

selected for the study. Mean age of the subjects were 31.77 ± 5.08 years at the time of sample collection.

Sperm count was done by Neubaur's chamber and later by Makler's counter. All samples were analysed in one laboratory. The normal reference range was that defined for our local population (Sperm Concentration $\geq 20 \times 10^6/\text{ml}$ and overall motility $\geq 50\%$) and remain unchanged throughout the study.

RESULTS

We included 1425 persons in the study. All lived in a small town or village area. Mean age at the time of sample collection was 31.77 ± 5.08 years (ranging between 18 to 43 years). It remained unchanged during the study from 1984 to 1996 (Table I). There is no significant difference in sperm count in subjects of different age group (Table II). Low sperm count in first group could not be compared as it has only 8 subjects.

TABLE I : Sperm count (millions/ml) between 1984 and 1996.

Year	No. of subjects	Mean age \pm SD	Total sperm count \pm SD	Motile sperm count \pm SD
1984	129	30.5 ± 5.12	51.5 ± 23.68	39.6 ± 20.21
1985	132	31.6 ± 5.16	55.4 ± 23.71	42.4 ± 21.00
1986	128	32.0 ± 5.00	55.2 ± 23.70	43.3 ± 21.78
1987	120	31.4 ± 5.16	52.0 ± 23.12	40.7 ± 20.81
1988	208	30.2 ± 5.02	56.8 ± 26.20	44.0 ± 23.70
1989	112	33.8 ± 5.21	51.3 ± 22.68	42.2 ± 21.92
1990	99	34.2 ± 6.00	52.2 ± 24.20	43.4 ± 23.00
1991	78	32.4 ± 5.72	52.6 ± 24.00	43.6 ± 23.48
1992	76	33.2 ± 5.81	51.2 ± 23.31	40.7 ± 21.97
1993	55	31.6 ± 4.93	50.5 ± 22.98	40.3 ± 21.97
1994	96	29.5 ± 4.67	54.3 ± 24.44	41.3 ± 23.68
1995	93	31.7 ± 5.11	55.7 ± 25.68	43.3 ± 23.00
1996	99	31.0 ± 4.98	54.0 ± 25.12	41.7 ± 22.68

TABLE II : Total and motile sperm count (millions/ml) in different age groups.

Age (years)	No. of subjects	SC (Mean \pm SE)	MSC (Mean \pm SE)
< 20	8	33.75 ± 6.88	18.94 ± 5.51
20 -	73	46.45 ± 2.69	33.35 ± 1.06
25 -	399	42.40 ± 1.18	30.28 ± 1.06
30 -	399	44.22 ± 1.62	30.03 ± 1.08
35 -	202	44.42 ± 1.89	31.64 ± 1.50
40 +	63	47.48 ± 2.50	34.11 ± 2.37

Mean \pm SD total sperm count of the samples was $53.23 \pm 24.06 \times 10^6$ /ml while mean \pm SD motile sperm count was $42.04 \pm 22.17 \times 10^6$ /ml. The trend of sperm count in our study does not show any change (Fig. 1).

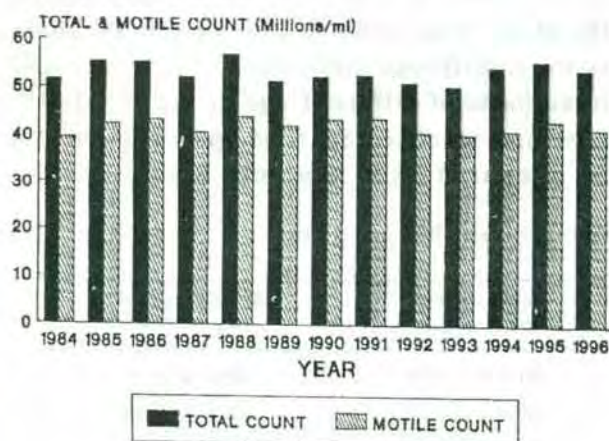


Fig. 1: Average total and motile sperm count between 1984 and 1996.

DISCUSSION

In agreement to the results shown by Bujan et al (4) we also did not observe any decrease in the total and motile sperm count in semen collected between 1984 and 1996 in rural population. The decreasing trend in sperm count observed in the study done

by Carlson et al (1), Auger et al (2) and Irvine et al (3) is not evident in our study.

Ginsburg et al (5) have reported that difference in sperm count among men living in the London area were found to reflect differences in the water supply. Bujan et al (4) explain the differences in their finding as compared to other studies done in urban areas of Paris and U. K., may be due to difference in environmental conditions as the two areas differed in air quality, water supply and matters of lifestyle (such as time spent in commuting and stress factors). High concentration of nitrogen dioxide in air, industrial pollution as emission of oxidizable waste in water and production of sulphur dioxide are some of the factors responsible for industrial pollution in Paris.

However, sperm counts could also be affected by many other environmental factors like greenhouse effect, global warming (I. S. Tummon & David Mortimer, 1992) as well as behavioral factors which need further studies on environmental conditions and male reproductive function. Thus it appears, considering the vary fact that the area of study in Bujan et al (4) and our study environment has a greater role in changing sperm quality.

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