

SEASONAL VARIATION OF FERTILITY PATTERN IN BENGALEE WOMEN

by

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During the past two decades, population experts have focused their attention on the massive and rapid population growth in India. The increase of population in India was 70 million during 1951-61, while in the previous decade the increase was 42 million. The net growth rate appears to be about 13 million or 2.5 per cent per annum (Chandrasekhar, 1967). The rapid growth of population adversely affects the socio-economic conditions of the country and foils all attempts to improve the living standard of the country.

In keeping with this situation, research workers are trying to seek the factors responsible for the increase of population. The fertility of Indian couples of different social and economic strata have been subjected to meticulous investigation (Pakrasi and Malakar, 1967). Coale and Hoover (1960), stated that the birth rate in India would remain high as the customs and habits of the people have not materially changed for the past half a century and the age structure of the population has remained fairly similar for several decades.

In spite of various studies on fertility pattern in our country, it is still a problem to understand why 2.5 per cent annual population growth persists in India. The pattern of reproductivity,

viewed as a whole, shows a wide range of diversity among different species of animals. This diversity includes within its compass all the various factors concerned in the physiological mechanism of reproduction. Some animals, for example, have their reproductive activities restricted to certain seasons of the year, others like man and some higher primates reproduce all the year round (Pearl, 1939).

An attempt has been made to study the trend of population rise and the effect of seasons on fertility of the urban population of Bengal. All the figures of birth (live and still births) from 1959 to 1968 have been analysed. At the same time, the figures for seasonal variations in births and miscarriages as presented were from the hospital records of Ramakrishna Mission Seva Pratishthan, during the five years period (1964-68).

Material and analysis

A year-wise count of births and miscarriages shows the fertility trend and thus brings to light the population dynamics of the community.

The above figures clearly show that there was definite rising tendency of both out-patient antenatal attendance and confinement cases.

During the years (1964-68), there were 27,352 births, including both live and still births. Over the same period, 1,844 patients had miscarriages. The patients that were admitted for threatened abortion, treated and discharged, to be confined at

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a later date, were not taken into account. A total of 29,196 women were admitted for delivery and miscarriages during the five years under review, yielding an average of 5839.2 patients per year (Table 1).

births and miscarriages per year showed little changes.

From the analysis of the figures, it is apparent that there was cyclic fluctuation of both births and miscarriages, which focussed the seasonal effect on these

TABLE I
Year-wise distribution of births and miscarriages (1964-68)

Year	Total No.	Births and miscarriages			
		Births		Miscarriages	
		No.	%	No.	%
1964	5337	4939	92.54	398	7.46
1965	5870	5478	93.32	392	6.68
1966	5801	5476	94.38	325	5.62
1967	5716	5378	94.08	338	5.91
1968	6472	6081	93.16	391	6.84
Total	29196	27352	93.68	1844	6.32

It appears from the above table that there was an increasing tendency of number of birth from 1964 to 1967, but slight fall was observed in 1968. The yearly miscarriage rate was variable, which was probably due to emergency admissions. The ratio between the percentage of

phenomenon (Table II, III and Fig. II).

There was decrease in miscarriage rate, which was statistically significant ($X^2=80.89$, d.f.=11, $p<.001$), and it remained almost constant to the rate of birth, being the same through the years 1964-68. But definite trend of rise in the birth rate from January to October can be seen from the Fig. II. In the month of July, the rate of birth and miscarriage rate were found to be the same, but after that month, definite fall in the miscarriage

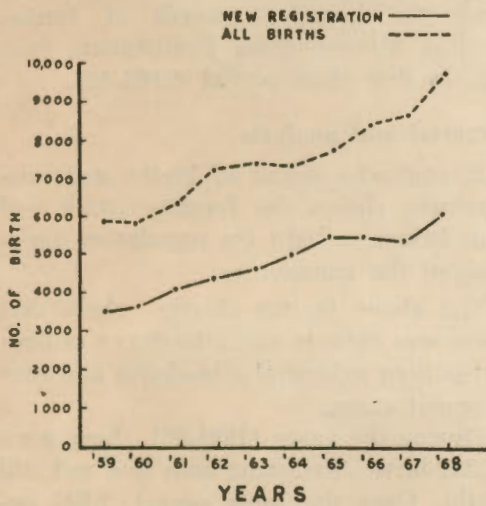


Fig. 1

Yearly new registration in antenatal department and confinements during 10 years period (1959-1968)

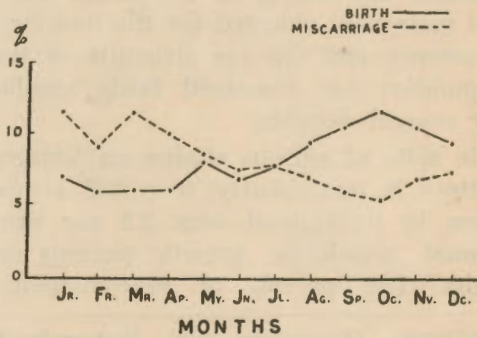


Fig. 2

Depicting the seasonal variations of births and miscarriages for the years (1964-1968).

TABLE II
Month and year-wise number of births during the years, 1964-68

Year	Jan.	Feb.	March	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1964	342	333	340	294	343	286	374	478	588	536	527	498	4939
1965	428	387	352	308	337	382	410	563	561	638	571	508	5478
1966	480	442	282	362	375	348	432	542	554	619	535	505	5476
1967	425	285	325	314	498	401	498	431	534	630	545	492	5378
1968	414	352	362	472	546	450	560	631	527	617	568	582	6081
Total	2089	1799	1661	1750	2129	1867	2274	2648	2764	3040	2746	2585	27352
Month Avg.	418	360	332	350	426	373	455	530	553	608	549	517	(5839.2 P. yr.)

TABLE III
Month and year-wise number of miscarriages during the years, 1964-68

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1964	49	36	44	42	36	34	30	29	22	25	24	27	398
1965	42	32	45	42	36	34	36	30	20	18	27	30	392
1966	38	32	40	34	52	22	24	24	26	18	22	20	325
1967	42	34	39	36	26	19	26	25	23	22	20	26	338
1968	45	32	46	34	36	32	30	29	24	23	24	36	391
Total	216	166	214	188	159	141	146	137	115	106	117	139	1844
Month Avg.	43	33	45	37	32	28	29	27	23	21	23	28	(368.8 P. yr.)

rate, while a definite rise in the birth rate can be observed from the graph. The rise of birth rate during the months again is statistically significant ($X^2=480.70$, d.f.=11, $P<.001$).

From the analysis of the birth and miscarriage rates, the seasonal variations were well marked. The peak months for births were September, October and November, whereas the peak months for miscarriages were January and March.

Ramakrishna Mission Seva Prathisthan is a suitable place for the study of fertility factors in the female population, as the hospital is located in the well populated southern zone of Calcutta. During the five years (1964-68) under review, the socio-economic and other conditions including the hospital admission policy remained almost the same.

An attempt has been made to analyse statistically the birth (still and live births) rate and miscarriage rate. This brings to light some important findings on the effect of seasonal factors on the births and abortions.

Pearl (1939), remarked that human beings exhibited only relatively minor seasonal fluctuations in the birth rate. He argued that we would not obtain correct picture in the human female, since several factors influence actual and potential reproductivity in the human female. Moreover, mothers in one calendar year were not altogether the same women who were mothers in the year before or will be mothers in the next year. While agreeing with the above statement, the present figures show a definite seasonal variation in the productive performance of Bengalee women, who may not be the same mothers a year before or in the following year.

Seasonal variation of births as observed in this study is in conformity with

those of Belavalgidad (1963), who analysed the birth rate from Delhi population.

There are several published works on the seasonal variations of abortion. Collins (1951), found that peak month for abortion was May. Mukerjee (1959), and again Banerjee and Mukerjee (1962a and 1962b), collected figures from women of Bengal and from other parts of India and found a definite seasonal variation in the rate of abortions. They noticed that the rate of abortion was higher in the earlier months of the year, specially the peak months were April and May. In the present study, though there was a trend of increase of miscarriage rate during the first half of the year, the peak months were in January and March.

The seasonal variations as observed in births and miscarriages, give some idea as to the pattern of cohabitation in the community. As the months of September, October and November have maximum births, so most of the conceptions probably took place during the months of December, January and February.

Since the incidence of births and miscarriages have their peaks at different times of the year, it is essential for hospital authorities to take cognizance of this phenomenon in arranging emergency service. During the earlier part of the year arrangement should be made to accommodate more abortion cases and more confinement beds must be available at the later months of the year. This will in turn improve the asepsis and anti-sepsis. The knowledge of seasonal fluctuation of births and miscarriages has important bearing on domicilliary and family planning workers.

Summary:

Cases admitted in Ramakrishna Mis-

sion Seva Pratishthan, for births (still and live) and miscarriages during the years, 1964-68, have been analysed to study the seasonal variations in relation to fertility pattern.

Total births and miscarriages during the five-years period were 29,196 with yearly average of 5,839.2 patients. The seasonal variations were observed from 27,352 births and 1844 miscarriages.

The cases registered in antenatal department as well as cases confined show an increasing trend. But the yearly miscarriage rates were variable, probably due to uncertainty of emergency admissions. The ratio between the birth and miscarriage rate of the five years under review showed little change.

The seasonal variations for births and miscarriages were statistically significant and were in conformity with the findings of other workers. The peak months for births are in September, October and November, whereas, the peak months for miscarriages are January and March.

The recognition of this important factor of fertility will enable the obstetricians and hospital administrators to organise the antenatal care and maternity service as a whole and the needed service can be intensified in particular seasons according to the need. The social and the family planning workers can also utilise the seasonal phenomenon of birth pattern by educating and helping the selected communities.

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This seasonal variation in fertility is encountered in all parts of India—Editor.