

# Low Birth Weight Incidence in Lundu, Sarawak

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## Summary

The overall mean birth weight of the total deliveries (1986-1988) in Lundu Hospital was 2.96 kg. The mean birth weight for the male babies was 2.94 kg. The Chinese babies had a significantly higher mean birth weight (3.12 kg) than the other ethnic groups ( $p < 0.05$ ). The overall incidence of low birth weight (LBW) in this study was 11.84 per cent. The Chinese again had a lower incidence of LBW of 6.73 per cent compared to Ibans who had the highest incidence of LBW, 13.59 per cent, with the Bidayus 12.97 per cent and Malays, 12.45 per cent. It was also noticed that of the 14.9 per cent preterm deliveries, 37.5 per cent were LBW. The very young mothers (15-19 years) and older mothers (>40 years) seem to have a higher incidence of LBW. Mothers who had medical conditions like anaemia, hypertension, pre-eclampsia also had a higher incidence of LBW when compared to mothers who did not have a medical condition. Special emphasis should be given to mothers who have medical conditions, and to very young and very old mothers during antenatal care, to prevent incidence of LBW.

**Key Words:** Low birth weight, Sarawak, Mean birth weight

## Introduction

The birth weight of an infant is the single most important determinant of its chance of survival, and health growth and development. The World Health Organization (WHO) has defined low birth weight (LBW) as less than 2500gm (up to and including 2499gm). Low birth weight can be caused by premature delivery or by foetal growth retardation<sup>1</sup>. Some of the factors which can affect birth weight are antenatal infections, smoking, multiple pregnancy, congenital malformations, maternal nutrition, height and weight of mother, and socio-economic factors<sup>2,3,4,5,6</sup>.

Low birth weight is directly associated with perinatal mortality<sup>7,8</sup>. It is therefore essential to identify LBW early and give special attention to LBW babies. The incidence of LBW in Malaysia ranges from 9.0 to 13.0 per cent and it varies from state to state. A study on hospital data in Krian suggested a rate of 11.8 per cent<sup>9</sup>. The incidence of LBW is also directly associated with the socio-economic development of a country. It has been noticed that developing countries have a high incidence of LBW whereas developed countries have a low incidence of LBW. This study attempts to describe the LBW incidence in some of the ethnic groups in Sarawak from hospital data, and makes comparison with the ethnic groups in Peninsular Malaysia.

**Materials and Method**

**Study area**

The district of Lundu is situated in the western part of Sarawak (97km from Kuching). It has a population of 21,576 (1980 census). The Bidayuhs consist of 38.5 per cent with the Malays, 30.5 per cent, Chinese, 16.2 per cent and Ibans 13.8 per cent. There are 104 villages in the district. The Chinese stay mainly in Lundu town while the other ethnic groups are spread out in the rural areas. The main occupations are small scale farming (pepper, cocoa, paddy and rubber), labourers in logging camps, fishing and as government staff in government offices.

Lundu Hospital is 52 bedded and has a general medical, surgical, paediatrics, and obstetric and gynaecology wards. There are two rural clinics and a small dispensary kecil that refer the patients to the Hospital. Minor operations are done in the Hospital but the more serious cases are referred to Sarawak General Hospital in Kuching.

On average there are 630 deliveries in the district each year. In 1988, there were 417 deliveries in the Hospital (64.6%), 90 (13.9%) in clinics, 26 (4.1%) by trained personnel and trained TBA, and 108 (16.7%) by untrained TBA. For 1986 to 1988, the hospital delivered 58.1 per cent of the total deliveries in the Lundu District.

**Data collection**

This was a retrospective study. All deliveries in Lundu Hospital (1986-1988) were considered for the study. This constituted about 58.1 per cent of the total deliveries in the district during the year 1986-1988. The source of the data was the delivery register in the hospital. All deliveries except that of illegal Indonesian, Melanaus and other indigenous groups (0.8%) were considered for the study.

**Results**

All deliveries in Lundu Hospital (1088 deliveries) were considered for the study. The majority of the deliveries, 446 (40.9%), were Bidayuhs; 361 (33.1%) were of Malays; with the Chinese numbering 103 (9.5%) (Table I). The male:female ratio was 1.07:1.

**Table I**  
**Mean birth weight, standard deviation, standard error of mean**  
**amongst various ethnic group in Lundu Hospital**

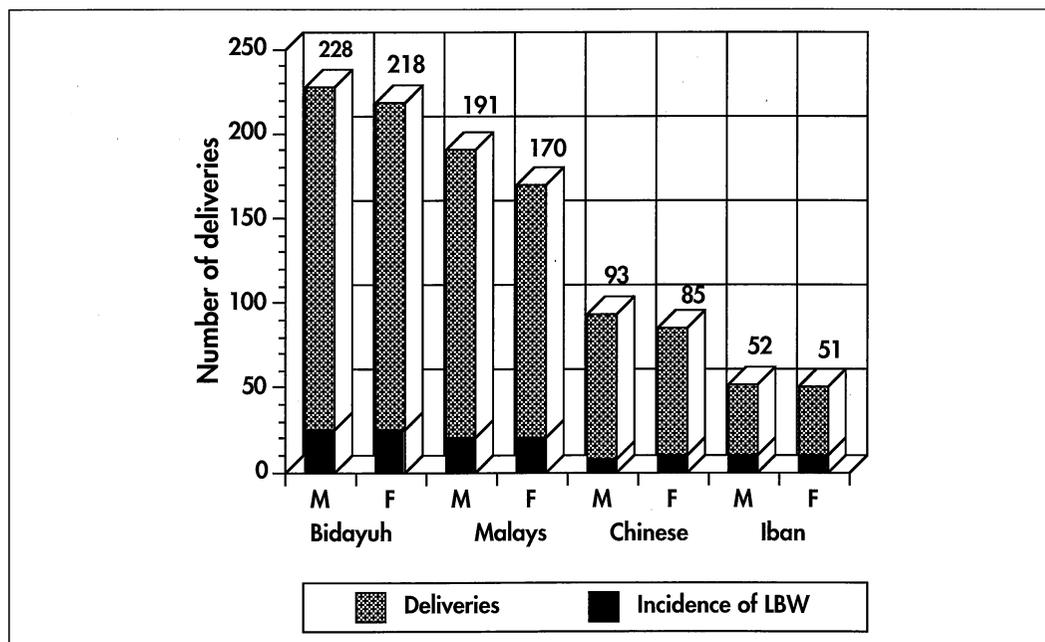
|                        | Bidayuh |       |       | Malay |       |       | Chinese |       |       | Iban  |       |       | Total |       |       |
|------------------------|---------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        | M       | F     | T     | M     | F     | T     | M       | F     | T     | M     | F     | T     | M     | F     | T     |
| Number                 | 228     | 218   | 446   | 191   | 170   | 361   | 93      | 85    | 178   | 52    | 51    | 103   | 564   | 524   | 1088  |
| Mean                   | 2.928   | 2.899 | 2.968 | 3.018 | 2.939 | 2.982 | 3.165   | 3.014 | 3.128 | 2.956 | 2.842 | 2.898 | 3.004 | 2.942 | 2.964 |
| Standard deviation     | 0.378   | 0.308 | 0.340 | 0.352 | 0.304 | 0.332 | 0.371   | 0.224 | 0.281 | 0.290 | 0.317 | 0.317 | 0.338 | 0.364 | 0.304 |
| Standard error of mean | 0.025   | 0.02  | 0.02  | 0.025 | 0.02  | 0.02  | 0.03    | 0.02  | 0.02  | 0.04  | 0.04  | 0.03  | 0.014 | 0.015 | 0.01  |

The overall mean birth weight of all the babies was 2.90kg. The mean birth weight of the males was 3.00kg while the mean birth weight of the females was 2.94kg ( $p>0.05$ ). The Chinese had the highest mean birth weight of 3.13kg while the Ibans had the lowest mean birth weight of 2.89kg ( $p<0.05$ ). The mean birth weight by sex showed that the Chinese male had the highest mean birth weight of 3.16kg while the Iban female had the lowest mean birth weight of 2.84kg ( $p<0.05$ ). In all the ethnic groups the mean birth weight of the males was higher than that of females (Table I).

Fig 1 shows that overall LBW incidence in the study was 11.8 per cent. The Ibans had the highest LBW incidence of 13.6 per cent overall and the Chinese had the lowest LBW incidence of 6.7 per cent ( $p<0.05$ ). It is interesting to note that of the total deliveries, there were only 16 babies (1.64%) below 2.00kg. Among the sexes, the Chinese male baby had the lowest LBW incidence of 5.3 per cent while the Bidayuh female and the Iban female had the highest incidence of LBW incidence of 13.7 per cent.

There is a significant contribution of the age of the mother to the birth weight of the baby. In this study, mothers in the 15-19 years age group had babies with higher incidence of LBW (17.5%). Similarly older mothers (>40 years age) also showed a higher incidence of LBW (Table II). A similar pattern was seen in other races except for Iban mothers whose highest incidence LBW was in the 25-29 years age group.

Another important factor of LBW is the incidence of pre-term babies. Table III shows that the pre-term delivery rate was 14.9 per cent and the incidence of LBW amongst preterm deliveries was 37.5 per cent ( $p<0.05$ ) whereas the LBW among the term babies was only 8.7 per cent.



**Fig.1: Incidence of LBW of males & females by ethnic group**

|                      |                |       |                |       |
|----------------------|----------------|-------|----------------|-------|
| <i>LBW incidence</i> | <i>Iban</i>    | 13.6% | <i>Chinese</i> | 6.7%  |
|                      | <i>Bidayuh</i> | 12.9% | <i>Overall</i> | 11.8% |
|                      | <i>Malays</i>  | 12.5% |                |       |

**Table II**  
**LBW incidence by age of mother (%)**

|                                   | <b>Ethnic Group/<br/>Age</b> | <b>15-19<br/>yrs</b> | <b>20-24<br/>yrs</b> | <b>25-29<br/>yrs</b> | <b>30-34<br/>yrs</b> | <b>35-39<br/>yrs</b> | <b>40-44<br/>yrs</b> | <b>45-49<br/>yrs</b> | <b>Total</b> |
|-----------------------------------|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|--------------|
| <b>Low birth weight incidence</b> | Bidayuh                      | 12.2                 | 14.0                 | 13.1                 | 8.8                  | 14.6                 | 23                   | 0                    | 12.9         |
|                                   | Malay                        | 24.0                 | 13.4                 | 10.2                 | 17.2                 | 5.9                  | 0                    | 0                    | 12.5         |
|                                   | Chinese                      | 18.1                 | 7.8                  | 6.5                  | 6.3                  | 0                    | 0                    | 0                    | 6.7          |
|                                   | Iban                         | 7.1                  | 11.7                 | 14.8                 | 14.2                 | 2.5                  | 0                    | 100                  | 13.6         |
|                                   | Total                        | 17.5                 | 12.4                 | 11.0                 | 11.3                 | 8.9                  | 15.2                 | 50                   | 11.8         |

**Table III**  
**LBW by preterm and term babies, Lundu Hospital (1986-1988)**

| <b>Birthweight</b> | <b>Preterm</b> | <b>Term</b> | <b>Total</b> |
|--------------------|----------------|-------------|--------------|
| <2500gm.           | 48 (37.5%)     | 64 (8.7%)   | 112          |
| >2500gm.           | 80 (62.5%)     | 664 (91.2%) | 744          |
| Total              | 128 (14.9%)    | 728 (85.0%) | 856 *        |

\* Data available for 1988, 1987 and partially for 1986

The medical conditions of the mother during pregnancy like pre-eclampsia, hypertension, anaemia and ante-partum haemorrhage also had effect on the birth weight of the baby. Of the 58 (5.3%) mothers who had these medical conditions, 26 (44.8%) of them had a baby with LBW ( $p < 0.05$ ), whereas of the 1030 mothers who did not have medical conditions, only 103 (10%) had babies with LBW (Table IV).

## Discussion

The overall mean birth weight of the study was 2.96kg. The mean birth weight of the male was 3.00kg whereas the mean birth weight of the female was 2.94kg. ( $p < 0.05$ ). Chinese babies seem to have a higher mean birth weight of 3.13kg and the Iban, a lower mean birth weight of 2.8kg. This higher incidence of mean birth weight in the Chinese babies is comparable to studies done in Peninsular Malaysia<sup>9</sup>. The lowest mean birth weight in this study of 2.84kg was that of Iban babies. This is comparable to the mean birth weight of Indian babies of 2.83kg seen in a similar study done in Krian<sup>9</sup> ( $p > 0.05$ ).

The overall incidence of low birth weight (LBW) in this study was 11.84 per cent. It was slightly higher than the Sarawak state average of 11.73 per cent (unpublished data). The LBW incidence was the lowest among the Chinese (6.74%) when compared to the Ibans of (13.59%) and Bidayuh (13.0%). However the Indians in the Krian study showed a LBW incidence of 17.4 per cent

**Table IV**  
**Mothers medical condition and LBW by ethnic group in Lundu Hospital (1986-1988)**

| Medical condition* of mother | Birth weight   |                | Total     |
|------------------------------|----------------|----------------|-----------|
|                              | <2500gm. (LBW) | >2500gm. (LBW) |           |
| Yes                          | 26 (44.8%)     | 32 (55.2%)     | 58 (5.3%) |
| No                           | 103 (10%)      | 927 (90%)      | 1030      |
| Total                        | 129 (11.8%)    | 959 (88.2%)    | 1088      |

\* Medical condition included pre-eclampsia, hypertension, anaemia, antepartum haemorrhage.

which was significantly higher than the LBW of the Ibans in this study of 13.59 per cent ( $p < 0.05$ ). Medical conditions of the mother was another factor which affected the birth weight of the baby.

This study also showed that the incidence of LBW among the preterm babies was 37.5 per cent whereas in the term babies, the LBW incidence was only 8.7 per cent (Table III). It is noticed that in developing countries, the incidence of LBW is higher amongst the term babies, whereas in the developed countries the LBW incidence is higher in the preterm babies.

The age of the mother is another important factor which is associated with LBW. Very young mothers (15-19 years) and older mothers >40 years increase the incidence of LBW as shown in Table II. The overall LBW incidence of young mothers was 17.5 per cent.

Thus emphasis in antenatal care should be given to very young mothers and older mothers who have a medical condition, especially if they are Iban or Bidayuh. This emphasis coupled with health education will reduce the incidence of LBW in Lundu.

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