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# 4 Maternal anaemia and fertility and Mortality of a village population of Kamrup District of Assam

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***Abstract***

*The present study was conducted on a Kalita agricultural caste population of Pamohi Village of Kamrup district of Assam, India to enquire into the possible relation of maternal anaemia and fertility and mortality. The results confirm that negative relations exist between heamoglobin level of the mother on the one hand and fertility and offspring mortality, on the other.*

***Key Words:*** *Maternal anaemia, Fertility, Mortality, Assam*

## Introduction

The 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.

In the most Third World Country Anaemia of various etiologies, is indeed one of the major health problems of women (WHO 1980, Royston 1982), but very small studies are so far been conducted on its possible relation with these women's pregnancy outcomes (Baker 1978 Mahadevan, Reddy, Murthy, Reddy, Gowri and Siva Raju (1986). In Assam, Sengupta Choudhury, Sarmah, Begum et al (1999-2001, 2005). 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


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and toddler mortality, on the other, among a group of women inhabiting a village known as Pamohi of West Guwahati of Assam.

## Materials and Methods

The Kalita is a numerically large agricultural caste group of Assam. The present study was conducted in Pamohi village, Beharbari Police Station, Ulubari Subdivision, Kamrup district of Assam. The village comprises 200 households. Most of the adult men are agriculturists, working on their own land or as agricultural labourers, while a few are engaged in 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 questionnaire/ schedules, pretested for their usefulness. Data on reproductive history were collected from the women of all the age groups shown in Table -1

Table – 1 : Livebirths 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 (15) | 0.77 (13) | 1.05 (56) | 0.70 (43) |
| 20 - 24 | 1.33 (15) | 1.23 (13) | 1.52 (56) | 1.44 (43) |
| 25 - 29 | 1.60 (15) | 1.46 (13) | 1.37 (52) | 1.26 (42) |
| 30 - 34 | 1.73 (15) | 1.08 (13) | 1.02 (42) | 0.77 (35) |
| 35 – 39 | 1.07 (15) | 0.69 (13) | 0.57 (35) | 0.44 (25) |
| 40 – 44 | 0.47 (15) | 0.46 (13) | 0.24 (29) | 0.29 (21) |
| ≥ 45 | 0.27 (15) | 0.00 (13) | 0.27 (15) | 0.00 (13) |
| TFR | 7.80 | 5.69 | 6.04 | 4.90 |

* Anaemic status classification was taken from WHO (1968)


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Standard questionnaire/ schedules already used among several village population inhabiting the village area as several other rural populations of that area were used. The questionnaire/ schedules were pretested in the village Pamohi on women belonging to various age groups and socio-economic, educational, etc. categories to ensure their general applicability.

More details about the demographic data, including the age structure of the women, method of data collections are also seen. The number of livebirths 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 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 period <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 hemoglobin contents measured by Sahil's method (Kolmar, Spaulding and Robinson 1951). For diagnosis of anaemic status, 12g/dl was used as the cutoff point, following WHO (1968).

**Results and Discussion**

Table-1 shows that fertility is higher in the anaemic women than in non-anaemic ones, whether we consider the livebirths during 5 yearly age periods (with the exception of 40-44 years age period) or TFR. This is true for relatively elderly women ($\geqslant$ 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 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.


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Fig – 1 : Age Specific Fertility Rates ( Married Females ≥ 45 Years)

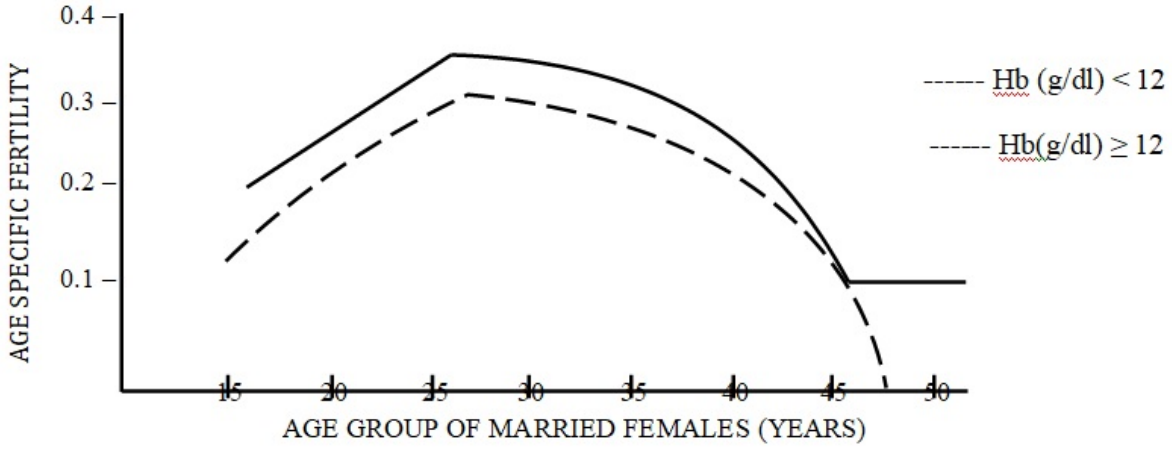


Fig – 1 : Age Specific Fertility Rates ( Married Females , All Ages)

The observation that anaemic mothers, who thus prima facie is less healthy, are more fertile than normal mothers needs some discussion in terms of possible explanations. On the other 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


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(especially in a situation where obstetric gynecological care is not well developed) wish to make up for losses and end up "overdoing" it. There are some instances for 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 1486, Ro 1486, Begum 2001, Choudhury 2002). 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 child having and child drawing and thereby more likely to be anaemic than women having lower fertility. Finally, since the mean hemoglobin level decreases and fertility increases from

Table – 2 : Miscarriage, stillbirth, infant mortality

| Category | Hb (g/dl) < 12 | Hb (g/dl) ≥ 2 |
|---|---|---|
| Miscarriage | 2.29 | 0.81 |
| Still Birth | 2.56 | 1.60 |
| Infant | 11.99 | 8.13 |
| Mortality | 3.22 | 0.41 |
| Toddler Mortality | | |
| Total Live Birth | 342 | 246 |

the high through middle to low economic subgroup of the Pamohi village population (Bhenali 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 demonstrable the 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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