

THE MALE FACTOR IN FERTILITY AND INFERTILITY. II. SPERMATOZOON COUNTS IN 1000 MEN OF KNOWN FERTILITY AND IN 1000 CASES OF INFERTILE MARRIAGE

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This paper is the second in a series designed to analyze every aspect of semen quality in terms of the fertility of the donor. The primary aims of this work are:

- 1) To study the characteristics of semen from fertile men and to compare them with those from men whose wives have difficulty in conceiving.
- 2) To determine with as much precision as statistical analysis will allow the lowest semen standards compatible with relative ease of conception.
- 3) To determine the optimal conditions which permit production of semen of the quality defined in No. 2.
- 4) To relate semen quality to the medical history of the individual.

The conditions of this study are presented in detail in the first paper of this series which dealt with ejaculate volume.¹ It was shown that the mean ejaculate volume for 800 men of known fertility was 3.33 cc in contrast to that of 3.59 cc for 600 men in "infertile" marriage. The "infertile" mean was significantly higher, the difference being due, in great part, to the "infertile" men whose semen quality was poorest.

We now have completed the analysis of 1000 men in each group (fertile and "infertile"). Before passing to discussion of the sperm counts in these individuals, we believe it appropriate to present a brief summary of the volume figures for 1000 fertile and 1000 "infertile" men. These figures are presented in detail in figure 1 which shows the relative frequency distributions of semen volume.

As would be expected, these distributions are quite similar to those presented previously for smaller groups. The mean volume for 1000 (not shown in fig. 1) fertile men is 3.4 cc. (S. D.* = 1.9) and 3.7 cc (S. D. = 1.7) for 1000 "infertile" men. The difference is significant. As in the previous analysis, the highest ejaculate volumes in the "infertile" group are associated with the poorest semen specimens as measured by sperm counts. We shall discuss this relationship later in detail.

SPERMATOZOAN COUNTS IN FERTILE AND "INFERTILE" MARRIAGE

The relationship of the spermatozoan count to fertility has been a much-debated point for many years. The work of Meaker² and Macomber and Saunders³ in which the figure of 60,000,000/cc was given as the lowest sperm count level compatible with fertility has been accepted generally by workers in the

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Azoospermias are not included in these initial studies. They will be studied later as a special group.

* S.D. = Standard Deviation.

¹ MacLeod, J.: *J. Fert. & Steril.*, 1: 347, 1950.

² Meaker, S. R.: *Human Sterility*. Baltimore: Williams & Williams Co., 1937.

³ Macomber, D. and Saunders, N. B.: *New England J. Med.* 200: 981, 1929.

field. However, it has been obvious to many that this figure is too high. Hotchkiss et al.⁴ in a study on 200 fertile men found 25 per cent of his cases below the 60,000,000/cc level and Kaufman⁵ in a series of 100 similar cases found 15 per cent below this level. The lowest count/cc level found by Farris⁶ in 49 fertile men was 50 million/cc and he has gone further⁷ in claiming that the total number of active spermatozoa is a more reliable measure of fertility than count/cc. His claims will be discussed below.

A study of the literature makes it clear that standards of male fertility are based on inadequate sampling of populations. For example, it would seem appropriate to base these standards on semen quality in fertile men who never had

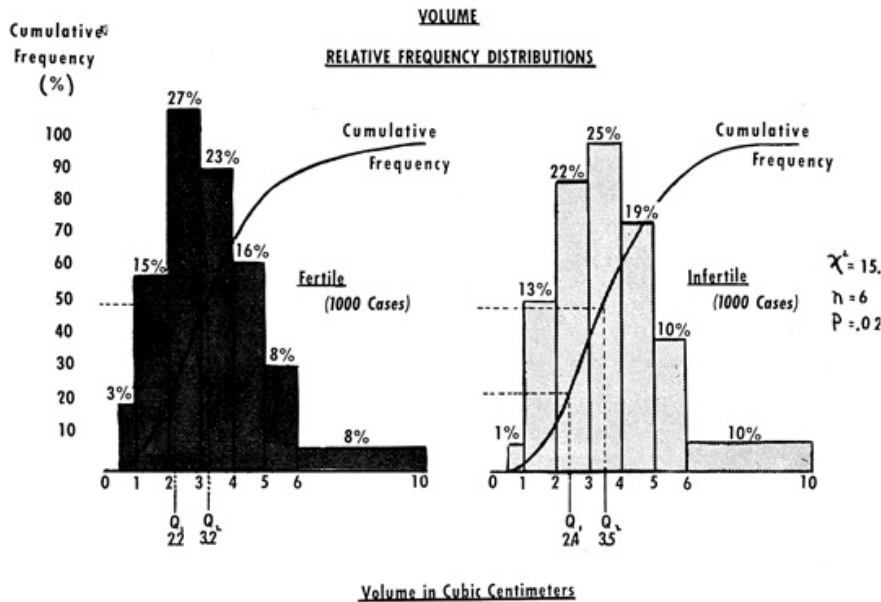


FIG. 1

a sterility problem. Such men are never seen by doctors or clinics. The only such studies in the literature are those of Hotchkiss et al.⁴ and Kaufman⁵ in which groups of 200 and 100 men respectively were examined. These numbers are very small when compared to the large samples of "infertile" men whose semen quality has been analysed. Actually, standards of semen quality are based on so-called defects which have been found in the semen of "infertile" men with little knowledge of the prevalence of such defects in "normal" men. The following analysis is based on semen quality in 1000 men whose wives were pregnant at the time the semen was examined. The wives were passing through the antepartum clinic of The Lying-in-Hospital. Only a very small percentage of this group had sterility problems prior to their pregnancy. In most cases, conception

⁴ Hotchkiss, R. S., Brunner, E. K., and Grenley, P.: *Am. J. M. Sc.*, **196**: 362, 1938.

⁵ Falk, H. C. and Kaufman, S. A.: *J. Fert. & Steril.*, **1**: 489, 1950.

⁶ Farris, E. J.: *J. Urol.* **61**: 1099, 1949.

⁷ Farris, E. J.: *J. Urol.* **58**: 85, 1947.

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