

THE EFFECT OF ANTENATAL CARE ON BIRTH WEIGHT

By

G. V. S. MURTHY AND K. MAKHIJA

SUMMARY

The impact of antenatal care services on the incidence of low birth weight and the mean birth weight was studied in 2292 singleton live births at a rural project hospital, in Haryana. Utilisation of antenatal care services was most influenced by the scholastic achievement of the parents. The mean birth weight was 150 grams higher in the booked group, compared to the unbooked category. The incidence of low birth weight was higher in the unbooked group. At all parity levels, the booked cases had a higher mean birth weight, compared to the unbooked cases.

Introduction

The principal objective of antenatal care is to ensure good health in every expectant and lactating mother and to enable her to have a normal delivery and a healthy baby. Provision of effective antenatal care is of primary concern to the health planners, because it is a well documented cost-effective strategy.

Many conditions during the pregnant state have a bearing on the fetal outcome. Adequate attention to these conditions during pregnancy lead to a positive impact on the birth weight of the newborn.

Antenatal care would prevent prematurity and low birth weight, by decreasing the incidence of anaemia and toxemia in pregnancy. It would also ensure early treatment of incidental complications like pneumonias, influenza, chronic nephritis, rheumatic fever, syphilis Tuberculosis and malaria, all of which could influence

the birth weight. Moreover, it would also ensure prompt management of conditions like antepartum haemorrhage and congestive cardiac failure, thus improving the fetal outcome. Antenatal care services are also geared to impart health and nutrition education, so that other contributing causes like arduous labour during pregnancy, food fads and restriction, and closely spaced pregnancies can also be tackled. Very few workers have attempted to gauge the effect of antenatal care on the birth weight distribution, especially in India. Thus it is of paramount importance to detail the effects of antenatal care on birth weight distribution in a community.

Materials and Methods

The present study was conducted at the Comprehensive Rural Health Services Project hospital at Ballabgarh industrial township in Haryana. This hospital is the referral institution for 3 primary health centres in this block. It is a 60 bed hospital with all specialities, and is the rural

From: Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi.

Accepted for publication on 13-4-88.

outpost of the All India Institute of Medical Sciences, New Delhi. Antenatal clinics are held 3 times a week at the referral institution and once weekly at the respective primary health centres. The services provided at those centres, in the antenatal clinics include physical examination, routine investigations for Haemoglobin and urine sugar and albumin, provision of iron-folic acid supplements, immunization with Tetanus toxoid and imparting nutrition and health education. The records of 2292 singleton live births over a 2 years period (1985-1987) were analysed to ascertain the differences between the booked and the unbooked cases.

Observations

2292 singleton live births over a 2 year period were analysed. 74.5 per cent of the mothers were from the township, while the remaining 25.5 per cent of the mothers who delivered at this hospital, were from the neighbouring rural block (upto a distance of 20 kilometres from the referral institution).

77 per cent of the mothers had received antenatal care at the referral institution or the catchment primary health centres, while 23 per cent did not receive any such care. 84.4 per cent of the study population from the urban township had received antenatal care, compared to only 55.4 per cent from the neighbouring rural area. This difference was highly significant (X^2 -207.4406; $p < .0001$).

The mean birth weight of the 2292 live births was 2715 gms (SD 453). The mean birth weight amongst cases availing antenatal care services was 2750 gms (SD 432) while it was 2600 gms (SD 499), amongst those not receiving such care.

Increasing levels of literacy status of the fathers was associated with an increase

in the utilisation of antenatal care facilities by the mothers. Where the fathers were illiterate or educated to less than the primary grade, only 65.6 per cent of the mothers availed of these facilities, while amongst the graduates and postgraduates, 86.4 per cent availed of these facilities. This difference was also statistically significant (X^2 value -61.3141; p value $< .001$). Considering maternal literacy, 67.3 per cent of the illiterates and those educated to below the primary grade, attended antenatal clinics, as against 91.3 per cent of the mothers who were graduates or postgraduates. This was also statistically significant (X^2 value -117.1953; p value $< .001$).

78.3 per cent of the mothers below 30 years availed of antenatal care facilities as against 65.3 per cent of mothers aged 30 years and above. The difference in availing of antenatal care facilities at different ages was statistically significant (X^2 value -49.9267 p value $< .001$).

The utilisation of antenatal care facilities and parity, did not show a linear relationship, though more number of women of lower parity availed of these services, compared to the grandmultiparas (parity ≥ 4) (Table II). The difference was significant at .01 level (X^2 value -15.0288).

Both parity and the utilisation of antenatal care facilities had a bearing on the mean birth weight of the newborns (Table III). However, at all parities, mothers receiving antenatal care gave birth to heavier babies, compared to the mothers not receiving antenatal care. At all levels of parity, except para 6 and above, the difference in the mean birth weight exceeded 100 grams (The maximum difference was at second parity i.e. 225 gms).

TABLE I
Relationship Between Maternal Age and Utilisation of Ante Natal Care

Mat. Age	Utilised ANC		Not utilised ANC		
	No.	%	No.	%	
< 20 yrs.	197	151	76.6	46	23.4
20-24 yrs.	1188	977	82.2	211	17.8
25-29 yrs.	679	488	71.9	191	28.9
30-34 yrs.	174	119	68.4	55	31.6
> 34 yrs.	54	30	55.6	24	44.4
Total	2292	1765	—	527	—

TABLE II
Relationship Between Parity and Utilisation of Ante Natal Care

Parity	Utilised ANC		Not utilised ANC		
	No.	No.	%	No.	%
Para 1	731	573	78.4	158	21.6
Para 2	750	578	77.1	172	22.9
Para 3	532	424	79.7	108	20.3
Para 4	175	120	68.6	55	31.4
Para 5	59	39	66.1	20	33.9
> Para 5	44	31	70.5	13	29.5
Total	2292	1765	—	527	—

TABLE III
Relationship Between ANC, Parity and Mean Birth Weight

Parity	No.	Utilised ANC		Not utilised ANC	
		Mean Birth	Mean Birth	Mean Birth	Mean Birth
		Wt. (gms)	S.D.	Wt. (gms)	S.D.
Para 1	731	2610	419	2498	437
Para 2	750	2785	410	2560	509
Para 3	532	2832	429	2700	503
Para 4	175	2923	400	2771	545
Para 5	59	2864	428	2670	505
> Para 5	44	2764	548	2715	563
Total	2292	2750	432	2600	499

The incidence of low birth weight amongst mothers receiving antenatal care was 35.9 per cent, as against 49.0 per cent amongst mothers not receiving antenatal care. The difference was significant (X^2 value -29.2347; p value < .001).

Discussion

The literacy levels of both parents were found to influence the utilisation of the available antenatal care facilities. More women irrespective of their educational

attainment, were found to utilise these services in the present study, compared to previous studies (Gupta, 1983). No previous studies have commented upon the importance of the fathers educational attainment, in determining the utilisation of antenatal care services. In a male dominated society like ours, the decision to utilise a service like an antenatal clinic, would definitely be dictated by the husband's awareness, interest and motivation. Thus one should expect that the husband's literacy status would have an impact on the utilisation of antenatal services. More studies would be required in this direction.

Previous studies have shown that antenatal care reduces the incidence of low birth weight. At Delhi, 14.3 per cent of babies of unbooked mothers weighed less than 2500 gms, as compared to 1.5 per cent in the booked group (Mirchandani and Verma, 1978), while another study showed that 28.8 per cent of booked cases were low birth weight, as against 50 per cent in unbooked cases (Gupta, 1983). In the present study, the incidence of low birth weight in the unbooked group was 49 per cent and amongst the booked cases was 35.9 per cent. Thus, antenatal care is a

definite strategy of controlling low birth weight. A previous study has also shown that mean birth weight is improved in mothers receiving an iron supplement during pregnancy (Qureshi and Devi, 1977). All the women attending the antenatal clinics in the present series were routinely given iron and folic acid supplement. Hence a part of the increased mean birth weight may be due to the prevention of anaemia and subsequently a reduction of low birth weight.

Thus the present study has clearly demonstrated that antenatal care definitely influences the mean birth weight, and also reduces the incidence of low birth weight. In turn, the utilisation of the antenatal care services provided, is influenced by a battery of factors, the most important of which may be the level of scholastic achievement of both the mother and the father.

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