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Determinants of Male Infertility among Married Couples in a Tertiary Hospital in Bangladesh

Shaheen Ara Anwary*[1], Md. Alfazzaman[2], Zeenat Mahzabin[3], Munshi Akid Mostofa[4], Amirun Nahar[5]

Abstract:

Introduction: *Infertility may be defined as a lack of conception after 1 – 2 years of unprotected coitus. In a normal population approximately 60 % of couples will achieve pregnancy within 6 months, 80 % by 12 months, and 90 % by 18 months leaving approximately 10 % of couples arbitrarily classified as infertile. A general classification of causes of infertility are male 35 – 40 %, female 40 – 50 %, sexual 10 % and unknown 10 %.* ***Objective:*** *To see the determinants of male infertility among the infertile couples who attending the outpatient department of infertility unit of the department of obstetrics and gynaecology of Bangabandhu Shiekh Mujib Medical University, Shahbag, Dhaka.* ***Materials and Methods:*** *This prospective observational study was conducted in the Infertility unit, Department of Obstetrics and Gynaecology, Bangabandhu Shiekh Mujib Medical University (BSMMU), Dhaka, during the period from 31.10.2016 to 21.03.2018. 500 infertile male patients were recruited from the out-patient department of infertility unit who came to take treatment for their infertility problem. They were analyzed by data collection sheet and the results were plotted in the table.* ***Result:*** *The socio-demographic characteristics of the study subjects (n = 500).Husbands age group was 22 -55in years, Mean ± SD (34.0 ± 5.9). Educational level of male partners was, no education = 5 (1.0%), primary = 27 (5.4%), secondary = 152 (30.4%), graduate = 148 (29.6%), postgraduate = 74 (14.8%), 0thers = 94 (18.8%). Occupation of male partners was, unemployed = 6 (1.2%), service = 356 (71.2%), business = 138 (27.6%). Diabetes: In male = 28 (5.6%).Mumps: In male = 7 (1.4%). Chicken pox: In male = 18 (3.6%). Hypertension: In male = 10 (2.0%). Orchitis: In male = 6 (1.2%). Personal history of husband: Smoking = 129 (25.8%). In male patients, Testosterone level normal (10 – 30 nmol/L) in 133 (26.6%) patients and above normal (>30 nmol/L) in 367 (73.4%) patients. The semen analysis of the husbands of the infertile female patients.In quality of semen poor (<4%) in 305 (61%) patients. Regarding semen quality, oligospermia (<15 million/ml) was in 480 (96%) patients and azospermia (0% count) in 20 (4%) patients. In case of motility of sperms, rapid linear below normal (<50%) was in 90 (18%). In case of slow linear (SL), below normal (<15%) in 324 (64.8%) patients. In case of morphology of sperms, below normal (<14million/ml) in 25 (5%) patients.*

Conclusion: *This study shows a significant percentage of male are suffering from infertility. There is considerable association of determinants of infertility among the male partners.*

Keywords: *Male Infertility, Determinants, Semen abnormality.*

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***1. Corresponding Author:**
Dr. Shaheen Ara Anwary
Assistant Professor
Infertility Unit
Department of Obstetrics and Gynaecology
Bangabandhu Sheikh Mujib Medical University (BSMMU)
Shahbag, Dhaka, Bangladesh.
E- mail: drshaheenara1965@gmail.com
Phone: 01718271719, 01715043612.

2. Dr. Md. Alfazzaman
Associate Professor
Department of Surgery
MH Samorita Medical College and Hospital, Dhaka, Bangladesh.

3. Dr. Zeenat Mahzabin
Resident
MS Surgical Oncology Course
National Institute of Cancer Research and Hospital, Dhaka, Bangladesh.

4. Dr. Munshi Akid Mostofa
Assistant Registrar
Department of Oncourology
National Institute of Cancer Research and Hospital, Dhaka, Bangladesh.

5. Dr. Amirun Nahar
Lecturer
Department of Pharmacology and Therapeutics
ZH Sikder Women's Medical College and Hospital, Dhaka, Bangladesh.

Introduction:

Infertility is defined as the inability to conceive at least 1 year after regular and unprotected sexual intercourse [1,2]. The prevalence of infertility differs from one country to another[2,3,4]. This is reported to range from 5 to 30% in various countries[4]. As estimated by the World Health Organization (WHO), 60–80 million couples are currently suffering from infertility[5]. Infertility affects approximately 15 % of couples. Roughly 40 % of cases involve a male contribution or factor, 40 % involve a female factor, and the remainder involves both sexes[6]. Infertility may be primary or

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secondary. Primary infertility means if the couple has never conceived despite unprotected coitus for two years. Secondary infertility means if the couple fails to conceive following a previous pregnancy, despite unprotective coitus in the absence of contraception, breastfeeding or postpartum amenorrhoea for a period of two years. Other determinants of indirect causal factors of infertility include anaemia, malnutrition, poverty and tuberculosis. Reproductive health problems like sexually transmitted diseases (STD), urinary tract infections (UTI), reproductive tract infections (RTI), unhygienic delivery, postpartum infection and unsafe obstetric and abortion procedures are linked to sepsis and pelvic infections, which can cause infertility[7].

Infertility among the married couples of reproductive ages is an emerging problem in Bangladesh. The effects of infertility for couples who are unable to conceive can be devastating in our society and can cause anxiety, depression and psychological stress. Male infertility accounts for another third of the infertility cases. Factors relating to the male infertility are: (a) Pretesticular causes (i) Endocrine problems, i.e. diabetes mellitus, thyroid disorders; (ii) Hypothalamic disorders, i.e. Kallmann syndrome, Hyperprolactinaemia; (iii) Hypopituitarism; (iv) Hypogonadism due to various causes; (v) Psychological factors; (v) Drugs, alcohol. (b) Testicular factors (i) Genetic defects on the chromosome Y and chromosome microdeletions; (ii) Abnormal set of chromosomes, i.e. Klinefelter syndrome; (iii) Neoplasm, i.e. Semiformal; (iv) Idiopathic failure; (v) Cryptorchidism; (vi) Varicocele; (vii) Trauma; (viii) Hydrocele; (ix) Mumps; (x) Testicular dysgenesis syndrome. (c) Post testicular causes (i)Vas deferens obstruction; (ii) Infection, i.e. prostitutes; (iii) Retrograde ejaculation; (iv) Hypospadius; (v) Impotence[8-11]. Some causes male infertility can be determined by analysis of the ejaculate, which contains the sperm. The analysis includes counting the number of sperms and measuring their motility under a microscope: (a) producing few sperm, oligospermia, Or no sperm, azoospermia, and (b) a sample of sperm that is normal in number but shows poor motility, or asthenozoospermia[12]. Smoking has well-known adverse impact on pregnancy outcome, and evidence strongly suggests that fertility is lower in both men and women who smoke. An active approach to prevention of infertility is justified, discouraging smoking and helping those who smoke to quit[11]. Radiant heat or heavy metal exposure in men causes semen abnormalities. Exposure to herbicides or fungicides in women has been associated with decreased fertility[12]. This study therefore, aims to assess the determinants of infertility in male partners of married couples of reproductive age and create awareness about the infertility problems.

Materials and Methods:

This study was the prospective observational study which was conducted in the Infertility unit, Department of Obstetrics and Gynaecology, Bangabandhu Shiekh Mujib Medical University (BSMMU), Dhaka, during the period from 31.10.2016 to 21.03.2018 Bangabandhu Shiekh Mujib Medical University (BSMMU), is a tertiary hospital, where patients of infertility come from different parts of the country, and most modern treatment and management are given for the infertile couples. 500 infertile couples were recruited from the out-patient department of infertility unit who came to take treatment for their infertility problem either primary or secondary. All the study subjects were informed about the study. Ethical clearance was achieved from the Infertility unit, Department of Obstetrics and Gynaecology, Bangabandhu Shiekh Mujib Medical University (BSMMU). 500 female partners were analyzed by data collection sheet and the results were plotted in the table. After collecting the data, it was analyzed by appropriate statistical methods using Statistical package for Social Sciences (SPSS) software programme.

Results

Table I: Socio-demographic characteristics of the study subjects (n=500)

Socio-demographic characteristics	No of patients	Percentage (%)
Age of the participants		
18-20	32	6.4
21-25	198	39-6
26-30	152	30.4
31-35	83	16.6
36-40	31	6.2
41-45	4	.8
Mean±SD (range: min-max)	27.1±5.2 (18 – 44 years)	
Range		
Husband's age group (in years)		
21-25	14	2.8
26-30	166	33.2
31-35	160	32.0
36-40	103	20.2
41-45	42	8.4
46-50	10	2.0
51-55	5	1.0
Mean±SD (range: min-max)	34.0±5.9 (22 – 55) years	
Range		
Educational level of female partner		
Not education	8	1.6
Primary	49	9.8
Secondary	247	49.4
Graduate	87	17.4
Postgraduate	54	10.8
Other	55	11.0
Educational level of female partner		
Not education	5	1.0
Primary	27	5.4
Secondary	152	30.4
Graduate	148	29.6
Postgraduate	74	14.8
Other	94	18.8

Socio-demographic characteristics	No of patients	Percentage (%)
Occupation of female partner		
Housewife	395	79.0
Service	103	20.6
Business	2	.4
Occupation of male partner		
Unemployed	6	1.2
Service	356	71.2
Business	138	27.6

Table I shows the socio-demographic characteristics of the study subjects (n = 500). Husbands age group was 22 -55 in years, Mean ± SD (34.0 ± 5.9). Educational level of male partners was, no education = 5 (1.0%), primary = 27 (5.4%), secondary = 152 (30.4%), graduate = 148 (29.6%), postgraduate = 74 (14.8%), 0thers = 94 (18.8%). Occupation of male partners was, unemployed = 6 (1.2%), service = 356 (71.2%), business = 138 (27.6%). Regarding religion, Muslims were 476 (95.2%), others were 24 (4.8%). Monthly income of the infertile couple were in taka, < 10000 = 52 (10.4%), 10000 – 20000 = 188 (37.6%), 20000 – 40000 = 212 (42.4%), > 40000 = 48 (9.6%). Area of residence: urban 176 (35.2%), rural = 310 (62.0%), slum = 14 (2.8%).

Table-II: Type of infertility of the study subjects (n=500).

Type of infertility		
Primary	299	59.8
Secondary	201	40.2
Total	500	100.0

Table II shows the type of infertility of the study subjects (n = 500): Primary infertility = 299 (59.8%), secondary infertility = 201 (40.2%).

Table-III: Duration of marital life of the infertile couples (n=500)

Duration of marital life (years)	No of patients	Percentage (%)
<5	225	45.0
5-10	164	32.8
10-15	77	15.4
15-20	31	6.2
>20	3	.6
Total	**500**	**100.0**

Table III shows the duration of marital life (in years) of the infertile couples: < 5 years = 225 (45.0%), 5 – 10 years = 164 (32.8%), 10 – 15 years = 77 (15.4%), 15 – 20 years = 31 (6.2%), > 20 years = 3 (0.6%).

Table-IV: Medical history of the couple (n=500)

Medical history of couple	Female partner No. (%)	Male partner No. (%)
Diabetes	18 (3.6%)	28(5.6%)
Mumps	1(0.2%)	7(1.4%)
Chicken pox	35(7.0%)	18(3.6%)
Hypertension	12(2.4%)	10(2.0%)
Chemotherapy	0(0.0%)	1(0.2%)
Tuberculosis	2(0.4%)	3(0.6%)
Hypothyroidism	38(7.6%)	3(0.6%)
Allergy	5(1.0%)	1(0.2%)
Radiation	0(0.0%)	1(0.2%)
Orchitis	0(0.0%)	6(1.2%)

Table IV shows the medical history of the couple (n = 500). Diabetes: In male = 28 (5.6%).Mumps: In male = 7 (1.4%). Chicken pox: In male = 18 (3.6%). Hypertension: In male = 10 (2.0%). Tuberculosis: In male = 3 (0.6%). Orchitis: In female = 0 (0.0%), in male = 6 (1.2%). In male patients, Testosterone level normal (10 – 30 nmol/L) in 133 (26.6%) patients and above normal (>30 nmol/L) in 367 (73.4%) patients.

Table- V: Semen analysis of husbands (n=500)

Semen analysis (husbands)	No of patients	Percentage (%)
Semen type		
Intermediate (4-14%)	195	39.0
Poor (<4%)	305	61.0
Semen count		
Normal (15-20)	96	19.2
Above normal (>20)	404	80.8
Semen analysis		
Oligospermia (<15 million/ml)	480	96.0
Azoospermia (0%)	20	4.0
Rapid linear (RL)		
Normal (50- 60)	408	81.6
Above normal (>60)	2	.4
Below normal (<50)	90	18.0
Slow liner (SL)		
Normal (15-20)	125	25.0
Above normal (>20)	51	10.2
Below normal (<15)	324	64.8
Non propagative (Np)		
Normal (0-10)	439	87.8
Above normal (>10)	61	12.2
Morphology		
Normal (14-50)	72	14.4
Above normal (>50)	403	80.6
Below normal (<14)	25	5.0

Table V shows the semen analysis of the husbands of the infertile female patients. In quality, semen type was intermediate (4-14%) in 195 (39%) patients and poor (<4%) in 305 (61%) patients. Regarding semen count, normal (15-20 million/ml) was in 96 (19.2%) patients and above normal (>20 million/ml) was in 404 (80.8%) patients. Regarding semen quality, oligospermia (<15 million/ml) was in 480 (96%) patients and azospermia (0% count) in 20 (4%) patients. In case of motility of sperms, rapid linear (RL), normal (50-60%) in 408 (81.6%) patients, above normal (>60%) was in 2 (0.4%) patients and below normal (<50%) was in 90 (18%). In case of slow linear (SL), normal (15-20%) in 125 (25%) patients, above normal (>20%) was in 51 (10.2%) patients and below normal (<15%) in 324 (64.8%) patients. Regarding non propagative (NP), normal (0-10%) in 439 (87.8%) patients and above normal (>10%) was in 61 (12.2%) patients. In case of morphology of sperms, normal (14-50 million/ml) in 72 (14.4%) patients, above normal (>50 million/ml) in 403 (80.6%) patients and below normal (<14million/ml) in 25 (5%) patients.

Discussion:

Our study attempted to assess the determinants of male infertility among the married couples who were attending

the infertility outpatient department of Bangabandhu Shiekh Mujib Medical University, shahbag, Dhaka. Socio-demographic characteristics of the married couples attending the infertility outpatient department are one of the determinants affecting fertility. Rural residents 310 (62%) are more sufferer of infertility than urban 176 (35.2%) ones. Among the determinants of male infertility are: age, smoking, obesity, alcohol and caffeinated beverages consumption, stress, electronic devices, scrotal temperature, some drugs. Our findings of male infertility corresponds with the findings of Mahat et al.[8]. Besides, some structural factors of male genital tract, like varicocele, endocrine disorders, male reproductive tract infection, ejaculatory disorders, immunological factors, genetic and chromosomal defects also cause male infertility. One of the main causes of male infertility is semen quality. In our study, semen analysis shows normozospermia and oligospermia together 96% and azoospermia 4%, motility 81.6%, which corresponds to the study of Nigeria[9]. Bhattacharya et al., 2009; also shows the male factors of infertility which also corresponds to our study results[10]. One study conducted by Farhi and Ben-Haroush et al.,2011; also shows the similar results of male infertility like ours one[11]. Seminal fluid abnormalities among male partners of infertile couples in this study correspond to the study of male partners of Owolabi et al. 2013. Ile-Ife, Nijeria[12].

Conclusion:

In our study we have found a significant percentage of male are suffering from infertility, both primary and secondary. Male partners of the couples shows the major determinants of infertility are partly hormonal, structural abnormalities of male genitalia, infection of genital tract, abnormal sperms in the semen and partly psychological. These causes or determinants of infertility of male partners can be overcome by treatment and counseling which are available in this tertiary hospital.

Conflict of Interest: None.

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References:

1. El Kissi Y, Romdhane AB, Hidar S, Bannour S, Ayoubi Idrissi K, Khairi H, et al. General psychopathology, anxiety, depression and self-esteem in couples undergoing infertility treatment: A comparative study between men and women. Eur J Obstet Gynecol Reprod Biol. 2013;167:185-9. (PubMed) (Google Scholar) https://doi.org/10.1016/j.ejogrb.2012.12.014 PMid:23298895

2. Benyamini Y, Gozlan M, Kokia E. Variability in the difficulties experienced by women undergoing infertility treatments. Fertil Steril. 2005;83:275-83. (PubMed) (Google Scholar]) https://doi.org/10.1016/j.fertnstert.2004.10.014 PMid:15705363

3. Behboodi-Moghadam Z, Salsali M, Eftekhar-Ardabily H, Vaismoradi M, Ramezanzadeh F. Experiences of infertility through the lens of Iranian infertile women: A qualitative study. Jpn J Nurs Sci. 2012;10:41-6. (PubMed) (Google Scholar) https://doi.org/10.1111/j.1742-7924.2012.00208.x PMid:23735088

4. Baghiani Moghadam MH, Aminian AM, Abdoli AM, Seighal N, Falahzadeh H, et al. Evaluation of the general health of the infertile couples. Iran J Reprod Med. 2011;9:309-14. (PMC free article) (PubMed) (Google Scholar)

5. Dillu R, Sheoran P, Sarin J. An exploratory study to assess the quality of life of infertile couples at selected infertility clinics in Haryana. IOSR J Nurs Health Sci. 2013;2:45-51. (Google Scholar)

6. Wikipedia. Infertility. August, 2006. Retrieved from: http//en.wikipedia.orh/wiki/infertility.

7. Nahar P. Invisible women in Bangladesh: Stakeholders' views on infertility services (Monograph). 2012; 30 - 37.

8. Mahat et al. Risk Factors and Causes of Male Infertility - A Review; Mahat et al., Biochem Anal Biochem. 2016, vol.5,Issue 2, pages 1 - 5. https://doi.org/10.4172/2161-1009.1000271

9. Lukman et al. Determinants of infertility in male partners of infertile couples at a public health facility in Ilorin. Nigeria. J Med Soc. 2016; 30; 153 - 157. https://doi.org/10.4103/0972-4958.191180

10. Bhattacharya et al.. The epidemiology of infertility in the North East of Scotland, Hum. Reprod. 2009; 24: 3096 - 3107. https://doi.org/10.1093/humrep/dep287 PMid:19684046

11.Farhi, J., Ben-Harosh, A. Distribution of causes of Infertility in Patients attending Primary Fertility Clinics in Israel. Isr.Med. Asso. J. 2011; issu:13, pp. 51-54.

12.Owolabi et al. Semen quality if male partners of infertile couples in Ili-Ifi, Nigeria. Niger J Clin Pract. 2013; vol. 16, p: 37 - 40. https://doi.org/10.4103/1119-3077.106729 PMid:23377467