

# Semen Pattern of Infertile - Male Partners Attending for Infertility Treatment, Sylhet, Bangladesh

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### Abstracts

**Background:** Infertility has major public health, economic, and psychosocial consequences, affecting approximately 15% - 20% of couples of reproductive ages. Male infertility can be caused by low sperm production, abnormal sperm function or blockages that prevent the delivery of sperm. Illness, injuries, chronic health problems, life style may contribute to male infertility.

**Objective:** the aim of the study was to find the semen profile of infertile couples who attended the OPD of a tertiary hospital in Sylhet city.

**Methodology:** This prospective longitudinal study was carried out in OPD of SOMCH, from June 2004 to December 2004. The study population was included with the criteria of the 100 male partners of the infertile couples who had tried for at least one year. The Exclusion criteria were men who had undergone a vasectomy.

Each of the male partner of the infertile couples were provided-with detailed instructions regarding the method of collection of the semen. After three days of abstinence, the subjects were instructed to collect semen by masturbation in a clean, dry, wide-mouthed container provided by the laboratory. In most of the cases, semen was collected in the semen collection room within the premises of the laboratory, but those were unable to produce semen by masturbation were advised to bring the specimen to the laboratory as soon as possible after collection by coitusinterruptus. It was strictly suggested that the semen was to be brought within 2 hours at the test, sample which was brought after 2 hours was rejected. The sperm concentration was estimated by using the Makler counting chamber. Sperm morphology was assessed under light microscope by making a semen smear. The semen parameters were interpreted as normal or abnormal according to WHO (1999) semen analysis reference values. In patients with absence of sperm, semen analysis was repeated three times at four weeks interval before declaring azoospermia. Those patients with azoospermia and oligospermia also had a hormonal assay.

**Result:** In this study, most (87%) of the semen specimens were between 2-3ml. In this study, 66% of the semen samples had a sperm count of more than 20 million/ml, 20% had 6-20 million/ml, 5% had < 5 million/ml & 9% had no sperm in their semen specimen (azoospermia). Out of 100 cases, 66% of semen specimens showed normal sperm concentration (>20 million/ml). 34% showed low or no sperm concentration. Statistically, the proportion is highly significant ( $P < 0.001$ ). In this study, the majority (74%) of male partners had pus cell in their semen specimen. In this study, most of the semen specimens (96%) liquefied within 30 minutes and 95% cases, pH of the semen specimen was between 7.2-7.4. In this study, out of 100 sample, sperm concentrations were found 0 in 9 samples (9%). Out of this 91 samples, 20.86% had 10-50% actively motile sperm, 2.18% had <10% motile sperm in their semen specimen. Out of 91 samples 21(23.04%) showed low sperm motility. The proportion is highly significant ( $P < 0.005$ ). 2.18% semen specimen had <10% normal sperm morphology. The distribution of male partners according to normal sperm morphology & their sperm count is highly significant ( $P \text{ value} < 0.001$ )

**Conclusion:** In conclusion, azoospermia and asthenozoospermia and infection in semen are found to be important factors associated with male infertility in our country

**Keywords:** Infertility, Semen profile. Semen concentration. Sperm morphology, azoospermia, and asthenozoospermia

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## INTRODUCTION

A male-related factor is solely responsible in about 15% - 20% of cases of infertility and is a contributory factor in another 30%–40%<sup>1</sup>. Infertility evaluation plays a major role in identifying the underlying cause, and directing treatment of reversible conditions to allow natural conception<sup>2</sup>. The current basis for - the diagnosis of male infertility, in men who have erections and who can ejaculate, is semen analysis<sup>3</sup>. In a study carried out by Omoriah<sup>4</sup> on male partner of infertile couple in Nigeria in 1985, 74% of these men were normozoospermic, while 6.19%, 5.57 & 4.09 % were azoospermic, necrozoospermic & asthenozoospermic, respectively. Another study by Thonneau in France in 1991, oligoteratoasthenozoospermia was found in 21%, asthenozoospermia in 17%, teratozoospermia in 10% & azoospermia in 9% of cases<sup>5</sup>. Study in infertility is getting importance day by day. Now more couples are seeking services as there are increased awareness of the available services & options for resolving infertility today. But any infertility workup is incomplete without evaluating the male partner. Semen analysis is a relatively inexpensive and simple laboratory test, and can provide valuable information regarding male fertility status if correctly performed<sup>6</sup>. Besides that, the introduction of new assisted reproductive techniques has moved. The interest of many infertility clinics from the man as a whole to his semen and its usefulness for assisted fertilization.

Therefore, the aims and objectives of this study were to find out the semen profile of male partners in infertile couples who attend infertility clinics and to get some baseline data from which it would be possible to find out the probable factors associated with male infertility in the Sylhet region.

## METHODS

### Study Settings and Population:

This prospective longitudinal study was carried out in OPD of SOMCH from June 2004 to December 2004. All data were collected in the performed questionnaire. Male partners of the 100 infertile couples attending the above-mentioned places at Sylhet. The study population was included with the criteria of the male partners of the infertile couples who had tried for at least one year. The Exclusion criteria were men who had undergone a vasectomy and also who had the

history of hernia operation, radiation, chemotherapy where evaluated.

**Study Procedure:** Each of the male partner of the infertile couples were provided-with *detailed* instructions regarding the method of collection of the semen. The subjects were instructed to collect semen by masturbation, in a clean dry wide mouthed container provided by the laboratory, after three days of abstinence. In most of the cases, semen was collected in the semen collection room within the premises of the laboratory, but those were unable to produce semen by masturbation were advised to bring the specimen to the laboratory as soon as possible after collection by coitusinterruptus. It was strictly suggested that the semen was to be brought within 2 hours at the test, sample which was brought after 2 hours was rejected. The sperm concentration was estimated by using the Makler counting chamber. Sperm morphology was assessed under light microscope by making a semen smear. The semen parameters were interpreted as normal or abnormal according to WHO (1999) semen analysis reference values.

In patients with absence of sperm, semen analysis was repeated three times at four weeks interval before declaring azoospermia. Those patients with azoospermia and oligospermia also had a hormonal assay. The assay included estimation of FSH, LH, TSH, prolactin and testosterone in the serum of the male partners.

**Statistical Analysis:** Data collected for each individual subject were compiled and analyzed using computer-based software, statistical package for social science (SPSS) for Windows. A, P value <0,05 was considered a minimum level of significance.

## RESULTS

This study was done to determine male infertility in infertile couples coming for treatment. It was a prospective longitudinal study where the factors associated with male infertility were sought out. The study population was the male partners of 100 infertile couples attending outdoor Sylhet Osmani Medical College Hospital. The data was collected from gynae outdoors of SOMCH, during the period of July 2004 to December 2004.

**Table I:** Semen profile of the male partners, (n=100)

Volume (ml).	No of male partners	Percentage	
<2ml	13	13%	
2-3ml	87	87%	
>3ml	0	0	
Sperm conc. (million/ml)	No. of male partners	Percentage	P value
0	9	9%	<0.001
< 5	5	5%	
6-20	20	20%	
> 20	66	66%	
Constituents of semen	Number of male partners	Percentage (%)	
RBC	1	1	
Pus cell	74	74	
Epithelial cell	2	2	
None	<b>23</b>	<b>23</b>	
Liquefaction time	No of male partners	Percentage (%)	
30 minutes	96	96%	
>30 minutes	4	4%	
pH	No of male partners	Percentage (%)	
<7	3	3%	
7.2-7.4	95	95%	
>7.4	2	2%	

In this study, most (87%) of the semen specimens were between 2-3ml. In this study, 66% of the semen samples had a sperm count of more than 20 million/ml, 20% had 6-20 million/ml, 5% had < 5 million/ml & 9% had no sperm in their semen specimen (azoospermia). Out of 100 cases, 66% of semen specimens showed normal sperm concentration (>20 million/ml) compared to 34% showed low or no sperm concentration. Statistically, the proportion is highly significant (P=<0.001) In this study, the majority (74%) of male partners had pus cell in their semen specimen. In this study, most of the semen specimens (96%) liquefied within 30 minutes and 95% cases, pH of the semen specimen was between 7.2-7.4.

In this study, out of 100 sample, sperm concentrations were found in 91% semen samples (91%) & none in 9 samples (9%). Out of this 91 samples, majority 70(76.91%) had >50% actively motile sperm, 20.86% had 10-50% actively motile sperm, 2.18% had <10% motile sperm in their semen specimen. Again, out of the 91 semen samples, 70(76.91%) showed normal sperm motility (>50%) & rest 21(23.04%) showed low sperm motility. The proportion is highly significant (P=<0.005)

In this study, 94.48% semen specimen had >30% normal sperm morphology, 3.28% semen specimen had between 10-30% normal sperm morphology & 2.18% semen specimen had <10% normal sperm morphology. The distribution of male partners according to normal sperm morphology & their sperm count is highly significant (P value<0.001)

**Table II:** Sperm status of semen of male partners (n=91)

Sperm count (Million/ml)	No. Activity motile	<10% Activity motile	10-50% Activity motile	>50% Activity motile	P value
<5	5	1(1.09%)	3(3.29%)	1(1.09%).	<0.005
6-20	20	1(1.09%)	5(5.49%)	14 (15.38%)	
>20	66	0	11(12.08%)	55 (60.44%)	
Semen count (million/ml)	Male partnerNo.	<10% normal morphology	10.30% normal morphology	>30% normal morphology	P value
<5	5	0	2(2.19)	3(3.29%)	= <0.001
6-20	20	1(1.09%)	0	19(20.87%)	
<20	66	1(1.09%)	1(1.09%)	64(70.32%)	

$\chi^2=16.35, df=4,$

## DISCUSSION

Data were obtained from selected male partners of 100 infertile couples attending the outpatient department of Sylhet MAG Osmani Medical College hospital, and private chambers of gynecologists and obstetricians.

Regarding volume of semen, the majority (87%) of the collected semen was between 2--3 ml, 13% was below 2 ml & none was above 3 ml in amount. Among them 66% of the semen sample had sperm count of more than 20 million/ml, which is considered normal according to WHO guidelines. Among those with sperm count less than 20 million/ml, 21% had sperm count between 6-20 million /ml (moderate oligospermia), 5% had sperm count less than 5 million/ml (severe oligospermia) & 9% had azoospermia. This differs from the study by Chowdhury & Fatema<sup>7</sup> who observed azoospermia in only 7.6% cases. In their study, only 8% had severe & 4.5% had moderate oligospermia. In another study by Omoriah<sup>8</sup> in Nigeria found 35.88% mild, 23.22% severe, 40.9% very severe oligospermia 16.9% azoospermia. Thonneau<sup>9</sup> - in Franc revealed 9% cases azoospermia. the result vary may be due to variation of time prevalence of sexually transmitted disease in different population. After carrying sperm count motility of the sperm was noted. In this study, 12.08% of the semen had 10-50% actively motile sperm (moderate asthenozoospermia) and 60.44% had normal motility (>50%) (Table-II). Acacio et al<sup>10</sup> observed 51% cases with an abnormality in sperm motility. Thonneau<sup>9</sup> observed 17% and Omoriah<sup>4</sup> observed only 4.09% cases astheno-zoospermia. Regarding the abnormal constituents in the semen, 23% had no abnormal constituents. Though 76% had pus cell in their semen. Only 1% had RBC in their semen smear. On the morphology of the sperm, 71.43% semen samples had normal morphology as they had more than 30% -normal sperm. Study by Chowdhury & Fatema<sup>7</sup> also revealed 61% morphologically normal sperm. Acacio et al<sup>10</sup> observed abnormality in 14% cases of sperm morphology. Besides that, Thonneau<sup>9</sup> observed oligospermia asthenozoospermia in 21% & teratoasthenozoospermia in 10% cases. Liquefaction time was also noted in which majority (96%) was the semen liquefied within 30 minutes, pH of the semen was also noted. Most of the samples (95%) had pH between 7.2--7.4 which is in within parameter.

## CONCLUSION

In conclusion, this study gives an insight into male partners in the Sylhet region's infertile couples

The study revealed a large proportion of the patients to be suffering from azoospermia and less sperm motility found to be an important factor associated with male infertility in our country.

## REFERENCES

1. P. Thonneau, S. Marchand, A. Tallec, M.L. Ferial, B. Ducot, J. Lansac, *et al.* Incidence and main causes of infertility in a resident population (1,850,000) of three French regions (1988-1989) *Hum Reprod*, 6 (1991), pp. 811-816
2. P.N. Kolettis Evaluation of the subfertile man *Am Fam Physician*, 67 (2003), pp. 2165-2172
3. Alexander NJ. Male evaluation and semen analysis. *Clin Obstet Gynaecol* 1988; 125:468.
4. Omoriah WE, Egbunike GN, Lapido OA. Classification of the semen of the male partners of infertile Nigerian couples. *Andrologia* 1985; 17:257-61
5. Thonneau P, Marchand S, Tallec A, Ferial ML, Ducot B, Lansac J, et al: Incidence and main causes of infertility in a resident population (1,850,000) of three French regions (1988-1989). *Hum Reprod* 1991; 6:811-6.
6. Elliasson R. Semen analysis and work-up. In: Cockett ATK, Urray RL, editors. *Male infertility*. 1st ed. USA: Grune and Stratton, 1976: 169-88.
7. Chowdhury TA, Fatima P. Semen parameters of male partners of couples attending infertility clinic. *Bangladesh J obstet Gynaecol* 2001; 16:60-3.
8. Omoriah WE, Egbunike GN, Lapido OA. Classification of the semen of the male partners of infertile Nigerian couples. *Andrologia* 1985; 17: 257-61.
9. Thonneau P, Marchand S, Tallec A, Ferial ML, Ducot B, Lansac J, et al: Incidence and main causes of infertility in a resident population (1,850,000) of three French regions (1988-1989). *Hum Reprod* 1991; 6:811-6.
10. Acacio BD, Israel GR, Sokol RZ. Evaluation of a large cohort of men presenting for a screening semen analysis. *Fertil Steril* 2000; 73:595-7.