FACTORS INFLUENCING LOW BIRTH WEIGHT AMONG BABIES BORN IN THE TEACHING HOSPITAL ANURADHAPURA: A PRELIMINARY STUDY

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INTRODUCTION

Low Birth Weight (LBW) is a major determinant of mortality, morbidity and disability during infancy and childhood, also having a long term impact on health outcomes once adulthood is attained (Francis, *et al*., 2010). World Health Organization (WHO, 2011) defined LBW as a condition where the weight at birth of a baby is less than 2500gm (5.5 pounds).According to Pallewatta (1998), maternal age below 20 years and over 35 years, occupational factors like heavy work, low maternal education, low income and maternal nutritional factors are associated with LBW. Siza (2008) found that the Pregnancy Induced Hypertension (PIH), Premature Rupture of Membranes (PROM), placenta prevae, abruption of placenta and gestational age below 37 weeks contribute to LBW. Further, the pre-existing medical conditions such as anemia, malaria and inadequate antenatal care are also found to have a relationship with LBW.

Jammeh, *et al*., (2011) described that more than 95 % of the LBW babies are born in developing countries. In Sri Lanka, as a developing country, the LBW rate was 17.6 per 100 live births in 2008 and LBW rate of North Central Province (NCP) was 14.3 % in 2008 (Ministry of Healthcare and Nutrition, 2008). According to the hospital statistics, out of 11,560 live births, 1966 births were found of having LBW in the year 2011 in the Anuradhapura District (Personal communication, RDHS office).Therefore the main purpose of this study is to examine the factors influencing LBW in babies born in the Teaching Hospital Anuradhapura) (THA) and the specific objectives are to assess socio-economic factors, obstetric factors, pre-existing medical conditions and antenatal care received during pregnancy influencing LBW of babies.

METHODOLOGY

Quantitative, descriptive design was used for the study to assess a purposive sample of 133 mothers who delivered LBW babies at post natal wards in the THA. A self administered questionnaire was used as the tool to assess demographic data, socio-economic data, obstetric data, data on pre-existing medical conditions and antenatal care received during pregnancy of mothers having LBW babies. Content validity of the instrument was assured by referring to the standard literature and the subject experts. Reliability and understandability was assured by performing test-pretest reliability. Ethical clearance was granted from the Research and Ethics Committee of Rajarata University of Sri Lanka. Voluntary written informed consent was obtained from each participant prior to the study.

RESULTS AND DISCUSSION

For the study, 133 participants were recruited and the response rate was 97.8% (127). Majority of the sample (28.3%) belonged to 26-30 years age group and18.1%belonged to 15-

19 years age group. Of the sample, majority (96.9%) was married, 78% was Sinhalese and 68.5% was Buddhist.

According to the findings of the study, majority (53.5%) had school education only up to grade 5 hence it might be influencing LBW. This idea was supported by Siza (2008) who suggests that mothers without formal education were four times more likely to give birth to a LBW baby than those who had attained higher education. Pallewatte (1998) also found that maternal education up to primary or no schooling had a significant effect on LBW.

With regard to occupational status of the sample, majority (58.3%;74) was unemployed and the greater proportion (52.8%;67) belonged to low income group which is below 5000 Rupees per month. Viengsakhone, et al., (2010) and Pallewatte (1998) highlighted that the low income level and low socio-economic status have significant association with LBW. Of the employed category, 26 % (33) was engaged in agricultural work m which usually involves hard physical labour. The majority (58.3%;74) was moderate workers while 26% (33) were heavy workers. Pallewatte (1998) also showed that occupational factors like heavy work increase the risk of LBW as it may retard the fetal growth. Moreover, the prevalence of exposure to smoking at home was 35% (43) in this study which may be a significant factor influencing LBW. Wadi and Al-Sharbatti (2011) found that the birth weight had a significant inverse correlation with the maternal exposure to passive smoking.

Table 1. Existing obstetric factors and Pre-existing medical conditions influencing LBW.

Factors influencing LBW	N	%	Factors influencing LBW	N	%
Existing obstetric factors			Medical conditions during pregnancy		
Parity			PIH	13	10.2%
Primiparous	55	43.3%	Pre-eclampsia	07	5.5%
Multiparous	72	56.7%	Eclampsia	01	0.8%
Previous LBW Babies			Gestational Diabetes	03	2.4%
Yes	28	22.1%	APH	15	11.8%
No	99	78.0%	PROM	22	17.3%
Previous miscarriages					
Yes	22	17.3%			
No	105	82.7%			
POA at delivery			**Pre-existing medical conditions**		
28-37 weeks	41	32.3%	Anemia 06 4.7%		
37-40 weeks	81	63.8%			
Above 40 week	05	4.0%			
Multiple Pregnancy	07	5.5%			

N= Frequency; %= Percentage; POA= Period of Amenorrhea; PIH= Pregnancy Induced Hypertension; APH= Ante Partum Hemorrhage

The study shows that 22.1% of mothers had a history of having LBW babies previously and 17.3% had previous miscarriages. Of the sample, 43.3% was primiparous and 56.7% was multiparous (Table 1). These findings were supported by Jammeh et al., (2011) indicating that parity, history of having LBW babies previously and history of having previous miscarriages as the factors affecting LBW babies. According to the findings, 32.3% mothers delivered their babies between 28-37 weeks of gestation which is pre-term (Table 1). Odendaal, et al., (1997) found a significant association between preterm delivery and LBW. According to the findings of the study, all participants with multiple gestations (7) delivered LBW babies and the medical conditions that were affected to LBW were Pregnancy Induced Hypertension (PIH)(10.2%), Ante Partum Hemorrhage (APH) (11.8%) and Premature Rupture of Membranes (PROM) (17.3%) (Table1).

When considering pre-existing medical conditions,4.7%participants were anemic during pregnancy and they all have delivered LBW babies (Table 1). Findings of Ugwuja, *et al*., (2011)and Siza (2008) reported that anemia and iron deficiency has major impact on LBW.

Concerning the antenatal care received by mothers, 80.3%(102) had received "Thriposha" and 88.2%(112) had received vitamins and mineral supplementations. Of the sample, 42.6% (54) had their "booking visit"(first clinic visit) before 12 weeks of gestation while the majority (57.4%;73)had it after12 weeks of gestation. Tayie and Lartey (2008) reported that the pregnant mothers who sought antenatal care before the end of the third month (before 12 weeks) had average of 3.2 times better chance of giving birth to a normal weight infant. They further stated that pregnant women who received multivitamins and mineral supplementations for more than 5 months had infants whose weight was better than those who receive them for a lesser duration.

Poor attendance at clinics was found problematic in this study as it was reported as 66.9%(85) up to 28 weeks of gestation, 65.1% (56) between 28- 36 weeks of gestation and 51.2% (44) between 36 weeks of gestation to delivery. Zeleka, *et al*., (2012) found that each antenatal follow-up clinic visit contributed to 21% reduction of the risk of LBW and Siza (2008) found a statistical significance between those who received antenatal care and those who did not. Tan and Yeo (2009) found that adequate maternal weight, height and BMI had a positive influence on birth weight of babies and in this study also 37.8% (48) had inadequate Body Mass Index (BMI is below 18 kg/m^2)which is considerable.

CONCLUSIONS/RECOMMENDATIONS

The findings of the study suggests that demographic factors such as maternal age below 18 years, socio economic factors such as low educational level, low income level, hard physical activities during pregnancy and passive smoking affect LBW. With regard to obstetric factors influencing LBW, having a pre-term birth, APH, PROM, PIH, multiple gestation and parity seemed to be significant. Maternal anemia significantly influenced the inhibition of fetal growth potential which is a pre-existing medical condition affecting LBW. Poor antenatal care received during pregnancy such as late booking visits and inadequate subsequent clinic visits, anthropometric differences in maternal physical structure which determine BMI also affected LBW.

The findings of the study can be implicated in maternity care in nursing practice as it can be used to enhance the current knowledge of health care providers especially through nursing and midwifery education. Further the findings would be useful in enhancing the knowledge of expecting mothers aiming to prevent LBW in NCP. As this study was limited to NCP only, the researchers recommend further studies in other provinces that will be beneficial in minimizing LBW in Sri Lanka.

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