	75(44.1)		

Discussion

There are reports that a woman's fertility peaks at thirty years old. The current survey indicates that 21.6% of infertile women were between the ages of 36 and 40, while 39.7% of infertile women were between the ages of 26 and 35. Their average age, however, was 32.04 (±7.515) years. Among the participants, Muslims made up the majority (82.6%), and 147 (45.9%) were housewives. 38.1% of participants' husbands had completed the SSC-HSC level of schooling; 33.1% had a service holder job; and 31.3% owned a company. Of the participants, 47.2% lived in an urban location, 64.1% belonged to a nuclear family, and 55.0% had fewer than three family members. Infertility affects infertile couples in a number of ways, particularly for women. Stress brought on by infertility can result in social anomalies, anxiety, despair, and other mental and physical diseases. Anxiety has been shown in numerous researches to negatively impact fertility. According to Lapane *et al.*, depression is a key factor in the pathophysiology of infertility. Our research supports the high rates of anxiety and sadness reported by infertile women.

Complex psychological issues arise in infertile patients. While nearly 80% of the infertile women in the Nahar P. study said their infertility, experience was unpleasant or extremely stressful, Freeman *et al*. reported that nearly half of the infertile couples considered their infertility to be the most upsetting experience of their life. A multitude of factors, including sociodemographic and other characteristics, impact the psychological well-being of infertile women. According to our research, housewives had higher rates of anxiety disorders at a younger age. The frequency of psychiatric illness was higher in women whose husbands disregarded them. Women suffered more from anxiety and depressive problems as their infertility lengthened. Our findings support the findings of Abedinia *et al*. in that regard, who discovered a statistically significant correlation between the length of infertility and anxiety and depressive disorders.

Age, not having at least one kid, a lack of a supportive relationship with one's spouse, and violence by in-law family members were all associated with poor mental health outcomes. The results of this study, which show a correlation between poor mental health and a lack of support from the husband, corroborate those of Matsubayashi *et al*., who found that stress and anxiety were strongly linked in Japanese women without children.

It is important to note that the stress that infertile women frequently endure can affect how they view their marriage and make it more difficult for them to acquire the assistance they require. The participants' psychiatric illness was substantially correlated with not having at least one kid. Although lack of support from in-laws did not predict any of the study's outcomes, the intrusive character of in-laws in families constitutes powerful causes of psychological morbidity for these women. The correlation between high levels of psychological illness and infertility that we found is consistent with another research.

The discovery that anxiety and sadness affected over half of the women who visited a clinic for infertility treatment has ramifications for both broader societal policy and the psychological support provided to infertile women. Our results underline how important it is for gynecologists and other medical providers to check for psychological discomfort in women receiving reproductive treatment. The inclusion of professionally supervised psychological therapies in the therapy of female infertility could potentially enhance the quality of life for women with fertility issues.

Conclusion

The purpose of this study was to assess the prevalence of depression and look into risk variables among infertile women who were visiting particular tertiary hospitals in Bangladesh. 32.04 (±7.515) years was the participants' mean age. Twenty-six percent of the 320 infertile women had irregular menstrual cycles, and 64.4% of them had not conceived in five to ten years. According to the BDI scale, 9.4% of infertile women had severe depression, 14.4% had moderate depression, 32.8% had mild depression, and 43.4% had no depression. The study's findings indicated that among infertile women, depression was substantially correlated with education level and marriage length of at least five years (P-value<0.05). Individuals who have been infertile for more than five years and are part of a combined family were statistically linked to sadness (P-value<0.05). According to the results of the chi-square test, sociocultural factors such as the pressure from in-laws to have a child, physical abuse suffered by the infertile woman, the death of a significant other, socioeconomic difficulties (difficulty in meeting daily needs), inadequate health care and social support, social withdrawal or experience with social stigma related to infertility, and lack of confidence in treatment success were found to be significantly contributing factors for depression (P-value<0.05). These research findings concentrated on the causes of sadness in women experiencing infertility and how to treat their melancholy.

Recommendations

- To help infertile women feel less stressed, depressed, and anxious, mental health care treatments ought to be included in their treatment plan.
- The government and/or legislators may launch social awareness programs and media engagements to lessen the impact of depression among infertile women and guarantee a higher standard of living.
- Counseling sessions should be made mandatory in every infertility center and hospital for women who are infertile as they become more vocal about their feelings.
- A family-level intervention that provides the infertile women with enough husband intervention is desperately needed.

Conflict of Interest

Not available

Financial Support

Not available

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