Original article

The prevalence of low birth weight and factors associated with low birth weight delivery in Gondar Region, north west Ethiopia

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Abstract: A cross-sectional study was carried out to determine the prevalence of low birth weight (LBW) and non low birth weight (NLBW) for neonates delivered in health centres and the Gondar College Hospital, from May)993 to January 1994. Factors associated with LBW were also analyzed. The prevalence of LBW was 17.8%. Maternal age and income were found to be associated with LBW deliveries (P<0.01 and P<0.05) respectively. Single mothers had 3 times as much risk of having LBW deliveries as compared to married ones (P<0.01). Gestational age and maternal weight were found to have strong association with LBW (P<0.01 and P<0.05) respectively. Antenatal care attendance showed a significant protective effect against BW (P<0.05).[Ethiop. J. Health Dev. 1996;10(3):149-152]

Introduction

Reports reveal that in urban centres of Ethiopia 38-60% of deliveries take place at health institutions(l) In rural parts of Gondar it was reported that more births took place out side the hospital (2). A longitudinal community based study of birth weight in small towns of Gondar Region in 1985 indicated that 30% of deliveries took place at home (3). More recently, however, the regional health bureau reported that the delivery coverage of health institutions in the region was less than 3% (4) . In such a situation studies of LBW based on deliveries at health institutions may suffer from considerable bias. Furthermore most of the
studies on LBW in Ethiopia do also suffer from a second major problem in that they are based on hospital records (1, 2, 4, 5, 7, 11). It is well known that in addition to problems of validity and reliability, such records often suffer from negligence, oversight and ignorance of the relevance of registering the required information by health personnel. However, these studies, although crude, can be taken as generating hypothesis with regard to population at risk. The present study aims at generating more reliable information on LBW and factors associated with it using selected study groups.

Methods

The cross-sectional study with descriptive and analytical components was carried out in; six maternity units of health centers of North Gondar Administrative Zone in 1993/94. The centers, selected using convenience sampling techniques, included the Gondar College Hospital and five health centers with in 10 to 100kms. radius from the hospital. A sample size of 384 live births, 10% or more from each center was used for the study. The sampling technique was convenient sampling in all areas, that is, we included all mothers who delivered in the health centers and in the hospital until the required number is reached. A questionnaire (or a semi structured questionnaire) enquiring about demographic characteristic, socio-economic conditions, relevant obstetrical information and anthropometric parameters was prepared. The questionnaire was pretested in two centers not selected for the study. Income was determined by asking monthly

salaries or by counting the number of sacks of grains or cereals harvested during their last harvesting season and multiplying it by the average local market price and converting it into monthly income. For business men the average monthly profit was considered.

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Data was collected by trained midwives and nurses working at the maternity units in all study sites. Weight of the mothers was taken on admission to the maternity units.
For the purpose of this study, low birth weigh was considered if the ,weight of the neonates was below 2.5 kg.

Ethical clearance. The purpose of the study was always explained to the study subjects and high compliance was obtained.

Data analysis. All questionnaire results were coded and entered in EPI-Info version five Computer package and analyzed.

Results

Data on demography, socio-economic status and anthropometry were obtained from 1657 persons (759 males and 898 females) in the 393 studied mother families. Taking the under 15 and the above 65 as dependants, the average household size was 4.22 and dependency ration was 1.37 :.

Among the 393 singleton live births in the study, 70 were LBW, indicating a prevalence of 17.8%. Mothers with age between 10 and 19 years have got a high risk of delivery a low birth weight infant (OR=2.02) and the difference was statistically significant (P<0.01). Single mothers had three times as much risk of having LBW deliveries compared to the married ones and the difference was statistically significant (P<0.01).

Table 1 shows the distribution of LBW and NLBW births in the study by demographic characteristics of mothers and the strength of association.

Table 2 shows the distribution of LBW and NLBW deliveries by socio-economic characteristics of maternal households. The OR for LBW decreased when the income per month increased (P<0.05). The distribution of LBW and NLBW deliveries by different obstetrical variables is indicated in table 3. A strong association was found between LBW and gestational age of below 37 completed weeks (P<0.05).

Antenatal care attendance was found to have a significant protective effect against LBW (P<0.05). Maternal weight was also found to be associated with the occurrence of LBW (P<0.01).

Table 1 Distribution of LBW and NLBW deliveries in six maternity units. in North Gondar administrative zone by demographic characteristics.

Characteristics	LBW	NLW	Total	

	No.(%)	No.(%)	No. (%)	OR(95%CI) p-value
Age of Mothers in Yrs				
10-19	28(40.0)	84(26.0)	112(28.5)	2.02(1.12-3.64)P=.01
20-34	36(51.4)	218(67-5)	254(64.6)	1.0
35-49	6(8.6)	21	27(6.91)	1.73(0.58-449) P=4
Marital Status				
Single	22(31.4)	44(13.6)	66(16.8)	2.91(1.53-5.49I P=.01
Married	48(68.6)	279(86.4)	327(83.2)	1.0

Table 2 Distribution of LBW by socio-economic factors

Characteristics	LBW	NLW	Total	
	No.(%)	No.(%)	No. (%)	OR(95%CI) p-value
monthly income				
0-49	36(51.4)	105(32.5)	141(35.9)	1.0
150-499	29(42.91	167(51.7)	196(49.9)	0.52(0.29-0.93)P= .03
500+	5(7.11	51(15.8)	56(14.2)	0.29(0.08-0.82)P-.01
Antenatal care				
	64(91.4)	259(80.2)	323(82.2)	2.4(1.08)-7.771 = .05
	6(8.61)	64(19.6)	70(17.8)	1.0

Table 3: Distribution of LBW by obstetric variables.

Characteristics	LBW	NLW	Total	
	No.(%)	No.(%)	No. (%)	OR(95%CI) p-value
Gestational age				
<37 weeks	25(35.7)	58(17.91	83(21.1)	3.48(1.53-7.88)P=.05
> 37 week	45(64.3)	265(82.11	310(78.9)	1.0
Maternal weight				
< 50kgms	20(28.6)	45(13.9)	65(16.51	2.91(1.21-7.30)P=.25
50-64 kgms	41(58.6)	219(67.8)	260(66.2)	.23(0.34-2.88IP = .05
65+	9(12.8)	59(18.3)	68(17.3)	

Discussion

The prevalence of LBW observed in this study (17.8 %) was relatively higher than the reported current estimate of LBW in Ethiopia (5). It was also higher than what was reported at Gondar College Hospital in 1985 (6). A study in the same hospital on 500 births revealed a LBW rate of 13.8% (7). In 1988 the average prevalence of LBW in 12 health institution of Gondar Administrative zone was reported to be 11.1% (2).

Furthermore, a study conducted in all hospitals Addis Ababa indicated a LBW rate of 12.6% and 8.1% for 1973 and 1982, respectively (1) .Addis Ababa includes all. In 1985 the incidence of LBW in Tikur Anbessa

Hospital was 12.4%, it was specifically for Tikur Ambessa, while in Dessie Hospital it was 7.2 % (8). In a neighbouring country , Kenya a figure of 12.8% was reported.

On the other hand sucha high percentage of LBW (22.30%) has been reported from Tanzania during the year 1976-1977 (9). During the 1984 famine of northern Ethiopia figures of 13 .3 % and 21.6% were reported in
the famine relief camps of Batti and Korem, respectively (8). Taking these into account one other possible factor for high prevalence of LBW could be the prevailing socio- economic stress on the population due to increased cost of living. The monthly family income of 36% of the study population was found to be less than 149 Birr. This corresponded to the highest proportion of LAW. This is not surprising as low income is associated with low standard of living and hence LBW.

The risk of LBW was found to be significantly high in those mothers whose age was below 20. The marital status of the mothers was also found to be related to the occurrence of LBW in this study, LBW being higher for single mothers. This was in general agreement with other studies (10, 11). Antenat,al clinic attendance (ANC), we defined as two or more visits of the mothers during pregnancy, was also found to have a protective effect on LBW. Nevertheless, only a small number of the population had attended antenatal clinic during pregnancy. Therefore studies and measures should be designed to encourage mothers to have proper antenatal care follow-up.

Family planning services in these areas should be available and accessible to mother with affordable prices or if possible free of charge. Education and job opportunity has to be given to women. The government needs to
encourage the implementation of women's policy, in other words women have to be empowered so that the nutritional and health conditions of the mothers will be improved and hence, the birth weight may increase.

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