

A TIME-DEPENDENT DISTRIBUTION FOR THE NUMBER OF CONCEPTIONS

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1. INTRODUCTION

The most important aspect of the study in human fertility is to examine the pattern of variation in the number of births per couple and to suggest a probability distribution which takes into account the variability in fecundability due to age of couples, number of children born, their health and sex conditions. The state of nature is such that fecundability cannot be known directly and therefore can only be estimated from the data relating to events occurring during the period of cohort. These events include conceptions, abortions and different modes of termination of the pregnancies. Data regarding the number of times a women conceives or the number of live-births she has are readily available and involve no memory bias, whereas the data pertaining to the timings of different conceptions, abortions or births may suffer from memory lapses. Several authors (Singh, 1963 & '68; Dandekar, 1955; Pathak, 1966 and others) have proposed models for describing the chance-mechanism of the variation in the number of live-births per couple and thereby have obtained estimates of fecundability utilising the data on the number of completed pregnancies during 5 years' duration of the cohort. In these models however, it has been assumed that fecundability of a woman remains constant throughout the period of observation. In the present paper we assume that it changes with time and hence derive a probability model for describing the variation in the number of conceptions per couple. The underlying assumptions are similar to those in Blyth (1949), Singh (1968) and Pathak (1966).

The proposed distribution would describe the situations better if the length of the observational period is restricted to a small part

* My sincere thanks are due to Prof. S. N. Singh for suggesting the problem.