

# A STUDY OF LOW BIRTH WEIGHT BABIES IN SPECIAL CARE UNIT

by

S. D. SHARMA,\* M.B.,B.S., M.D.

USHA ACHARYA,\*\* M.D.

Prof. S. SAXENA,\*\*\* M.D., D.C.H.

and

USHA SHARMA,† M.D., D.C.H.

## Introduction

It has generally been accepted that the WHO criteria of 2500 gms. as the line of demarcation between the mature and low birth weight babies can not be implicated in India where the average birth weight is found to be in between 2.7-2.9 kg., in most of the studies (Ghosh and Beri 1962). Hence the criterion of 2000 gms. or less is being accepted as the limit of low birth weight babies. Their problems are similar to a large extent to those babies weighing 2500 gms. or less in western countries. The number of such low birth weight babies is quite large in India 9.5-11.9 per cent (Sainaba *et al* 1972; Anand *et al* 1970; and Aiyar and Agarwal, 1967) and they present peculiar problems which contribute to high perinatal and neonatal deaths.

Since the incidence of low birth weight babies varies in different countries and the problems of low birth weight babies are quite different from fullterm babies, it is essential to have data on the local

\*Child Specialist, Civil Asstt. Surgeon, Referral Hospital (Rajasthan).

\*\*Lecturer in Pediatric Medicine.

\*\*\*Professor & Head of the Department of Pediatric Medicine, Jaykaylon Mother & Child Health Institute and S.M.S. Medical College, Jaipur, Rajasthan.

†Reader in Pediatric Medicine.

Accepted for publication on 1-4-82.

patient population for planning special care pattern for prevention and management of low birth weight babies in maternity units. Thereby we can reduce the neonatal and perinatal morbidity and mortality rates.

## Material and Methods

The present study comprises of 400 newborns weighing 2000 gms. or less, irrespective of their gestational age who were delivered in State Zenana Hospital, Jaipur. Only those low birth weight babies who needed special care (admitted in special care unit) were included in the study. Babies who died within few minutes after birth in the labour room and could not be brought to the special care unit were excluded. After a careful recording of all the aspects of history, gestational period was recorded in weeks, calculated from the first day of last menstrual period. Babies were thoroughly examined, fully investigated and their gestational age was assessed by modified Usher's criteria. All babies were nursed in special care unit and were discharged when either they weighed more than 2000 gms. or were considered well to be nursed at home.

## Observations

Four hundred low birth weight babies

were studied. Table I shows that maternal age and parity does not significantly influence the mortality of low birth weight babies admitted for special care. Similarly, Table II demonstrates that the outcome of such babies was not affected by their sex. About 70.0 per cent of low birth weight babies were preterm, while approximately 30.0 per cent were SGA—low birth weight babies.

TABLE I  
Influence of Maternal Age and Parity on the Outcome of Low Birth Weight Babies

Maternal age (years)	Total No. of babies	No. of died	Mortality Percentage
20 or below	100	55	55.0
21-30	227	123	54.18
31 or more	73	32	43.83
Total	400	210	52.5
Parity			
Primipara	130	69	53.07
2-4	200	118	59.0
5 or more	70	23	32.85

TABLE II  
Grouping of Low Birth Weight Babies According to Their Sex

Sex of babies	Total No.	No. died	% mortality
Male	236	126	53.39
Female	164	84	51.22

Table III shows that out of 400 babies, 204 were below 1500 gms. and rest were in the range of 1501-2000 gms. Thirty babies (7.5 per cent) who weighed less than 1000 gms. all were preterm. Out of 174 babies in the weight group of 1001-1500 gms., 79.9 per cent were preterm and out of 196 babies from 1501-2000 gms. weight group, 58.5 per cent were preterm.

TABLE III  
Grouping of Low Birth Weight Babies According to Weight

Weight (in gms.)	Number	Percentage
Below 1000	30	75.0
1001 - 1500	174	43.5
1501 - 2000	196	49.0

Table IV depicts the mortality in different weight group babies. No baby under 1000 gms. weight survived, thus the mortality in this group was 100.0 per cent. In the weight group of 1001-1500 gms. the death rate was 63.8 per cent and the total deaths were 111. Among the weight group 1501-2000 gms. the mortality was minimum that is 35.2 per cent and the total deaths were 69 out of 196 babies.

TABLE IV  
Mortality among the Different Weight Groups

Weight (in gms.)	No. of deaths	Percentage of death
Below 1000	30	100.0
1001 - 1500	111	63.80
1501 - 2000	69	35.20

Table V shows the clinical causes of death in relation to the birth weight of neonates. Total deaths in the weight groups less than 1000, 1001-1500, and 1501-2000 gms. were 30, 122 and 58 respectively. The causes of death in weight group less than 1000 gms. were prematurity (46.66 per cent), infections (16.66 per cent), sclerema (13.33 per cent), asphyxia (13.33 per cent) and diarrhoea (10.00 per cent). The causes in 2nd weight group were prematurity (32.78 per cent), infections (28.68 per cent), diarrhoea (22.13 per cent), sclerema (4.90 per cent), jaundice (4.9 per cent), intracranial haemorrhage (4.1 per cent) and asphyxia (2.46 per cent) in decreasing order of frequency.

TABLE V  
Causes and Number of Deaths in Relation to Birth Weight

Cause of death	Below 1000 gms.	Per-centage	1001-1500 gms.	Per-centage	1501-2000 gms.	Per-centage
Prematurity	14	46.66	40	32.78	10	17.24
Infections	5	16.66	35	28.68	20	34.48
Diarrhoea	3	10.00	27	22.13	16	27.58
Intracranial hemorrhage	0	—	5	4.10	3	5.17
Sclerema	4	13.33	6	4.90	2	3.45
Asphyxia	4	13.33	3	2.46	3	5.17
Jaundice	0	—	6	4.90	4	6.90

In the weight group 1501-2000 gms. the causes of deaths in decreasing frequency were neonatal infections (34.48 per cent), diarrhoea (27.58 per cent), prematurity (17.24 per cent), jaundice (6.9 per cent), intracranial haemorrhage and asphyxia constituting (5.17 per cent) each and sclerema (3.45 per cent).

The first three causes of deaths were prematurity, neonatal infections and diarrhoea.

In relation to survival time, the total deaths within 24 hours were 59 and prematurity was the commonest cause, while as the age advanced the commoner causes were infections and diarrhoea.

Among the total 30 deaths that occurred in weight group of less than 1000 gms., 27 were within 24 hours, and 3 within 2-7 days. Among the 122 deaths that occurred in weight group 1001-1500 gms., 15 were within 24 hours, 86 in 2-7 days and 21 deaths were after 7 days duration. In weight group 1501-2000 gms., the number of deaths within 24 hours, 2-7 days and after 7 days were 10, 39 and 9 respectively.

The different modes of delivery of low birth weight babies show that 72.5 per cent were delivered normally, 15.75 per cent were twins, 8.25 per cent breech, 2.5 per cent were delivered by caesarean

section, while forceps and transverse lie with shoulder presentation were in 0.75 per cent and 0.25 per cent only.

#### Discussion

In the present series, maximum number of babies were born to mothers below the age of 30 years. Several western authors (Klein, 1946; McKeown and Gibson, 1951) found that the age of the mother had practically no influence on the weight of the baby. However, Achar and Yankauer (1962), Basu and Puri (1963) showed that the mother's age has got a definite influence on the birth weight of baby i.e. the birth weight of baby increases with increasing maternal age upto 25-30 years and thereafter tends to fall. Maximum number of low birth weight babies were born to primigravida. It has been pointed out by other workers also, Basu and Puri (1963), Aeyar and Agarwal (1969), Sainaba *et al* (1972), that the birth weight increases with increasing parity upto the 5th gravida and thereafter it decreases. Ramchandran (1963) also showed that the mortality among premature were maximum in the first para, then it decreases in successive deliveries.

Two hundred and ten out of 400 low birth weight babies succumbed to death,

the mortality being 52.5 per cent. This is a high figure when compared with the mortality rate among low birth weight babies reported by Ramchandran (1962) 46.4 per cent, Gupta (1969) 46.7 per cent and Anand *et al* (1970) 39.0 per cent but is lower than the mortality rates reported by Bhalla *et al* (1975) 57.3 per cent and Sainaba *et al* (1972) 57.6 per cent. From our study it is evident that chances of survival of babies below 1500 gms. are very poor.

Prematurity per se was responsible for greatest number of deaths, that is 64 deaths out of 210 total deaths (30.5 per cent). Infections were the next common cause of death. The various infections encountered were umbilical sepsis, oral thrush, neonatal septicemia, cellulitis and nasal gangrene (2 cases). The other causes of deaths in decreasing order of frequency were diarrhoea, sclerema, asphyxia, jaundice and intracranial haemorrhage. The figures are comparable with the observations of Sainaba *et al* (1972), Anand *et al* (1970), Gupta *et al* (1969) and Bhalla *et al* (1975).

The babies who died of prematurity per se, the cause of death in them may be labelled as non-infective respiratory dysfunction (Crosse, V. M., 1961). The incidence of asphyxia as a cause of death has been quite low in our series (4.7 per cent) when compared to figures reported by other workers Gupta *et al* (1969) 15.9 per cent, Anand *et al* (1970) 22.0 per cent, Tyson (1946) 16.37 per cent and Potter *et al* (1964) 14.26 per cent. Sainaba *et al* (1972) gave an incidence of 6.2 per cent mortality due to asphyxia neonatorum. This discrepancy between our figures and those recorded by other workers might be due to the fact that we did not include those asphyxiated babies who could not be brought to our special care unit and died in the labour room. Respi-

ratory distress syndrome has been reported to be an important cause of death among low birth weight babies, both by Indian and Western authors. However, none of the babies in our series showed evidence of respiratory distress syndrome.

Sixty-two out of 64 babies died of prematurity, died within first week. This observation is comparable to that of Sainaba *et al* (1972). In babies weighing less than 1000 gms. death usually occurs during first 24 hours which has also been the case in our series. Maximum number of deaths occurred during first week which is the most critical period. With increasing birth weight the survival time of low birth weight babies increased in our series. More or less same trend of mortality has been reported by other workers Sainaba *et al* (1972), Anand *et al* (1970) and Gupta *et al* (1969).

The mode of deliveries of low birth weight babies in our series coincides with the study of Sainaba *et al* (1972).

#### Acknowledgement

We are grateful to Dr. Pushpa Gupta, Superintendent, State Zanana Hospital, Jaipur, Rajasthan for allowing us to publish this paper.

#### References

1. Achar, S. T. and Yankawer, A.: *J. Child Health.* 11: 157, 1962.
2. Aiyar, R. R. and Agarwal, J. R. *Indian Ped.* 6: 729, 1969.
3. Anand, S., Paul, S. S., Kumar, S. and Bhatia, S. L.: *Ind. Ped.* 7: 35, 1970.
4. Basu, A. K. and Puri R. K.: *J. Child Health.* 12: 233, 1963.
5. Bhalla, J. N., Bhalla, M. and Shrivastava, J. R.: *Ind. Ped.* 12: 665, 1975.
6. Crosse, V. M.: In the *Premature baby*, 5th Ed. J. & A. Churchill Ltd. London, 1961 p. 4.
7. Ghosh, S. and Beri, S.: *Ind. Jour. Child Health.* 11: 215, 1962.

8. Gupta, S., Shrivastava, G., Berry, A. M. and Khatri, R. L.: *Ped. Clin. India.* 4: 331, 1969.

9. Klein, J.: *Am. J. Obstet. Gynec.* 52: 574, 1946.

10. Mc Keown, T. and Gibson, J. R.: *Brit. J. Soc. Med.* 5: 98, 1951.

11. Potter, E. L.: *Clinic. Obstet. Gynec.* 7: 733, 1964.

12. Ramchandran, R. S.: *Ind. J. Child Health.* 12: 279, 1963.

13. Sainaba, M. K., Indira, O. C. and Mathai, N. M.: *J. Pediat.* 31: 389, 1972.

14. Tyson, R. M.: *J. of Ped.* 28: 648, 1946.

*[The following text is extremely faint and largely illegible due to fading and bleed-through from the reverse side of the page. It appears to contain a detailed report or discussion related to the study mentioned in the title.]*