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The Determinants of Child Size at Birth: A National Demographic and Health Survey in Bangladesh 2014

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Abstract: Survival and physical development of an infant, birth weight of a child is a major determinant. In developing country like Bangladesh maternal knowledge, beliefs, practices during prenatal period, and biomedical risk factors influences low birth weight of child at birth. This paper shows that how demographic characteristics and prenatal care affect the size of child at birth in Bangladesh. This paper shows demographic characteristics- place of residence of mother, economic condition of family, fathers and mother's education and occupation, age of pregnant woman and precedence birth interval affect the size of child at birth. The prenatal care during pregnancy by qualified doctor reduces the risk for abnormal size of child at birth. The prenatal care by untrained traditional birth attendant increases the risk for abnormal size of child at birth reduces the risk.

Keywords: Birth Weight, Prenatal Care, Pregnancy, Demographic Characteristics.

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I. INTRODUCTION

Child birth weight is <2500 grams considered as a low birth weight (LBW) according to Unicef 2004 reports [1]. In 2013, an estimated 16 per cent (22 million) of all babies born globally, had LBW and 96% of these babies were born in developing countries [1, 2]. LBW can result from either intra-uterine growth restriction, small-for-gestational-age (born before 37 weeks of gestation) or a combination of the two [1, 5, and 6]. The majority of LBW cases in developing countries are due to intra-uterine growth retardation, while pre-term birth is common in the developed countries [7]. In addition to adverse consequences, such as, increased neonatal morbidity and mortality, inhibition of growth and cognitive development, and an increased risk of chronic disease development, later in life, LBW also has substantial cost burdens on health care systems and society [1, 8–10]. Antenatal care (ANC), means caring the pregnant woman during pregnancy. Antenatal Care should begin from the early stages of pregnancy to delivery of child. Women can access ANC services either by visiting a health centre where such services are available or from health workers during their pregnant time visits. One of the most important components of ANC is to offer information and advice to women about pregnancy-related complications and possible curative measures for the early detection and management of complications [12]. One of the salient slogans of the World Health Organization (WHO) is "Children's health is tomorrow's wealth." The concern for children's health and survival finds expression in the continuous monitor by WHO of low birth weight (LBW) worldwide as a public health indicator (UNICEF and WHO,2004). The World Health Organization has defined low birth weight at birth as less than 2, 500 grams (2.5 kilograms5.5 pounds) (WHO, 1992). At birth, fetal weight is accepted as a parameter that is directly related to the health and nutrition of the mother as well as an important determinant of the chances of the newborn to survive and experience healthy growth and development. Birth weight also shows a reverse social gradient such that increasing disadvantage is associated with decreasing birth weight [13].

II. METHODOLOGY

Study design and sample

The analyzed dataset has been extracted data from the national survey BDHS 2014. Two stage stratified sampling methods was used in this survey. The study collected data from 4683 child from rural and urban areas in all divisions in the country. The details discussion describes in BDHS 2014 final report and sampling strategy [11].

Statistical Analysis

The two-tailed p value ($p < 0.05$) were considered for adjusted model selection and statistical significant correspondingly. The chi-square ($\chi 2$) test statistic and Fisher's exact test statistic (if cell frequency < 5) were

used to ascertain the statistically significant associations among demographic factors of birth child family. The multiple logistic regression model was used to analyze the demographic risk factors. To estimate the crude odds ratio (cOR) with 95% confidence interval (95% CI) simple logistic regression model was used to distinguish the probable risk factors size of child at birth. The adjusted odds ratio (aOR) with 95% CI was calculated using multiple logistic regression model; the exposure variables considered were age, gender, occupation, and education. All the statistical analyses were implemented using Stata 13 software (Stata Corp. 2013. *Stata Statistical Software: Release 13*. College Station, TX: Stata Corp LP.).

III. RESULTS

The proportion of male Childs were high among the child size at birth (CSB) from average to very large 51.8%, 54.9%, 58.7% and the female Childs were higher among small size 51.1%, 53.1% respectively at birth. The CSB among the rural community (78.9%, 69.3%, 66.6%, 70.2%, 73.9%) were significantly ($p<0.05$) higher than the urban community. The average size of child significantly higher among the rich peoples was high proportion (21.1% & 21.2%) than the others. The high proportion (20.2%) of average child size was in Chittagong division but lowest proportion in Khulna division (11.2%). Both secondary educated father and mother were significantly high proportion of average size of child ~32% and ~48% respectively. Average size of child proportion was higher 43.3% among unskilled worker father profession. On the other hand the average size of child among unemployed mothers was higher proportion (~78%). The mother age <20 years were high proportion of average size of child ~82%. In case of preceding birth interval (months) first birth child was high proportion (~40%) of average child size (**Table 1**).

Determinants of prenatal care during pregnancy

The multiple logistic model was used for detection of determinants of prenatal care and child size at birth with significant adjustment. The prenatal care by qualified doctor reduce the 13% (OR=0.97, 95%CI=0.79, 1.2) risk for abnormal size of child at birth. The nurse/midwife/paramedic care was reduce the risk (OR=0.85, 95%CI=0.67, 1.1) of child abnormal size. The community skilled birth attendant, medical assistant and community health care provider care increase the normal size of child at birth but reduce the risk of abnormal size (OR=0.74, 95%CI=0.18, 3.1), (OR=0.56, 95%CI=0.17, 1.85), (OR=0.89, 95%CI=0.56, 1.4) respectively. The untrained traditional birth attendant ~1.5 times (95%CI=0.15, 15.1) more likely for abnormal size of child at birth (**Table 2**).

Table 1: Demographic characteristics and size of child at birth (N=4683)

Characteristics	Size of child at birth					P value
	Very large, n(%)	Larger than average, n(%)	Average, n(%)	Smaller than average, n(%)	Very small, n(%)	
Sex						
Male	61(58.65)	281(54.88)	1648(51.76)	304(48.95)	144(46.91)	0.067
Female	43(41.35)	231(45.12)	1536(48.24)	317(51.05)	163(53.09)	
Place of residence						
Rural	82(78.85)	355(69.34)	2121(66.61)	436(70.21)	227(73.94)	0.004
Urban	22(21.15)	157(30.66)	1063(33.39)	185(29.79)	80(26.06)	
Wealth index						
Poorest	29(27.88)	99(19.34)	633(19.88)	161(25.93)	89(28.99)	0.000
Poorer	19(18.27)	102(19.92)	601(18.88)	121(19.48)	59(19.22)	
Middle	22(21.15)	93(18.16)	604(18.97)	110(17.71)	72(23.45)	
Richer	21(20.19)	119(23.24)	671(21.07)	123(19.81)	48(15.64)	
Richest	13(12.5)	99(19.34)	675(21.2)	106(17.07)	39(12.7)	
Division						
Barisal	15(14.42)	51(9.96)	393(12.34)	57(9.18)	33(10.75)	0.000
Chittagong	21(17.31)	101(12.3)	700(20.16)	177(22.06)	102(17.59)	
Dhaka	8(7.69)	91(17.77)	557(17.59)	119(19.16)	63(20.52)	
Khulna	21(20.19)	77(15.04)	356(11.18)	61(9.82)	37(12.05)	
Rajshahi	15(14.42)	78(15.23)	397(12.47)	54(8.7)	31(10.1)	
Rangpur	18(17.31)	73(14.26)	389(12.22)	61(9.82)	24(7.82)	
Sylhet	9(8.65)	79(15.43)	450(14.13)	132(21.26)	65(21.17)	
Father's education						
No education	21(20.19)	101(19.73)	700(22)	177(28.50)	102(33.22)	0.000
Primary	39(37.5)	162(31.64)	929(29.2)	200(32.21)	96(31.27)	

Secondary	34(32.69)	178(34.77)	1018(31.99)	174(28.02)	75(24.43)	
Higher	10(9.62)	71(13.87)	535(16.81)	70(11.27)	34(11.07)	
Father's occupation						
Agriculture	23(22.33)	119(23.29)	751(23.67)	166(26.77)	91(29.74)	0.000
Unskilled worker	45(43.69)	215(42.07)	1375(43.33)	288(46.45)	142(46.41)	
Professional work	6 (5.83)	32(6.26)	230(7.25)	33(5.32)	12(3.92)	
Businessmen	26(25.24)	127(24.85)	745(23.48)	112(18.06)	51(18.06)	
Others	3(2.91)	18(3.52)	72(2.27)	21(3.39)	10(3.27)	
Mother's education						
No education	9(8.65)	56(10.94)	404(12.69)	118(19)	59(19.22)	0.000
Primary	31(29.81)	141(27.54)	859(26.98)	191(30.76)	92(29.97)	
Secondary	57(54.81)	245(47.85)	1529(48.02)	260(41.87)	135(43.97)	
Higher	7(6.73)	70(13.67)	392(12.31)	52(8.37)	21(6.84)	
Mother's occupation						
No	81(77.78)	393(76.76)	2495(78.39)	479(77.26)	242(78.83)	0.903
Yes	23(22.12)	119(23.24)	688(21.61)	141(22.74)	65(21.17)	
Mother age at first birth (years)						
<20	74(71.15)	382(74.61)	2299(72.2)	454(73.11)	214(69.71)	
20-30	29(27.88)	129(25.2)	867(27.23)	165(26.57)	90(29.32)	0.727
30+	1(0.96)	1(0.2)	18(0.57)	2(0.32)	3(0.98)	
Preceding birth interval (months)						
First Birth	45(43.27)	215(41.99)	1289(40.48)	284(45.73)	122(39.74)	0.612
<24	5(4.81)	27(5.27)	206(6.47)	39(6.28)	21(6.84)	
24-47	23(22.12)	83(16.21)	589(18.5)	104(16.75)	44(14.33)	
48+	31(29.81)	187(36.52)	1100(34.55)	194(31.24)	120(39.09)	

Table 2: Determinants of prenatal care during pregnancy and size of child at birth using multiple logistic regression models

Characteristics	cOR (95% CI)	P value	aOR (95% CI)	P value
Qualified doctor				
No (ref)	1.00		1.00	
Yes	1.048(0.924-1.189)	0.461	0.965(0.791-1.178)	0.727
nurse/midwife/paramedic				
No (ref)	1.00		1.00	
Yes	0.879(0.7-1.104)	0.268	0.847(0.667-1.076)	0.175
Community skilled birth attendant				
No (ref)	1.00		1.00	
Yes	0.812(0.194-3.4)	0.775	0.743(0.176-3.136)	0.686
Medical assistant				
No (ref)	1.00		1.00	
Yes	0.584(0.178-1.916)	0.375	0.559(0.169-1.852)	0.341
Community health care provider				
No (ref)	1.00		1.00	
Yes	0.939(0.597-1.478)	0.787	0.895(0.558-1.438)	0.649
Untrained traditional birth attendant				
No (ref)	1.00		1.00	
Yes	1.461(0.152-14.06)	0.742	1.513(0.152-15.111)	0.724

IV. DISCUSSION

This study was carried out to examine the influence of maternal and socio environmental factors on infant birth weight in Bangladesh. This paper shows that how demographic characteristics (table-1) and prenatal care (table-2) affect the size of child at birth in Bangladesh. In our research we consider 4683 child at birth in whose 2438 are male 2245 are female child. From (table-1) we see that female child were low weight at birth than male child at birth. In our research we see that place of residence of mother, economic condition of family, fathers and mother's education and occupation, age of pregnant woman and precedence birth interval affect the size of child at birth. In case of residence, child births in rural area were low size at birth than urban residence.

In case of father and mother education, secondary educated father and mother were significantly high proportion of average size of child. . In case of unskilled worker profession of father, average size of child proportion was higher. On the other hand the average size of child among unemployed mothers was higher proportion. The mother age <20 years were high proportion of average size of child. In case of preceding birth interval (months) first birth child was high proportion.

The multiple logistic model was used for detection of determinants of prenatal care and child size at birth with significant adjustment. The prenatal care by qualified doctor reduces the risk for abnormal size of child at birth. The prenatal care by untrained traditional birth attendant increases the risk for abnormal size of child at birth (table-2).

V. CONCLUSION

This study contributes to the understanding of the individual and collective effect of maternal, socio-cultural and demographic factors influencing infant birth weight in Bangladesh. This study interlinks between demographic characteristics and prenatal care during pregnancy to determine normal child size at birth.

REFERENCES

[1]. Wardlaw, T.M. Low Birthweight: Country, Regional and Global Estimates; Unicef: New York, NY, USA, 2004.
[2]. United Nations Children's Fund (UNICEF). Low Birhtweight. Available online: https://data.unicef.org/topic/nutrition/low-birthweight/ (accessed on 27 October 2018).
[3]. Barros, F.C.; Barros, A.J.; Villar, J.; Matijasevich, A.; Domingues, M.R.; Victora, C.G. How many low birthweight babies in low- and middle-income countries are preterm? Rev. Saude Publica 2011, 45, 607–616. [CrossRef] [PubMed]
[4]. Kramer, M.S. Intrauterine growth and gestational duration determinants. Pediatrics 1987, 80, 502–511. [PubMed]
[5]. Qadir, M.; Bhutta, Z.A. Low birth weight in developing countries. In Small for Gestational Age; Karger Publishers: Basel, Switzerland, 2009; Volume 13, pp. 148–162.
[6]. Alderman, H.; Behrman, J.R. Reducing the incidence of low birth weight in low-income countries has substantial economic benefits. World Bank Res. Obs. 2006, 21, 25–48. [CrossRef]
[7]. Chen, W.; Srinivasan, S.R.; Yao, L.; Li, S.; Dasmahapatra, P.; Fernandez, C.; Xu, J.; Berenson, G.S. Low birth weight is associated with higher blood pressure variability from childhood to young adulthood: The bogalusa heart study. Am. J. Epidemiol. 2012, 1, S99–S105. [CrossRef] [PubMed]
[8]. Harding, J.E. The nutritional basis of the fetal origins of adult disease. Int. J. Epidemiol. 2001, 30, 15–23. [CrossRef] [PubMed]
[9]. Ediriweera, D.S.; Dilina, N.; Perera, U.; Flores, F.; Samita, S. Risk of low birth weight on adulthood hypertension—Evidence from a tertiary care hospital in a south asian country, sri lanka: A retrospective cohort study. BMC Public Health 2017, 17, 358. [CrossRef] [PubMed]
[10]. Larroque, B.; Bertrais, S.; Czernichow, P.; Leger, J. School difficulties in 20-year-olds who were born small for gestational age at term in a regional cohort study. Pediatrics 2001, 108, 111–115. [CrossRef] [PubMed]
[11]. National Institute of Population Research and Training (NIPORT). Bangladesh Demographic and Health Survey 2014. Dhaka;2016. https://dhsprogram.com/pubs/pdf/FR311/FR311.pdf.
[12]. Chandhiok N, Dhillon BS, Kambo I, Saxena NC. Determinants of antenatal care utilization in rural areas of India: a cross-sectional study from 28 districts (an ICMR task force study*). J Obstet Gynecol India* 2006; 56:47-52.
[13]. Berney, L., Blane, D., Davey Smith, G., et al. 2000. Lifecourse influences on health in early old age. In: Graham, H., (ed.) Understanding health inequalities. Buckingham and Philadelphia: Open University Press, 2000.

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