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A RECORD BASED STUDY ON MATERNAL AND SOCIO DEMOGRAPHIC FACTORS ASSOCIATION WITH BIRTH WEIGHT OF BABIES IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Low birth weight (LBW) is an important cause of perinatal, neonatal and post-natal morbidity and mortality. In developing countries, LBW of newborns is mainly due to the poor socio-economic and environmental conditions of the mother.

Objectives: To assess the maternal and socio demographic factors influencing the birth weight of babies

Material and Methods: A record based retrospective study was conducted for three months duration in Chengalpattu Medical College Hospital. 500 case sheets of neonates who were admitted in neonatal intensive care unit during the period of were collected based on convenient sampling from the medical record department.

Results: Among the study group 39.1 % of neonates were low birth weight. A significant association was found between the following factors like age of the mother, education, family income, birth spacing and birth weight of the babies.($P<0.05$).

Conclusion: The present study suggests that improvement in maternal education, income, avoiding close birth spacing , adequate antenatal care are essential for reducing LBW in newborns. The problem of low birth weight is multidimensional and integrated approach is necessary which includes medical, social, economical and educational measures.

INTRODUCTION

Normal birth weight is the first wealth of baby. Low birth weight is a major determinant of morbidity mortality & disability in neonates, infancy & children. LBW is defined as birth weight less than 2500 gm, the measurement being taken preferably within first hours of life. Birth weight less than 1500 g at birth irrespective of gestation age is considered as very low birth weight. Extremely low birth weight is weight less than 1000 grams [(1)].

World Health Organization (1995) estimated that there is a large gap between the of low-birth-weight babies in developing countries (19%) and developed countries (7%). Ninety three percent (93%) of these LBW babies are born in developing countries. According to the UNICEF (2004) estimates, more than 20 million infants are born with low weight in the world and low-birth are concentrated more in Asia and Africa.[(2)] Low birth weight constitutes around 28% of all live births in India[(3).]

It is well recognized fact that birth weight is not only a critical determinant of child survival, growth, and development, but also a valuable indicator of maternal health, nutrition, and quality of life. LBW babies are at increased risk of perinatal mortality and morbidity, i.e. respiratory distress syndrome, poor cognitive development and neurologic impairment, cardiovascular disease, high blood pressure, obstructive lung disease, diabetes, high cholesterol concentrations and renal damage in adulthood. Maternal factors include low socioeconomic status, very young age, high parity, close birth spacing malnutrition, severe anemia, heavy physical work, malaria, toxemia, smoking; low socioeconomic status, short maternal stature, very young age, high parity, close birth spacing play an important factor in determining the birth weight of the baby.

This study aims at identifying the maternal and socio demographic risk factors that can cause low birth weight in the babies so that efforts can be put in eliminating these risk factors.

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MATERIALS AND METHODS

A record based retrospective study was conducted to determine the maternal factors and sociodemographic influencing the birth weight of the babies in Chengalpattu Medical College Hospital. The details of the neonates and their mother who were admitted in Neonatal intensive care unit during the period of July to September 2015 were collected from the case sheets available in the medical record department after obtaining prior permission from the Head of the institution. The records of all the neonates delivered and admitted in Chengalpattu Medical College and also the details of the babies delivered outside and referred to the institution were also taken for the study. Chengalpattu Medical College is a tertiary care centre with an average of 300-350 neonate admissions per month. The number of admissions during the period considered for study was around 1050. A convenient sampling method was adopted and 500 neonates admitted during this period were taken for the study. These 500 neonates were selected by simple random sampling method by lottery method from the admission register available in NICU. The case sheets of these 500 neonates were collected from the medical record department.

New born details like birth weight, sex, term or preterm, place of delivery, outome of the baby, cause of death were collected from the case sheets available. The socio demographic details of the mothers like their age, age at marriage, education, occupation, family income and other history like type of delivery, spacing between deliveries were also collected from the records. Birth weight of the babies delivered in the institution was measured immediately after birth and for babies referred from outside were measured at the time of admission.

The variables were entered in Microsoft excel and analysis was done using SPSS16.0. The frequencies were expressed in percentage. Chi square test was used to find the association between the maternal factors and birth weight of the babies. P value <0.05 is considered to be significant.

RESULTS

Table 1 shows the socio demographic profile of the mother. Majority (48.3%) of the mother were from the age group of 22-25 years with most of the mothers got married at young age. Most of the mothers were illiterate (33.5%) and more than 90% were unemployed with few adopting labour work. More than half in the study population had family income less than 5000. 57.3 % of mothers had normal vaginal delivery. Birth spacing was less than 1 year in 64.7% of the mothers and 18.2% with spacing between 1-2 years. (Table -2)

Table -3 provides the distribution of birth weight of the babies with 4 (0.7%) less than 1000grams followed by 192 (38.4%) of newborn between 1000- 2500 grams and around 300 (59.9%) with birth weight above 2500 grams. 57% of the newborn were male child. 24.6 were preterm babies,74.7% were full term and 0.7% post term. Most of the newborn (75%) admitted in NICU were born in Chengalpattu medical college hospital. 13% of neonates who were referred from other districts than Kanchipuram were also admitted in NICU. Among the referred cases 12% were from Primary health centres, 3% from private and district hospital and 0.5% from home delivery. 3.2% of neonates expired during the time of admission and the rest got discharged alive. Most common cause of death was found to be respiratory distress syndrome(38%) followed by hypoxic ischemic encephalopathy(25%) and 25% of death was among preterm neonates.36% of the death were among neonates weighing above 2500 grams and 64% among neonates <2500.69% of death were from baies born within Chengalpattu Medical college and the rest from the referred case

Table- 5 shows the association of mother's socio demographic variables and birth weight of the babies. A significant association was noticed between age and education of the mother with 36.3% of neonates with low birth weight among mothers more than 21 years.30.45% of illiterate mothers had low birth weight babies compared to only 15% of literate mothers having low birth weight babies. Low birth weight babies was more among low income group less than 5000 with 30% compared to only 10% with income more than 5000 and this was significant.60% of mothers with birth space less than one year had low birth weight babies compared only 18% who

Table- 1 Table Showing Distribution of Mother's According To Sociodemographic Profile

		Frequency	Percentage
Age of mother	18-21YRS	92	18.4
	22-25YRS	242	48.3
	26-30YRS	133	26.5
	>30YRS	33	6.8
	<18YRS	14	2.8
Age at marriage	18-21YRS	230	45.9
	22-25YRS	213	42.6
	26-30YRS	38	7.7
	>30YRS	5	1.0
Mother's education	Illiterate	168	33.5
	Primary & Middle school	147	29.5
	High & Higher sec school	130	26.2
	Graduation and above	55	11
Mother's occupation	Labour work	36	7.1
	Household work	455	91.1
	Office work	9	1.8
Family income	<5000	267	53.56
	5000-10000	182	36.32
	>10000	51	10.14

Table- 2 Frequency Distribution of Mother's Obstetric Profile

		Frequency	Percentage
Type of delivery	Normal vaginal delivery	287	57.3
	LSCS	213	42.0
	Assisted vaginal delivery	10	0.7
Birth spacing	<1yr	324	64.7
	1-2yrs	91	18.2
	2-3yrs	40	8
	>3yrs	45	9

Table- 3 Table Showing the Details Of New Born

		Frequency	Percentage
Gender of the baby	Male	285	57.02
	Female	215	43.98
Based on gestation age	Preterm	123	24.6
	Full term	374	74.7
	Post term	3	0.7
Distribution based on place of delivery			
Inborn Vs Outborn	Inborn (GH)	372	74.4
	Outborn	128	25.6
Birth based on districts	Kancheepuram district	436	87.2
	Other district	64	12.8
Place of Delivery	Tertiary Hospital	378	75.6
	Primary health Centre	60	12
	Private Hospital	15	3
	District hospital	15	3
	Home	3	0.5
	Others	29	6
Distribution based on outcome of delivery			
Outcome	Alive and Discharged	484	96.8
	Expired	16	3.2
Cause of death	Respiratory distress syndrome	6	38
	Hypoxic Ischemic Encephalopathy	4	25
	Meconium aspiration syndrome	2	12.5
Death based on weight	Preterm	4	25
	<1000 gms	2	13
	1000-1499 grams	3	17
	1500-2499grams	5	34
	>2500 grams	6	36
Death based on place of delivery	Chengalpattu Medical college hospital	11	69
	Referred from other centres	6	31

DISCUSSION

This study shows the influence of socio demographic characteristics among low birth babies and healthy babies. In the past few decades it shows that there has been increasing average birth weight of the babies. This improvement is partly mainly due to changing socio demographic profile of the mothers.

The present study showed that majority of women 242 (48.3%) come under 22 to 25 years of age and common age group of marriage was 18 to 25 years of age. 168 (33.5%) were illiterates. 455 (91.1%) women were doing household works. Majority of income 267 (53.56%) were earning less than 5000. Among the study population, 287 (57.3%) were delivered normal vaginal delivery and 213 (42.0%) were undergone LSCS. Birth spacing of less than one year was found in 324 (64.7%) women.

Based on gestational age, 374 (74.7%) newborn were delivered full term, 123 (24.6%) were preterm and 3 (0.7%) were post term.

Based on observation of the present study found that 196 (39.1%) newborns were low birth weight babies. This result was more than what observed in hospital based study (29.8%) done in Western Region Hospital, Pokhara, Nepal [4] and Kathmandu.[5, 6]

Age of mother, Mothers education, Family income, Birth spacing, Gestation age and Place of delivery were significantly correlated with the birth weight of the baby. In the present study we found that majority of preterm babies (36) were delivered by mothers more than 21 years of age. The reason may be due to majority of study population are more in more than 21 years of age.

Preterm baby was common in cases referred from outside the hospital. The reason due to more complicates cases are referred from outside. Birth spacing of less than one year and preterm babies were more prone for low birth weight babies.[7]

Table- 4 Table Showing the Association of Mothers Sociodemographic Variables And Birth Weight Of The Babies

		Birth Weight of Babies		Chi square & P value
		<2500gms (%)	>2500gm (%)	
Age of the mother	<21YRS	13.3	86.6	X^2 =34.22
	>21YRS	36.13	63.87	P=0.0001
Mother's education	Illiterate	30.45	69.05	X^2 =18.14
	Literate	14.76	85.24	P=0.02
Family income	<5000	29.59	70.41	X^2 =29.78
	>5000	9.87	90.13	P=0.004
Birth spacing	<1yr	60	40	X^2 =1..78
	1-3yr	18	72	P=0.001
Gestation age	Preterm	96.7	3.3	X^2 =81.78
	Full term	49.3	50.7	P=0.000
Place of delivery	Chengalpattu Medical College hospital	52.6	47.4	X^2 =9..78
	Referred from outside	66.92	33.08	P=0.001

had birth spacing above 1 year.96.7% of preterm babies were low birth weight and this was found to be significant. Low birth weight was more among the babies referred from other centers compared to babies born in the Chengalpattu Medical College. A significant association was found in this factors.

It was observed that in 324 (64.7%) mothers, the birth interval between present and previous pregnancy was less than 1 year and 20 % of them gave birth to LBW babies. These finding were supported by Deswal *et al*.[8]

CONCLUSION

Age at delivery, mother's education, family income, short birth interval, gestational age, place of delivery (referred from outside) come out as major factors associated with low birth weight in newborn. The present study suggests that improvement in maternal education, income, avoiding close birth spacing , adequate antenatal care are essential for reducing LBW in newborns. The problem of low birth weight is multidimensional and integrated approach is necessary which includes medical, social, economical and educational measures.

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