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SHORT REPORT

Fertility, mortality and maternal anaemic status in a village population of West Bengal, India

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Summary. The present study was conducted on a Mahishya agricultural caste population of Chakpota village, Howrah district, West Bengal, India to enquire into the possible relations of anaemia, and fertility and mortality. The results confirm that negative relations exist between haemoglobin level of the mother, on the one hand, and fertility and offspring mortality, on the other.

1. Introduction

That fertility of women and pre- and post-natal mortality among their offspring are related to general health status is intuitively understandable as well as empirically well known (WHO 1980, Population Reports 1984). Such relations, especially the relation of maternal ill health with fertility, may occur in two different ways: (1) ill health of the mother may reduce her capacity to produce viable offspring, or (2) high fertility, presumably resulting from too many and too frequent pregnancies, may adversely affect the mother's health status.

Anaemia, of various aetiologies, is indeed one of the major health problems of women in most Third World countries (WHO 1980, Royston 1982), but hardly any studies seem to have been conducted on its possible relations with these women's pregnancy outcomes (Baker 1978, Mahadevan, Reddy, Murthy, Reddy, Gowri and Siva Raju 1986). It is, therefore, the purpose of this present note to enquire whether any relations are discernible between anaemia, on the one hand, and age specific fertility rates, miscarriage, still birth, infant mortality and toddler mortality, on the other, among a group of women inhabiting a village in southern West Bengal.

2. Materials and methods

The Mahishya is a numerically large agricultural caste group of southern West Bengal. The present study was conducted in Chakpota village, Amta Police Station, Uluberia subdivision, Howrah district, West Bengal. The village comprises 255 Mahishya households. Most of the adult men are agriculturalists, working on their own land or as agricultural labourers, while a few are engaged in sundry other occupations. The women are generally housewives, except in households having low economic status, where they also work in the fields. The demographic data were collected using questionaire/schedules, pre-tested for their usefulness. Data on reproductive history were collected from the women of all the age groups shown in table 1.

Table 1. Live births during each 5-yearly age period to married women living in wedlock by anaemic status.*

Age period (years)	≥ 45 years		All ages	
	Hb(g/dl) <12	Hb(g/dl) ≥12	Hb(g/dl) <12	Hb(g/dl) ≥12
<20	1·33	0·77	1·05	0·70
	(15)	(13)	(56)	(43)
20–24	1·33	1·23	1·52	1·44
	(15)	(13)	(56)	(43)
25–29	1·60	1·46	1·37	1·26
	(15)	(13)	(52)	(42)
30–34	1·73	1·08	1·02	0·77
	(15)	(13)	(42)	(35)
35–39	1·07	0·69	0·57	0·44
	(15)	(13)	(35)	(25)
40–44	0·47	0·46	0·24	0·29
	(15)	(13)	(29)	(21)
≥ 45	0·27	0·00	0·27	0·00
	(15)	(13)	(15)	(13)
TFR	7·80	5·69	6·04	4·90

*Anaemic status classification was taken from WHO (1968).

Standard questionaire/schedules, already used among several village populations inhabiting southern West Bengal as well as several other rural populations of West Bengal, were used. The questionaire/schedules wer pre-tested in the village of Chakpota on women belonging to various age groups and socioeconomic, educational, etc. categories to ensure their general applicability. More details about the demographic data, including the age structure of the women, method of data collection (including pre-testing) are given by Bharati (1981, 1983). The numbers of live births during the 5-yearly age periods were calculated by counting the number of live children born to a woman during each 5-yearly period passed through by the woman. Each woman was, therefore counted once for each 5-yearly period of her age. For instance, a woman of age 29 years has been counted thrice, once each for age periods < 20, 20–24 and 25–29 years. The average of the numbers of children born during a certain age period to a group of women is taken as the number of live births during that 5-yearly age period. These averages are summed over all the seven age periods to obtain the Total Fertility Rate (TFR). (The numbers of live births to 5-yearly age periods are divided by 5 to obtain the Age Specific Fertility Rates shown in figures 1 and 2). Blood specimens were obtained by finger pricking and their haemoglobin contents measured by Sahli's method (Kolmer, Spaulding and Robinson 1951). For diagnosis of anaemic status, 12 g/dl was used as the cut off point, following WHO (1968).

3. Results and discussion

Table 1 shows that fertility is higher in the anaemic women than in non-anaemic ones, whether we consider the live births during 5-yearly age periods (with the exception of 40–44 year age period) or TFR. This is true for relatively elderly women (≥45 years), as well as those of all ages. Figures 1 and 2 present these results diagrammatically. In case of mortality, analogous results are obtained; all four pre- and post-natal mortality measures (miscarriage, still birth, infant and toddler mortalities) have higher values in the anaemic than non-anaemic women (table 2). It is noteworthy that toddler mortality,

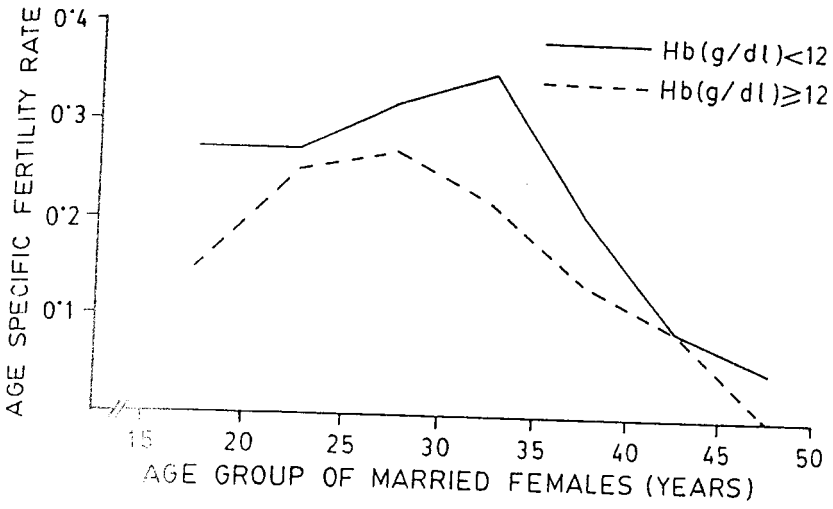

Figure 1. Age specific fertility rates (married females, ≥ 45 years).

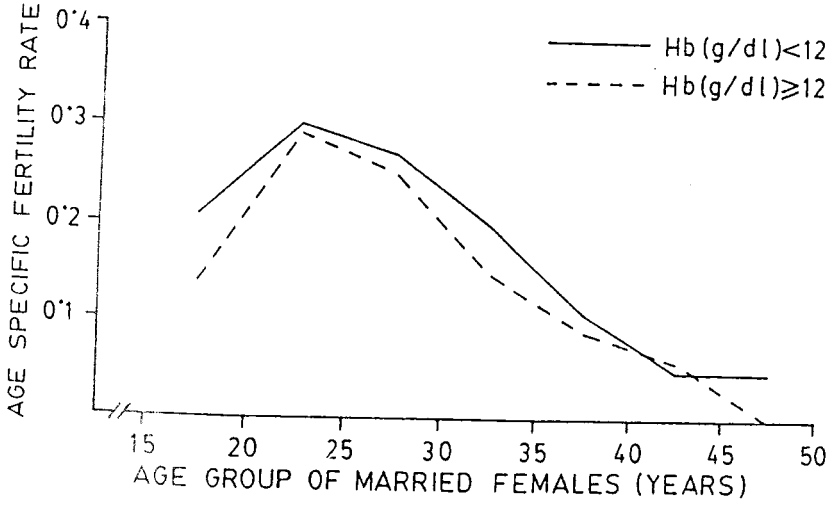

Figure 2. Age specific fertility rates (married females, all ages).

which is generally considered to be a useful indicator of population health status (Ashworth 1982) shows the largest difference between anaemic and non-anaemic women.

The observation that anaemic mothers, who thus *prima facie* are less healthy, are more fertile than normal mothers needs some discussion in terms of possible explanations. On the one hand, fertility of these women may indeed be adversely affected by their general health status, as has been mentioned . However, this possibility does not seem very likely when the specific health impairment under consideration is anaemia, except when anaemic women tend to lose many potential children through reproductive losses (especially in a situation where obstetric-gynaecological care is not well developed), wish to make up for losses and end up 'overdoing' it. There are some

Table 2. Miscarriage, still birth, infant mortality and toddler mortality by anaemic status.

Category	Hb(g/dl) <12	Hb(g/dl) ≥12
Miscarriage	2·29	0·81
Still birth	2·56	1·60
Infant mortality	11·99	8·13
Toddler mortality	3·22	0·41
Total live birth	342	246

instances of such overdoing in the form of large 'desired family size', aimed at making up for substantial loss through reproductive wastages, and actually realizing this 'desire' (Nayer 1986, Reddy 1986). However, this possibility may not necessarily have been realized in case of these anaemic women. On the other hand, the cause-effect relation may be the other way around, for instance, women having high fertility may suffer more from the adverse health effects of too many and too frequent childbearing and childrearing, and thereby more likely to be anaemic than women having lower fertility. Finally, since the mean haemoglobin level decreases and fertility increases from the high through middle to low economic subgroup of the Chakpota village population (Bharati 1983), it is possible that the observed relation between anaemia and high fertility is a function of both variables being related to socioeconomic status rather than the two variables being directly related to each other. The data presently available do not permit us to distinguish among these possibilities, but the data nevertheless demonstrate that relations between anaemia, on the one hand, and fertility and mortality, on the other, are discernible even at the micro-level.

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Zusammenfassung. Die vorliegende Untersuchung wurde bei einer Bauernkastenbevölkerung der Mahishya aus dem Dorf Chakpota im distrikt Howrah von Westbengal in Indien durchgeführt, um die möglichen Verknüpfungen von Anämie, Fertilität und Mortalität zu hinterfragen. Die Ergebnisse bestätigen, daß es negative Verknüpfungen zwischen dem Hämoglobinspiegel auf der einen Seite und andererseits der Fertilität und der Nachkommenmortalität gibt.

Résumé. La présente étude a été effectuée sur une caste agricole Mahishya de la population du village de Chakpota dans le district de Howrah (Quest-Bengale, Inde) afin d'examiner les relations possibles entre l'anémie, le fécondité et la mortalité. Les résultats confirment que des associations négatives existent entre le niveau d'hémoglobine de la mére d'une part, so fécondité et la mortalité de ses enfants d'autre part.