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Evaluation of 40 Cases of Sub-Fertile Couples in OPD of Holy Family Red Crescent Medical College and Hospital, Dhaka

Umme Parveen[1*], Shaheen Rahman Choudhury[2]

[1]Assistant Professor, Department of Obstetrics and Gynecology, Holy Family Red Crescent Medical College and Hospital, Dhaka, Bangladesh
[2]Professor, Department of Obstetrics and Gynecology, Holy Family Red Crescent Medical College and Hospital, Dhaka, Bangladesh

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***Corresponding author:** Umme Parveen
Assistant Professor, Department of Obstetrics and Gynecology, Holy Family Red Crescent Medical College and Hospital, Dhaka, Bangladesh

Abstract **Original Research Article**

Background: Subfertility is defined as the inability to conceive after one year of unprotected intercourse,affects about 80 million couples worldwide, male factors contribute to 40-50% of these cases. The condition has a multifactorial pathogenesis affecting sperm function, highlighting the needfor comprehensive diagnostic and treatment strategies. ***Objective:*** The study aimed to understand subfertility causes better through thorough history taking, clinical examination, and necessary investigations, thereby informing improved treatment strategies. ***Method and Materials:*** This descriptive cross-sectional study was conducted on 40 couples seekingtreatment at the OPD, Department of Obstetrics and Gynecology, Holy Family Red Crescent MedicalCollege and Hospital, Dhaka from 1 July 2023 to 31 December 2023. Couples with infertility for over one year whoagreed to participate were included via convenience sampling. Data were collected on socio-demographic factors and certain relevant questions where asked to find the causes of infertility. Female participants underwent pelvic ultrasound, thyroidfunction tests, serum prolactin, and random blood sugar tests for Male. Semen analysis was performed followingWHO 2010 guidelines. The data were analyzed using IBM SPSS Statistics for Windows, version 23. ***Results:*** Among the 40 subfertility patients, the majority (25%) were aged between 26-30 years, with a meanage of 24.21 ± 2.04 years and a mean BMI of 23.08 ± 1.54. The duration of marriage was 5-10 yearsfor 40%, under 5 years for 32.5%, and over 10 years for 27.5%. Subfertility lasted less than 6 years for60% and 6-10 years for 40%. Female factors alone were responsible for 30% of cases, male factors and unexplained causes each accounted for 25%, and combined factors were 20%. Semen analysis showednormal results in 60% of cases, with abnormalities in 40%. Endometriosis and PCOS each affected25%, tubal factors 20%, and hyperprolactinemia and uterine factors 15%. ***Conclusion:*** Subfertility is a significant public health issue in Bangladesh, affecting couples physically,mentally, and socially. To address this challenge, it is essential to enhance the referral system, offer comprehensive fertility education, and implement effective prevention programs.

Keywords: Subfertility, Semen Analysis, Diagnostic Techniques.

INTRODUCTION

Subfertility is clinically defined as the inability to conceive after one year or more of consistent, unprotected sexual activity [1]. Subfertility affects both males and females, and this definition recognizesthat male factors, either their own or in combination with female causes, account for roughly 40% to 50% of all infertility cases [2]. Despite the fact that infertility is a worldwide problem, the exact prevalenceis unknown. In developing nations, its prevalence is more. According to reports from various nations around the world, the range is often between 5% and 30% [3].

Globally, an estimated 60 to 80 million couples are affected by subfertility, as reported by the World Health Organization [4]. A global analysisof infertility from the World Fertility Survey estimated that 4% of couples in Bangladesh are infertile, despite the fact that no accurate national epidemiological study has been performed to determine the prevalence of infertility in Bangladesh [5]. The pathogenesis is multifactorial, and any change in the normal physiology of the reproductive organs may affect sperm functions, causing difficulties with successful fertilization such as oligozoospermia (low sperm count), asthenozoospermia (loss of motility), teratozoospermia (abnormal morphology), and azoospermia (absence of sperm in ejaculation) [6,7].

Male infertility is characterized by one or more anomalies in a semen analysis, accordingto the WHO[8]. The assessment of semen quality stands as a crucial indicator of male reproductive health, playing a vital role in the diagnosis and treatment of male infertility. Advances in diagnostic techniquesand treatments have provided better outcomes for infertile couples, highlighting the importance of timely medical intervention and continuous research in this field [9,10]. Recent studies have emphasized the role of lifestyle factors, environmental exposures, and genetic predispositions in influencing male fertility, necessitating a comprehensive approach to management [11,12].

OBJECTIVES

The objective was to provide a comprehensive evaluation through history taking, clinical examination, and necessary investigations, thereby enhancing the understanding of subfertility causes and giving better treatment approaches.

METHOD AND MATERIALS

Study Design: This descriptive cross-sectional study was conducted to examine the aetiological factors of subfertility in 40 subfertile couples seeking treatment in the OPD, Department of Obstetrics and Gynecology at Holy Family Red Crescent Medical College and Hospital from 1 July 2023 to 31 December 2023.

Inclusion: Sub-fertile couples experiencing infertility for more than one year and willing to participatein the study were included. Convenience sampling was used for selecting participants.

Exclusion: Couples who declined to participate or refused to undergo necessary investigations were excluded from the study.

Data Procedure: Socio-demographic information such as age, ethnicity, address, and occupation, along with probable causes of subfertility, were collected from the couples. Infertility was defined as the inability to conceive after 12 months of regular unprotected intercourse, and the term "subfertility"was preferred to reflect the potential for correction in most cases. After obtaining informed consent, couples were evaluated through history taking, clinical examination, and necessary investigations. Female patients underwent pelvic ultrasound, thyroid function tests, serum prolactin, and random bloodsugar tests during the same visit. Tubal factors were assessed via hysterosalpingography (HSG) on days 7-10 of the menstrual cycle or withdrawal bleeding, and laparoscopy with or without chromotubation was performed in the premenstrual period. Semen analysis was conducted after 2-3 days of sexual abstinence, with results analyzed manually according to WHO 2010 guidelines.

Statistical Data Analysis: Data were analyzed using IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y., USA). Appropriate statistical tools were applied to interpret the data. Categorical variables were described using frequency (percentages), while continuous parameters were expressed as mean ± standard deviation.

Ethical Consideration: Informed consent was obtained from all participating couples before their inclusion in the study. The privacy and confidentiality of all participants were strictly maintained throughout the study. All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional review committee and with the 1964 Helsinkideclaration and its later amendments or comparable ethical standards.

RESULT

Table 1: Demographic Distribution of Patients. (n=40)

	Frequency	Percentages (%)
Age		
21-25	8	20.00
26-30	10	25.00
31-35	7	17.50
36-40	9	22.50
≥41	6	15.00
Mean ± SD	24.21 ± 2.04	
BMI	23.08 ± 1.54	
Occupation		
Business	10	25.00
Worker	8	20.00
Farmer	7	17.50
Service holder	10	25.00
Others	5	12.50

Table 1 presents the demographic distribution of 40 patients, including their age, body mass index (BMI), and occupation. The age distribution shows that the majority of patients (25%) were in the 26- 30 age group, followed by 36-40 (22.5%), 21-25 (20%), 31-35 (17.5%), and ≥41 (15%) age groups. The mean age of the patients was 24.21 ± 2.04 years, and the mean BMI was 23.08 ± 1.54. Regarding occupation, the most common were business and service holder (25% each), followed by worker (20%),farmer (17.5%), and others (12.5%).

Table 2: Duration of marriage life and subfertility among participants (n=40)

	Frequency	Percentages (%)
Duration of Marriage life		
<5y	13	32.50
5-10 yrs	16	40.00
>10 y	11	27.50
Duration of subfertility		
<6y	24	60.00
6-10 yrs	16	40.00

Table 2 represents the duration of marriage life and subfertility among participants in the study on abnormal semen parameters in the context of subfertility. In terms of marriage duration, 40% of participants have been married for 5-10 years, while 32.50% have a marriage duration of less than 5 years and 27.50% more than 10 years. Regarding subfertility duration, the majority 60% report subfertility for less than 6 years, with 40% experiencing subfertility for 6-10 years.

Table 3: Contribution of male & female factor to subfertility (n=40)

Factor	Frequency	Percentages (%)
Male alone	10	25.00%
Female alone	12	30.00%
Combined	8	20.00%
Unexplained	10	25.00%

Table 3 presents the contribution of male and female factors to subfertility among 40 patients. The most prevalent factor is female alone, accounting for 30% of cases. Male alone and unexplained factors eachcontribute to 25% of the subfertility cases. Combined male and female factors account for the remaining20% of cases.

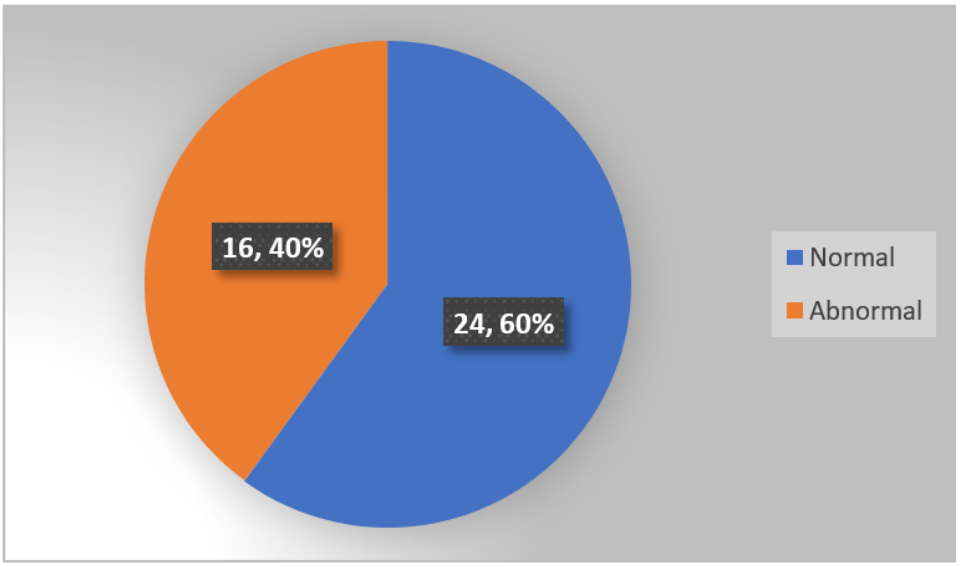

Figure 1: Seman analysis result

The analysis reveals that 60% (24 patients) have normal semen parameters, while 40% (16 patients) exhibit abnormal semen parameters.

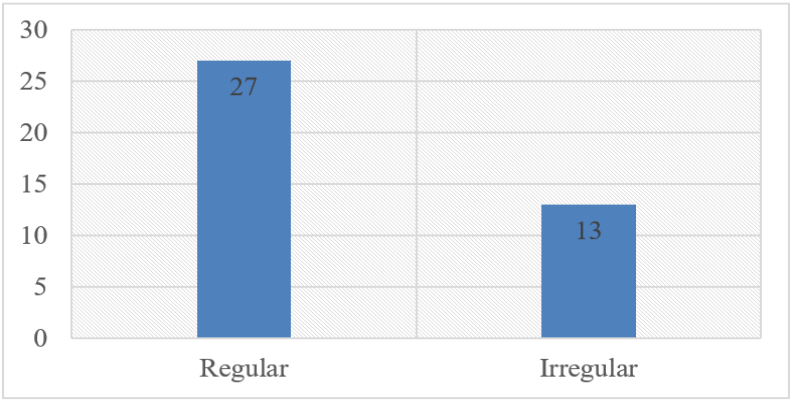

Figure 2: Menstrual Cycle Regularity

Figure 2 shows the distribution of menstrual cycle regularity among the study participants. The majority of the participants, 67.5% (27 individuals), reported having a regular menstrual cycle, while 32.5% (13 individuals) experienced irregular menstrual cycles.

Table 4: Abnormality contributing to female factor subfertility. (n=40)

Causes	Frequency	Percentages (%)
Endometriosis	10	25.00%
Hyperprolactinemia	6	15.00%
Tubal factor	8	20.00%
PCOS	10	25.00%
Uterine factor	6	15.00%

Table 4 details the various abnormalities contributing to female factor subfertility in a cohort of 40 patients. Endometriosis and PCOS are the leading causes, each affecting 25% of the patients. Tubal factors account for 20% of the cases, while hyperprolactinemia and uterine factors each contribute to 15%.

Table 5: Incidence of Dysmenorrhea in the Study Population (n=40)

	Frequency	Percentages (%)
Present	12	30.00
Absent	28	70.00

Table 5 shows the incidence of dysmenorrhea among the study population. Out of the total participants, 30% (12 individuals) reported experiencing dysmenorrhea, while the remaining 70% (28 individuals) did not report any dysmenorrhea symptoms.

Table 6: Incidence of Dyspareunia (n=40)

	Frequency	Percentages (%)
Present	9	22.5
Absent	31	77.5

Table 6 provides information on the occurrence of dyspareunia within the study population. It shows that 22.5% (9 individuals) of the participants reported experiencing dyspareunia, while 77.5% (31 individuals) did not report this condition.

Table 7: Hormone Levels in Female Patients

	FSH	LH	PROLAC	TSH
Female Hormone	9.23	5.69	18.56	2.98
	10.34	6.12	15.23	1.67
	8.67	7.43	20.12	1.99

Table 7 presents the hormone levels of female patients. The table includes measurements for four hormones: FSH, LH, Prolactin, and TSH. For female patients, FSH levels range from 8.67 to 10.34, LH levels range from 5.69to 7.43, Prolactin levels range from 15.23 to 20.12, and TSH levels range from 1.67 to 2.98.

DISCUSSION

This study was undertaken to discern diverse sperm abnormalities observed in couples actively pursuing infertility treatment. Furthermore, the investigation sought to establish whether occupational factors exert influence on sperm parameters. Sperm quality, as evaluated during semen analysis, relies on parameters such as count, motility, and morphology. Infertility has long been a subject of debate and females have always had to bear the brunt of the socio-cultural connotations of this multifaceted issue [13,14]. In our study, the age distribution shows that the majority of patients (25%) were in the26-30 age group, followed by 36-40 (22.5%), 21-25 (20%), 31-35 (17.5%), and ≥41 (15%) age groups. The mean age of the patients was 24.21 ± 2.04 years, and the mean BMI was 23.08 ± 1.54. This parallels a study conducted in 2012, which documented the prevalence of male infertility at 62% [15]. Also our study shows, the most prevalent factor in female alone, accounting for 30%of cases. Male alone and unexplained factors each contribute to 25% of the subfertility cases.

Combinedmale and female factors account for the remaining 20% of the cases. Other study shows, determining the prevalence of male infertility is challenging, primarily attributed to the influence of a patriarchal society, where the responsibility for infertility is often disproportionately placed on the female partner [16]. In our study shows the incidence of dysmenorrhea among the study population. Out of the total participants, 30% (12 individuals) reported experiencing dysmenorrhea, while the remaining 70% (28 individuals) did not report any dysmenorrhea symptoms. Factors contributing to male infertility encompass both biological elements, such as testicular failure, cryptorchidism, and genetic issues, as well as social factors like contraceptive usage, stress, and the age at which marriage occurs [17].

Our study shows, In terms of marriage duration, 40% of participants havebeen married for 5-10 years, while 32.50% have a marriage duration of less than 5 years and 27.50% more than 10 years. Regarding subfertility duration, the majority 60% report subfertility for less than 6years, with 40% experiencing subfertility for 6-10 years. Our study shows, Endometriosis and PCOSare the leading causes. Tubal factors account for 20% of the cases, while hyperprolactinemia and uterine factors each contribute to 15% also shows, For female patients, FSH levels range from 8.67 to 10.34, LH levels range from 5.69 to 7.43, Prolactin levels range from 15.23 to 20.12, and TSH levels range from 1.67 to 2.98. Also our study shows dyspareunia within the study population. It shows that 22.5% (9 individuals) of the participants reported experiencing dyspareunia, while 77.5% (31 individuals) did not report this condition. In another study shows, the prevalence of azoospermia in their study population was 10.70%, oligozoospermia 34.14%, asthenozoospemia 14.2%, and of asthenoteratozoospermia 1.39% respectively [15].

This results are comparable to the study which reported the occurrence of azoospermia at 14.28% and that of oligozoospermia at 21.43% [16]. In another study, the incidence rate ofazoospermia was 16% [17]. Also in a study oligospermia is 60.9% azoospermia in 9% and asthenospermia and teratospermia in 17.4% and 8.7% cases respectively [18]. Another study showed that sperm disturbance such as oligospermia and asthenospermia and teratospermia was responsible in 40.3% cases [19]. In a study done in Srilanka, it was found to have abnormality in sexual function in 10% cases and the most common causes were irregular and infrequent coitus [20].

CONCLUSION

As a developing country, Bangladesh faces a significant public health challenge with subfertility, whichleads to various physical, mental, and social issues among couples. There is a pressing need to enhancethe referral system, provide comprehensive fertility health education, and implement effective subfertility prevention programs.

Limitations of the study: The study was limited by its small sample size of 40 infertile couples, whichmay not be representative of the overall population. Further research with larger, more diverse samples and longitudinal designs would be necessary to provide a more comprehensive understanding of the aetiological factors contributing to subfertility in the Bangladeshi context.

Conflict of interest: None

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