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TABLE - 1
SEMEN QUALITY IN FERTILE AND INFERTILE POPULATIONS

(MEAN ± SD)

GROUP	NO. OF CASES	EJACULATE VOL. (ml)	LIQUEFACTION TIME (min)	SPERM DENSITY (ml)	MOTILITY	GRADE OF MOTILITY (%)					MORPHOLOGY (% OVAL)	p ^t
						0	1	2	3	4		
FERTILE	50	3.17 ± 1.18	18.44 ± 8.04	81.80 ± 36.74	64.12 ± 20.50	35.88 ± 20.50	9.90 ± 3.30	16.34 ± 6.91	19.53 ± 7.61	18.90 ± 9.22	71.47 ± 12.46	7.83 ± 0.46
INFERTILE	100	2.80 ± 1.05	21.00 ± 9.09	41.78 ± 30.77	46.52 ± 22.78	51.46 ± 22.78	12.21 ± 5.80	12.73 ± 6.17	12.98 ± 6.84	11.06 ± 12.13	59.99 ± 17.94	7.80 ± 0.47
p-VALUE		NS	NS	0.001	0.001	0.001	0.001	0.05	0.001	0.001	0.001	NS

The mean grade of motility was 3.08 in fertile and 2.33 in infertile population. The mean percentage values and standard deviations for each grade are given in table 8. The difference in mean percent motility was statistically significant in all the grades in both groups.

The percentage of normal (Oval) forms ranged from 43 - 95 in fertile and from 21 - 88 in infertile groups. The mean oval percentage forms were significantly less in infertile men (59.99%) than the fertile ones (71.47). The relative frequency distribution of normal morphology is shown in Figure 5.

DISCUSSION :

Semen analyses in our study show that semen in fertile men is significantly superior from those of the infertile group regarding sperm density, motility and morphology. Similar results have been reported by many others^{5,6,7 & 8}. The fact, that the infertile men were referred because of some defect in their semen analyses was common in all of these studies. However, it is well known that many fertile men (fathers) have poor quality semen which falls well within the infertile classification, while many infertile men (childless men) have good quality semen which falls well within fertile classification⁹. It is also well established that there may be marked variations in the semen quality of the same person over a period of time^{10,11 & 12}. Thus, it is difficult to classify the fertility potential of a semen specimen¹³. These have considered the relationship between semen quality and the time taken to produce conception to evaluate the fertility potential of semen. They have concluded that percent motility and particularly the quality of motility are the most important factors in this regard and the rate of conception drops when a sperm density drops below 20 million/ml, within a specified duration. It has been shown that the achievement of pregnancies after varicocelelectomy is related to the post-operative improvement in sperm motility¹⁴. But sperm motility and quality of motility are highly unstable factors^{5,10}. Sherins, et al⁵ have selected sperm concentration and percent oval forms for the assessment of fertility potential. Kruger and Associates (9178) have reported normal sperm morphology to be significantly correlated with in vitro fertilization and cleavage ($p < 0.0001$). The fertilization rate (perioocyte) and the cleavage rate were 49.4% and 47.6% in group - I (< 14% normal morphology) and 88.3% and 87% in group - II (> 14% normal morphology) respectively. However, it is important that a patient should be declared infertile only in the presence of incorrectable azoospermia.

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FIGURE 1
AGE DISTRIBUTION IN
TOTAL POPULATION UNDER STUDY

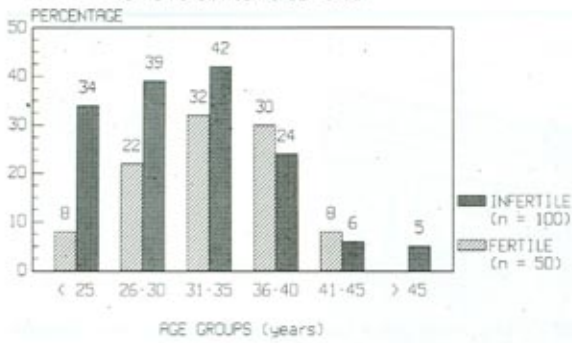


FIGURE 2
FREQUENCY DISTRIBUTION OF
EJACULATE VOLUME IN TOTAL POPULATION

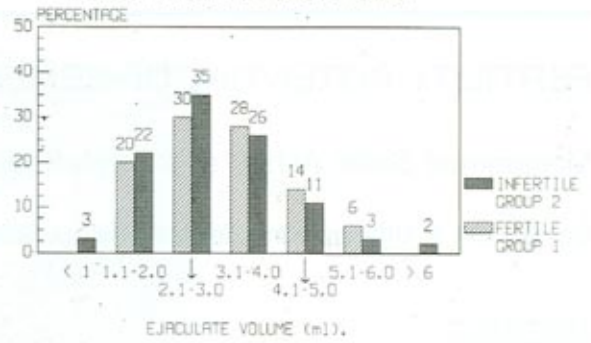


FIGURE 3
FREQUENCY DISTRIBUTION OF SPERM DENSITY
IN FERTILE AND INFERTILE POPULATIONS

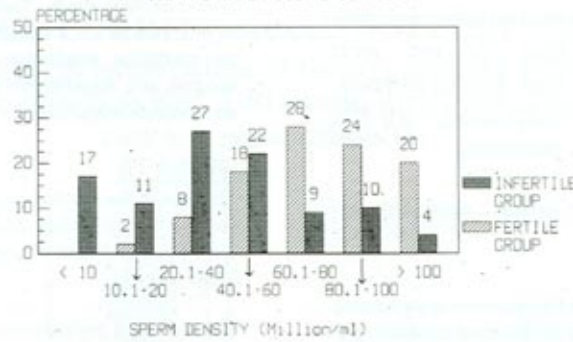


FIGURE 4
FREQUENCY DISTRIBUTION OF % MOTILITY
IN FERTILE AND INFERTILE POPULATIONS

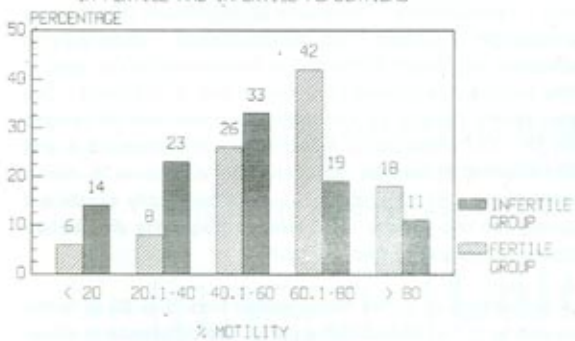
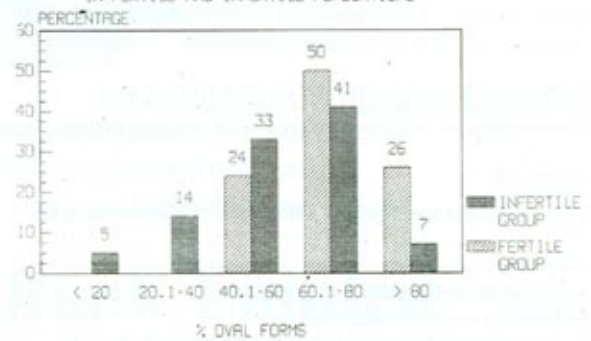


FIGURE 5
FREQUENCY DISTRIBUTION OF % OVAL FORMS
IN FERTILE AND INFERTILE POPULATIONS



ORIGINAL ARTICLE

FERTILITY POTENTIAL OF SEMEN.

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ABSTRACT :

Semen specimens have been analysed in 50 men of proven fertility and 100 male partners of infertile marriages. Our results show that there was no statistically significant difference in volume, pH and liquefaction time in the ejaculates of both groups. The semen was however much superior in fertile fathers than in infertile men ($p < 0.001$), as regards sperm density, percent motility, motility in various grades and morphology. We conclude that sperm density, sperm motility and normal morphology are the main determinants of fertility potential.

Key words : Infertility - sperm count - seminology.

INTRODUCTION :

At a time when limiting a family size has become a worldwide pre-occupation, increasing number of married couples are finding it difficult to initiate either a first or subsequent pregnancy¹. In the world 10 - 15 percent of married couples are infertile and the male partner is responsible for 30 percent of such cases². The male role in infertility has been neglected until recently especially in our country, where sexual potency is equated with normal fertility potential. Fertility in women can be assessed easily by pregnancy. But no such mechanism is available to test the biological fertility potential of human sperm among multiple female recipients³. The fertility of men is estimated by normal evaluating sexual behaviour, and the quality of the ejaculate⁴.

PATIENTS CONTROLS AND METHODS :

The subjects for this study were divided into two groups :

GROUP - I :

Group - I (the control group) comprised of 50 normal fertile

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men (Volunteers) who had fathered atleast two children without any treatment.

GROUP - II :

Group - II comprised of 100 male partners of infertile marriages, where no fault had been detected in the female partner. The duration of infertility was beyond two years. Azoospermic patients were excluded from the study. In all the individuals semen analyses were done after an abstinence period of three days. Two to three specimens were analysed at intervals of 1 - 3 months and their means was considered for statistical evaluation. The parameters studied were; volume, pH, liquefaction time, sperm density, sperm motility and normal morphology (% oval forms).

RESULTS :

The age in the control group (fertile men) ranged from 22 - 44 years with a mean of 32.2 years. The age range in infertile males was between 21 and 55 years and the mean age was 28.95 years.

The values of the parameters of semen analysed are given in Table - 1.

The mean ejaculate volume was 3.2 ml and 2.9 ml in fertile and infertile groups respectively. The volume ranged between 1.5 to 6.25 ml in fertile men and between 0.5 - 5.5 ml in infertile population. The difference in mean volume was not statistically significant between two groups. The frequency distribution of ejaculate volume in both groups is drawn in Figure 2. The pH range was 7 - 8.5 and 7 - 9 in group - I and group - II respectively. There was no significant difference in the mean pH (7.83 and 7.89) of both groups. There was no statistically significant difference in mean liquefaction time in fertile and infertile groups (18.44 min. and 21.09 min.). The mean sperm density or spermatozoa count per ml ranged from 18 - 197 million/ml in fertile men and between 1.9 and 170 million/ml in infertile people. The difference in mean sperm density (81.83 and 41.79) was statistically significant between the two groups. The relative frequency distribution of sperm density is shown in Figure 3.

The percentage of active forms varied from 5 to 95 in fertile men and from 0 to 95 in infertile men. The difference in mean percent motility in fertile (64.12%) and infertile (48.52%) groups was statistically significant. The frequency distribution of percentage motility is shown in Figure 4.