

# ON THE MECHANISM OF SELECTION OF FECUNDABILITY\*

K. B. PATHAK

## 1. *Introduction:*

THE composition of a cohort of exposed married women changes rapidly by the virtue of the tendency of pregnancy to select the most fecund and leave behind an increasingly subfecund residual group. This phenomenon, known as selection of fecundability, was first studied by Tietze (1959) through a crude model and later on by several authors like Potter and Parker (1964), Sheps (1964) and Potter et al (1970). In the presence of contraception, this selection seems to be slower as the effectiveness of contraceptive increases. The aim of this note is to examine the mechanism of the selection of fecundability with the help of a continuous model in the light of India data. Like Potter et al (1970) it has been found that the proportion of women accidentally conceiving within a given period of use is a function of the length of preceding period of non-protection, period of use and contraceptive effectiveness.

## 2. *The Model:*

We assume that (1) for any interval  $(t_1, t_2)$  where  $0 < t_1 < t_2$ , the number of conceptions to a non-pregnant woman follows a Poisson distribution with parameter  $m(t_2 - t_1)$  and that (2) among women  $m$  varies according to a type III density with parameters  $a$  and  $h$  (say). The parameter  $m$  is a measure of fecundability which gives the average number of conceptions during the time  $(t_2 - t_1)$  in the absence of rest periods. We have called it here instantaneous fecundability. Where  $(t_2 - t_1)$  is taken to be equivalent to one year we would like to call it accumulated fecundability. The rationale behind these assumptions has been discussed in Singh (1964). The

\* This research has been undertaken from grants to International Institute for Population Studies (formerly called DTRC) under a special International Research Project, NCHS — India-1, sponsored by the National Center of Health Statistics, Washington, U.S.A.