

PREVIOUS ABORTIONS AND THEIR RELATIONSHIP TO CURRENT TERMINATIONS AND SOCIO-ECONOMIC STATUS BASED ON HOSPITAL DATA

by

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The wastage of pregnancy by abortion is a common event. This is the most common and serious complication of pregnancy and is associated with grave risks to maternal life and health. There is no official record of the number of abortions, as they are not notifiable. However, it has been estimated that about 10-20% of all pregnancies end in spontaneous abortion.

Our pilot investigation was based on a study of a relatively small number of cases collected from the Maternity Department of R. G. Kar Medical College and Hospitals during the first six months of 1957. The object of the present study was mainly two-fold; firstly, to examine whether the current abortions are in any way associated with similar events recorded in the previous pregnancy histories of the patients admitted, and secondly, to assess the

influence of socio-economic status on the incidence of abortion.

Materials for Study: The record of the histories of previous pregnancies of the patients gives the total number of terminations classified into three categories, namely, live birth, still-birth and abortion. As the sequence of these events had not been recorded, an analysis of the incidence of abortion by parity could not be carried out with the data relating to the previous pregnancies. The obstetric cases of 1225 patients have been included in the data. Of these, 296 cases were primigravidae and as such had no previous obstetric history. The remaining 929 cases who had one or more pregnancy terminations earlier to admission provided the necessary data for the study made herein. Though no specific questions have been asked as to the social and economic status of the patients, the fact that a patient has been admitted into the paying or non-paying ward may serve as a guide for classifying

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TABLE 1
 Distribution of Abortions among Women classified by Number of Terminations
 (including current abortions)

No. of terminations	Frequency of abortions										Obs. X^2 value	X^2 value (critical)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
2	(182.43) 190	(42.13) 27	(2.43) 10	—	—	—	—	—	227	10.35	29.33	6.635 at 1%
3	(115.20) 120	(40.00) 32	(3.20) 7	(1.60) 1	—	—	—	—	160	10.21	3.93	6.635 at 1% 3.841 at 5%
4	(112.72) 117	(31.76) 24	3.36 6	(0.16) 1	(0.00)	—	—	148	6.59	5.50	6.635 at 1% 3.841 at 5%	
5	(82.55) 91	(44.01) 35	(9.38) 5	(1.00) 3	(0.04) 3	(0.00)	—	137	9.64	28.41	9.210 at 1%	
6	(39.18) 48	(30.80) 19	(10.08) 9	(1.75) 4	(0.17) 2	(0.00)	(0.00)	82	11.59	15.29	9.210 at 1%	
Total	566	137	37	9	5	—	—	754				

(** Women having more than 6 terminations who were in all 175 in number were excluded from the above analysis).

the cases according to social status. In view of the extreme inadequacy of hospital beds and the pressing need for hospital aid it is not unlikely that a substantial proportion of poor patients may procure the wherewithal for admission to the paying ward. The differentials between paying and non-paying patients may not, therefore, reveal the influence of social status on the incidence of abortions to the extent that it does in countries with abundant medical facilities.

Results: Even a casual observation of the data would suffice to show that the incidence of abortion varies so widely among women that one is led to believe that the hazards are not evenly distributed over all classes of women.

For instance, if we examine the data relating to the 227 women who had two pregnancies including the current one, we find that out of the 454 pregnancies they had, 47 terminated in abortions yielding an abortion rate of 10.4%. If all classes of women were exposed to the same risk, theoretically one should have observed double abortions only in

two to three women. On the other hand, the data revealed that as many as 10 women had both pregnancies terminating in abortions. Similar analysis with other multi-parous women indicated the same feature. Table 1 given above gives for each gravida the number of women included in the data, classified by number of abortions they had. The figures within brackets give the numbers one should have expected if all classes of women were exposed to the same risk. The significance of the deviation of the observed frequencies from the expected values as shown by the X^2 test establishes the fact that the hazards are not evenly shared by all classes of women.

If this be so, then one should expect the chances of the current pregnancy terminating in abortions to be greater in the cases of women whose previous obstetrical history showed one or more abortions. The following table gives the incidence of abortions in the current pregnancy terminations among women, whose previous history showed 0, 1, 2 and 3 or more abortions.

TABLE 2
*Current Abortion Rates (%) for Women Classified
by Number of Previous Abortions*

No. of previous abortions	Result of current pregnancy			current abortion rate (per cent)
	abortions	no abortion	total	
0	93	673	766	12.14
1	24	85	109	22.02
2	10	19	29	34.48
3	7	8	15	46.67
4 & above	6	4	10	60.00
Total	140	789	929	15.07

The figures given in the above table clearly indicate that incidence of abortions among succeeding terminations increases steadily as the previous history recorded larger and larger number of abortions. For the public health worker in the field of maternal health, therefore, the previous pregnancy history of the mothers is an important document for his future guidance.

To establish the statistical significance of the results given in table 2, a X^2 test has been performed by combining cases in which one or more abortions occurred in their previous pregnancy histories into one class. The results showed that current incidence rate among those who had one or more abortions in their previous pregnancies was nearly $2\frac{1}{2}$ times that of those who had none recorded in their previous history and the differentials were statistically very significant.

where hospital deliveries form only a minority, the selection of characteristically typical cases for hospital admission diminishes the value of hospital data for the statistical estimation of certain overall vital indices or rates. For instance, it is generally accepted that one important reason for a case to deserve admission to a hospital is that the authorities apprehend certain obstetrical complications, abortions being a serious one at that. If this be so, abortion rates estimated from hospital data must certainly be far higher than the one that may prevail in the general population. Though hospital data have these shortcomings, nevertheless by a judicious use of them it may be possible to draw certain broad statistical inferences which may be useful for the obstetricians. For instance, though the present obstetrical complication inherent in the case may mainly induce the authorities to

TABLE 3
X² Test for the Association of Previous and Current Abortions

Previous pregnancy history	Result of current pregnancy			Proportions complicated	(Obs.) X ²	X ² value at 1% level
	abortions	no abortion	total			
Abortions	47	116	163	0.2883	27.97	6.635
No abortion	93	673	766	0.1214		
Total	140	789	929	0.1506		

It is a well-known fact that the patients admitted into a hospital are characteristically selected ones and not representative of the general population of women confined during the period under consideration. Especially in a country like India

select it for hospital admission, the merit of the case is not much enhanced by the fact that one or more of the previous pregnancies had terminated in abortion or with any other complication. Of course, by virtue of the association of the current

abortion with those occurred previously as established in the previous section, there is a chance of loading the previous history also with undue proportion of abortions but certainly the bias will be considerably less than what one will have if the current terminations alone were dealt with. For this reason, the comparison between the two social status groups, viz. paying and non-paying patients, have been made on the basis of their previous pregnancy history alone. Table 4 gives the incidence of abortions in these two groups.

derably understated by the difference between the incidence rates given above.

Discussion

It is an accepted fact that proper respect should be paid to the consideration of past obstetrical life in connection with the study of abortions from any statistical angle. As a matter of fact, a current or recent pregnancy affords a basis for questioning and assists in obtaining the interest and cooperation of the informant. However, the data relating to

TABLE 4
Distribution of Abortions by Economic Groups
(data of previous terminations)

Economic groups	Frequency of previous terminations			X ² observed	X ² expected at 5% level
	Abortions	No abortion	Total		
(1)	(2)	(3)	(4)	(5)	(6)
Paying groups	62 (10.78)**	513	575	0.38698	3.841
Non-paying groups	245 (8.26)**	2721	2966		
Total	307	3234	3541		

** Abortion rates per 100 pregnancies.

The incidence rates given in the above table do not suggest any significant difference between the economic groups. As stated earlier in the circumstances obtained in India today, the entry of a patient into paying ward does not necessarily mean that she is economically well-off, and it is therefore not unlikely that the association between lower economic condition and higher incidence of abortion observed is consi-

derably understated by the difference between the incidence rates given above. For instance, if comparisons of incidence of abortions have to be instituted between parity, age and social classes, etc. it is a prerequisite condition that the complicated cases drawn into hospitals from these different groups are in proportion to what exactly exists in the cor-

responding groups of the general gravid female population. In the circumstances obtained in this country there are various grounds to believe that these conditions may not be fulfilled and as such the comparisons made may not be statistically sound. To obviate this difficulty as far as possible it was considered desirable to restrict such comparisons to previous pregnancies.

While enquiring into the fact that whether the future risk of abortion was more pronounced in one class of patients than the other, certain interesting results evolved out of our investigations. It was observed that a larger proportion of abortions were centred round a few 'abortive' mothers, i.e. the chance of abortions was associated with certain specific characteristics of mothers. The study also showed that women who had one or more abortions previously were 2.5 times more susceptible to future abortions than those who had experienced none. The analysis further revealed that abortion rate was significantly increased in relation to number of previous abortions. With no history of previous abortions 12.14% cases aborted. 22.02% cases aborted with history of one previous abortion, 34.48% with two, 46.67% with three and 60% of those with history of four and more abortions. Rucker (1952) similarly found that 5.7% aborted with no history of previous abortion; more than 12.5% of those with one previous abortion aborted and 17% of those with two.

Proper nutrition has long been recognised as a prerequisite to a normal pregnancy. There is a common agreement on the increased

need for minerals, vitamins, fats, proteins and carbohydrates with which to build a pregnancy. The continuation of pregnancy and growth of an intra-uterine foetus largely depends on mother's physique, health, habits and diet, all of which partly or wholly depend on the income and standard of living. The importance of dietary and economic influences on premature births was stressed by Edwards (1946). Adequate and balanced nutrition prevents premature termination of pregnancy. This has been corroborated by the study of population investigation committee formed under the auspices of Royal College of Obstetricians and Gynaecologists (1948). The incidence of miscarriage, premature births and still-births in women on poor diets was much increased (Ebbs, Tisdell and Scott—1942). Douglas (1950) stated that a significantly low incidence of premature termination of pregnancy was found among the most prosperous of the social classes. Javert (1957) stressed special importance to adequate supply of vitamin C, K and P in the diet during pregnancy with special reference to prevention of abortion due to decidual haemorrhage. In the present study we divided our cases into two broad groups according to socio-economic status with a view to find out the relationship of the latter on the incidence of abortion. Our investigations showed that the incidence rate of abortions between two socio-economic groups was not statistically significant. Similar was the experience of Stix (1939) who found out that the proportion of pregnancies terminating in unavoidable preg-

nancy wastage showed no variation by income or social class of patients. Since the abortion may result from so many etiological factors, functioning singly or in combination, it is really very difficult to find out some significant difference in the rate of abortions so far as only socio-economic standard is concerned. This might be judged from a simple fact that as a woman of poor socio-economic strata with inadequate nutrition may abort, similarly a well-fed and well-built woman of better socio-economic standard may also run the risk of unavoidable pregnancy wastage from some abnormalities of ovum, cord or placenta.

Summary and Conclusions

1. A pilot investigation was carried out on a study of 929 patients and 3,541 pregnancies to find out certain correlations of abortions.
2. The importance of scanning the past obstetric histories has been pointed out as regards the studies on abortion based on hospital data. Further, the previous pregnancy history is an invaluable document for prevention of vital loss and damage to maternal health.
3. The patients who had one or more abortions in course of their previous terminations, were 2.5 times more susceptible to further abortions, in their current or future terminations than those who had experienced none. There is a significant increase in the abortion rate in proportion to number of previous abortions.
4. The analysis of the data does not suggest any significant association between economic level and the incidence of abortions.

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