

ANTENATAL CARE AND REPRODUCTIVE PERFORMANCE*

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"Efficient antenatal care is preventive medicine at its best" (Stallworthy). Antenatal care is probably more appreciated for its effects on the selection of abnormal cases but its contribution in the supervision of normal cases cannot be underestimated. At the Lady Hardinge Medical College, New Delhi 6500-7000 patients are delivered annually and the clinics give antenatal care to 20000-22000 cases per year. Nevertheless the majority of cases delivered are emergency admissions from a poor-socio-economic status. With a view to analysing the effects of antenatal care on the outcome, 1000 women admitted to the Labour Rooms were selected at random and studied. These were divided into 6 groups according to the classification of the Indian Council of Medical Research, (1961).

Class I: Income of Rs. 1000 and above each month.

Class II: Income of Rs. 500-Rs. 999 per month.

Class III: Income of Rs. 200-Rs. 499 per month.

Class IV: Income of less than Rs. 200 per month but educated.

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Class V: Income of Rs. 100-Rs. 199 per month but uneducated.

Class VI: Unskilled labourers with income less than Rs. 100 per month.

Among booked cases adequate attendance meant at least 9 attendances, starting in the first trimester. Fairly adequate meant at least 6 attendances starting in the second trimester. Inadequate included the rest (Table 1).

The percentage of mothers who were booked were maximum-93.2% in the educated in Class I and decreased as the Class descended with the minimum (18.1%) in Class VI. This was highly significant. Even among Class IV who were all educated but belonged to a low socio-economic group only 54.6% were booked with only 4.5% having an adequate attendance. However, adequate antenatal attendance was seen at its maximum only in 16.4% of Class I and the percentage again decreased as the class descended so that in Class VI only 3.6% among 18.1% who were booked, attended regularly. Class V & VI showed 70% and 81.9% mothers respectively who were unbooked.

Abramowicz and Kass (1966) noted that in primigravidae more caesarean sections were done in unbooked patients than in booked. The present study also showed that 56% caesarean sections were done on unbooked and 44% on booked cases.

TABLE I
Distribution of Mothers Availing of Antenatal Care

Antenatal care	I		II		III		IV		V		VI	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Unbooked	5	6.8	41	23.5	136	47.0	10	45.4	232	70.0	91	81.9
Booked	68	93.2	133	76.5	153	53.0	12	54.6	99	30.0	20	18.1
(a) Adequate Fairly	12	16.4	9	5.5	13	4.4	1	4.5	4	1.2	4	3.6
(b) Adequate	34	46.5	62	35.5	37	12.8	3	14.1	15	4.5	2	1.8
(c) Inadequate	22	30.3	62	35.5	104	35.8	8	36.0	80	24.3	14	12.7
Total	73	100	174	100	289	100	22	100	331	100	111	100

Statistical evaluation: $X^2 = 142.36$. P is less than .001 Very highly significant.

TABLE II
Mode of Delivery and Antenatal Care

Antenatal care	Spontaneous delivery		Forceps delivery		Caesarean section		Operative delivery	
	No.	%	No.	%	No.	%	No.	%
Booked	355	47.3	86	57.3	44	44.0	130	52.00
Unbooked	395	52.7	64	42.7	56	56.0	120	48.00
Total	750	100	150	100	100	100	250	100

In Class VI, 13% were multiparae and 25.2% grand multiparae. The higher percentage (56%) of caesarean section in unbooked cases could be accounted for by the higher percentage of high risk grand multiparas among the lower socio-economic groups, 81.2% of whom were unbooked and admitted as emergencies.

Grand multiparae had the highest incidence of caesarean sections, the majority of them belonging to the lowest socio-economic group, where attendance at the antenatal showed much to be desired.

The correlation between socio-economic status, antenatal care and premature delivery showed overall a 2½ times higher rate i.e. 21.3% in unbooked patients as compared to 8.6% in the booked (Table III). Prematurity rate increased with descent in social class from 5.4% in Class I to 20.9% in Class VI. The effect of antenatal care was obvious in that double and some times triple the amount of deliveries were premature in the unbooked cases, in each class. This was markedly seen even in class I where the booked cases had only 4.4% premature deliveries against 20% in the unbooked. Since 93.2% of this class were booked these patients represent the best group where with a better diet, better Hb. levels, better antenatal care, a low prematurity rate was achieved.

As against Cecil (1967) who found no association with antenatal care and premature labour, Douglas (1950) pointed out that the rate of prematurity is lowest with adequate and highest with inadequate antenatal care. Eastman (1953), Martin (1954), Schwartz (1963), Abramowicz and Kass (1966) support Douglas (1950).

The combined effect of social class and antenatal care again showed a statistical correlation in that 5.4% only in Class I

had premature deliveries compared to 20.9% in Class VI. This highlights an important relationship since 93.2% of Class I were booked and 81.9% of Class VI were unbooked.

The lower socio-economic classes not only had a 4 times higher prematurity rate, compared to Class I but showed the same correlation with stillbirth and perinatal mortality. The stillbirth rate increased as the Class descended from 1.3% in Class I to 11.7% in Class VI. Similarly with perinatal mortality (Table IV).

The overall stillbirth rose three times from 3.09% among booked patients to 10.6% among the unbooked. The percentage of booked cases was highest 32.2% in Class I and these showed the lowest stillbirth rate (1.4%). This one case was due to cord around the neck.

The overall perinatal mortality also increased three-times in unbooked patients i.e. 159/1000 births as against 43/1000 in booked patients while the unbooked patients in Class V, showed the highest perinatal mortality 202/1000 compared to 101/1000 among booked patients in same Class. The relation between antenatal care and perinatal mortality was statistically significant in both upper and lower social classes.

Discussion

A high rate of antenatal attendance among the higher socio-economic classes was demonstrated by Douglas (1960) Llewellyn (1966) and Mukherjee *et al* (1971). The latter showed an antenatal attendance of 57% in higher socio-economic group as against 22% in lower group. The present study agrees with the above authors. There were 93.2% booked patients in Class I (all educated) as against only 18.1% in

TABLE III
Premature Cases and Antenatal Care

Antenatal care	I		II		III		IV			V		VI			Total	
	No. in group	% No.	No. in group	No.	% in group	No.	No.	%	No. in group	No.	%	No. in group	No.	%	No.	%
Booked	68	3 4.4	133 10	7.5	153	11 7.1	12 0	0	99	16 16.1	20 2	10.0	42	8.6		
Unbooked	5	1 20.0	41 5	12.1	136	31 22.7	10 2	20.0	232	50 21.5	91 21	23.0	110	21.3		
Total	73	4 5.4	174 15	8.6	289	42 14.5	22 2	9.09	331	66 19.9	111 23	20.9	152	15.2		

Statistical evaluation: $X^2 = 3.91$. P is less than .05 significant.

TABLE IV
Stillbirth and Perinatal Mortality According to Antenatal Care

Antenatal care	I		II		III		IV			V		VI			Total	
	No. in group	No. %	No. in group	No.	%	No. in group	No.	%	No. in group	No.	%	No. in group	No.	%	No.	%
Stillbirth																
Booked	68	1 1.4	133 2	1.5	153	4 2.6	12 0	0	99	7 7.07	20 1	5.0	15	3.09		
Unbooked	5	0 0	41 4	9.7	136	10 7.3	10 1	10.0	232	28 12.06	91 12	13.1	55	10.06		
Total	73	1 1.3	174 6	3.4	289	14 4.8	22 1	4.5	331	35 10.5	111 13	11.7	70	7.0		
Perinatal mortality																Ratio/1000
Booked	68	1 1.4	133 3	2.2	153	5 3.2	12 1	8.3	99	10 10.1	20 1	5.0	21	43		
Unbooked	5	0 0	41 5	12.1	136	15 11.02	10 2	20.0	232	47 20.2	91 13	14.2	82	159		
Total	73	1 1.3	174 8	4.5	289	20 6.8	22 3	13.6	331	57 17.2	111 14	12.6	103	103		

Statistical evaluation: Class I + II + III $X^2 = 16.96$. P is less than .001. Very significant
Class IV + V + VI $X^2 = 6.28$. P is less than .05. Significant.

Class VI. The better educated higher socio-economic groups of women understand the importance of antenatal care. In Class VI 81.9% were emergency admissions. An important reflection was that even among booked cases, the percentage of inadequate antenatal care was high in all classes and around 30% of the upper class did not attend the antenatal adequately and even among Class I where 93.2% availed of prenatal care only in 16.4% it was adequate. This reflects an important universal lack of appreciation of facilities available, among Indian women.

Premature labours correlated significantly with socio-economic levels and antenatal care being two and a half times higher in unbooked women of the lower social strata.

Sutherland (1946) noted that there was a decrease in stillbirth in England and Wales, which he attributed to better antenatal care. The present study also shows a higher incidence of still birth (10.6%) among unbooked cases as against 3.09% in booked cases. An increasing incidence with a decreasing socio-economic status was also found.

Donnelly *et al* (1957), Butter and Bonham (1963) and Wallace (1970) found a raised perinatal mortality among women who had inadequate antenatal care. Stallworthy (1966) stated that the mothers who received no antenatal care had a perinatal mortality rate 5 times the overall national figure. According to the present study a three-fold increase in perinatal mortality was seen in unbooked cases (159/1000) as against in booked cases 43/1000.

The lack of appreciation of available antenatal facilities was found more in lower socio-economic classes who were reluctant to attend the antenatal clinic

regularly, even though the majority of them were severely anaemic and included several high risk grand multiparae.

Summary

Lack of antenatal care and inadequate care play a significant role, both in maternal and perinatal mortality. Patients in India exhibit a marked indifference to facilities offered and present a challenge to obstetrician, health officials and to educationalists. Antenatal care played a significant role in the behaviour in pregnancy and in its outcome. Since it was intimately related to socio-economic status; the women of the upper strata interested in their health showed a high attendance at the antenatal clinic. However, even among these only 16.4% of Class I had an adequate attendance. In this study, this was the most significant finding.

The effects were seen in higher prematurity, stillbirth and perinatal mortality in the lower socio-economic group without prenatal care.

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References

1. Abramowicz, M. and Kass, E. H.: *New Eng. Med. J.* 275: 878, 1001, 1966.
2. Butler, N. R. and Bonham, O. G.: *Lancet.* 2: 1207, 1963.
3. Cecil, D. M.: *J. Obst. & Gynec. Brit. Emp.* 64: 161, 1957.
4. Donnelly *et al*: *Amer. J. Obst. & Gynec.* 74: 1245, 1957.
5. Douglas, J. W. B.: *J. Obst. & Gynec. Brit. Emp.* 57: 143, 1950.
6. Eastman: Cited by Reference 11.

