

PROPORTION OF STILLBIRTH AMONG THE PATIENTS ADMITTED IN A SELECTED TERTIARY LEVEL HOSPITAL OF DHAKA CITY

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I. Introduction

Stillbirth has long been a large, yet mostly hidden burden of disease in the developing world.^{1,2} Recent studies have drawn attention to the high global burden of an estimated 3.2 million annual stillbirths.³ Most stillbirths could be prevented by improving access to quality prenatal and obstetric care that is standard in wealthy countries.⁴

Issues related to fetal death, also called stillbirth and born dead, defined as the death of a fetus before or during delivery after 22 weeks of pregnancy, do not receive the same level of attention in relation to the measures to reduce maternal and infant mortality as recommended by the United Nations⁵⁻⁶.

In recent decades little decrease or stability in the fetal mortality rates has been observed in several countries around the world. Stillbirth rates do not represent an exclusive issue of developing countries. Among developed countries there is a variation in the fetal mortality rates that could be avoided through proper interventions.⁷⁻⁸

Globally, more than three million pregnancies result in a stillbirth annually, the majority arising in developing countries⁹. In developed countries, one in every 200 pregnant women reaching 22 weeks gestation and beyond will have a stillborn baby¹⁰. The UK has one of the highest stillbirth rates of high-income countries,¹¹ ranking 33rd out of 35 developed countries with only France and Australia ranking higher¹². There were 4,100 stillbirths reported in the UK in 2009, a rate of 3.5 per 1,000 births, or 11 stillbirths every day¹³. Although the vast majorities (98%) of these deaths occur in developing countries, rates are still high in many developed countries¹⁴.

No one classification system is commonly accepted, with varying definitions of stillbirth used by investigators, countries, health organizations, and classification schemes¹⁵. Stillbirths can be defined according to gestational age at birth typically into early stillbirths (20–28 weeks gestation) and late stillbirths (>28 weeks)¹⁶. Additionally stillbirths are classified into antepartum (death occurring before the onset of labour) or intrapartum (death during or after labour). However, the primary method for classification of stillbirth is according to the apparent cause or associated obstetric disorders.¹⁷

Stillbirths were first classified using the Aberdeen classification system based solely on available clinical information¹⁸. This was followed by the British perinatal mortality survey in the 1950's which used autopsy data¹⁹ and most recently by the Wigglesworth criteria which were developed in the 1980's and are the most widely used criteria to date²⁰. In Australia stillbirth is defined as any fetus born weighing more than 400 grams, or more than 20 weeks in gestation²¹. In the United Kingdom, the definition of stillbirth is any fetus stillborn after 24 weeks gestation²². Furthermore, many systems include both stillbirths and neonatal deaths. These variations in the lower gestational age limit the ability to compare findings from different studies. Earlier classification systems included only a few categories (congenital malformations, immaturity, and asphyxia) whilst more recent systems have tried to include more hierarchical information on fetal growth, placental changes, and maternal disorders. Therefore, the use of conflicting classification systems, of which there are more than thirty in existence (with an additional twelve modifications of such systems)²³, may result in a deficit of essential information and a large proportion of unexplained stillbirths. In keeping with this, the contribution of unexplained stillbirths has been reported to be as high as 70%²⁴. For this reason, researchers and clinicians have strived to better classify stillbirths according to the aetiology and models of causation for more than two decades²⁵.

The large number of stillbirth worldwide occurred in developing countries. In many developing countries, almost half of deliveries occur at home. Prolonged and obstructed labour, pre-eclampsia, placental problem, haemorrhage, infection, umbilical cord problems, medical and pregnancy disorder, intrapartum death, congenital disorders various infection, all without treatment appear to account for the majority of stillbirth in developing countries²⁶.

Women who lack skilled care at delivery and who do not have access to emergency obstetrical care are among those at greater risk for stillbirth²⁷. In many developing countries, one-third or more of the women in

labor are attended by skilled birth attendants and deliver at home²⁸. It is well known that in many developing countries, prolonged and obstructed labor and associated asphyxia, is a major cause of stillbirth²⁹. In most geographic areas, in addition to access to obstetrical care at delivery, various other socio-demographic factors, including rural residence, low socioeconomic status, lack of education, lack of a partner, and poor nutrition have been associated with increased stillbirth rates.³⁰⁻³¹

Twin pregnancies are high risk for stillbirth compared with singleton pregnancies.³²⁻³⁴ The recent global drive to prevent stillbirth has highlighted multiple pregnancy as a major risk factor in high income countries,³⁵ with calls to prioritise evaluation of timing of delivery and outcomes in twin pregnancies.³⁶

In addition, short inter-pregnancy intervals, prior stillbirths and a history of adverse pregnancy outcomes have all been associated with increases in stillbirth risk in developing countries³⁷. Several risk factors for stillbirth have been identified, including primiparity, advanced maternal age, high BMI, maternal conditions such as pre-eclampsia, diabetes and hypertension, low educational attainment and socioeconomic status³⁸, lack of antenatal care, lack of training birth attendants and obstetric care although the exact cause of stillbirth is often unknown³⁹. Although in developing countries have some risk factor for stillbirth and these are Maternal BMI, smoking, advanced maternal age, alcohol consumption etc.

The main objective of this paper were to estimate rates, types, and causes of stillbirths, using pregnancy history and verbal autopsy data from tertiary level hospital in Dhaka city.

Research Question of the Study:

What is the proportion of still birth among the patients admitted in a selected tertiary level hospital of Dhaka City?

Justification of the Study:

In 2015 there were 2.6 million stillbirths globally, with more than 7178 deaths a day. The majority of these deaths occurred in developing countries. Ninety-eight percent occurred in low and middle income countries. About half of all stillbirths occur in the intrapartum period, representing the greatest time of risk. Estimated proportion of stillbirths that are intrapartum varies from 10% in developed regions to 59% in South Asia. In Bangladesh the stillbirth rate was 36 per 1000 total birth, of which 62% occur during the intrapartum period.

Despite the highest prevalence globally, the death of a baby to still birth is an often misunderstood and disenfranchised loss. Women with stillbirths suffer from shoulder dystocia, clinical chorioamnionitis, postpartum haemorrhage and retained placenta. Mothers, fathers, and families struggle to cope with the immediate and long lasting effects of a baby's death which can last for years and sometimes decades. In addition, provider can be adversely affected by still birth, particularly when met with experiential avoidance and a sense of guilt and failure.

This research work may lightly to provide some data which can help other researchers to take initiative for further study. In that way awareness can be created among all mothers.

Operational definition:

Still Birth: Fetal death after 22 weeks and before or during delivery.

Proportion: Comparative relation between things or magnitudes as to size, quantity, number, etc. Or proportion says that two ratio are equal.

Neonatal death: Death of baby within first 28 days of life.

Prenatal: Before birth of baby

Obstetric care: The special care which is given during pregnancy, labour, delivery and post partum period.

Developing country: Developing country means medium income country.

Developed country: Developed country means high income country.

Ante partum: The period from concept to before onset of labour.

Intra partum: The period from the onset of labour to the end of the third stage of labour.

Placentation: Formation of placenta in the uterus.

Obstetric disorder: Any complication of pregnancy and childbirth.

Gestational age: It is the total time of pregnancy. Normal pregnancy can range from 38 to 42 weeks.

Maternal age: Age between 18-35 years

Advanced maternal age: Pregnancy after 35 years of age.

Congenital malformation: The abnormalities that presents from birth.

Immature: Not fully developed.

Asphyxia: It is a condition arises due to deficit of oxygen to body from abnormal breathing.

Pre-eclampsia: It is a pregnancy related complication where swelling, protein in urine and high blood pressure present.

Skill birth attendant: The person who provide basic and emergency health care services to women and their newborn during pregnancy, childbirth and after that.

Maternal education: Minimum education about pregnancy like food habit, rest period, antenatal check up, delivery plan etc.

Knowledge about TT: Knowledge regarding current immunization schedule.

Twin pregnancy: When mother carry 2 baby in her pregnancy.

Singleton pregnancy: When mother carry one baby in her pregnancy.

Antenatal care: The special care which provide the during pregnancy.

Low birth weight: The weight less than 2.5 kg at birth.

Gestational diabetes: When a women without diabetes, develops high blood sugar levels during pregnancy.

Gestational hypertension: It is pregnancy include hypertension, characterized by high blood pressure during pregnancy.

Family support: Family support means all kind of support from all member of family which includes food practice, proper checkup, adequate rest, mental support etc.

Home treatment: Some remedies that advices family member to solve problem or complication.

II. Literature Review

In 2016, Aupont JE et. al. find that, significant contribution to the prediction of stillbirths was provided by maternal factor derived a priori risk, MoM values of PLGF and UT-PI and head and abdominal circumference Z-score. A model combining these variables predicted 58% of all stillbirths and 84% of those due to impaired placentation, at false positive rate of 10%; within the impaired placentation group the detection rate of stillbirth at <32 weeks' gestation was higher than that of stillbirth at ≥ 37 weeks (97% vs 61%; $p < 0.01$). A high proportion of stillbirths due to impaired placentation can be effectively identified in the second trimester of pregnancy.⁴⁰

In another study showed that in the same time, combined screening predicted 55% of all stillbirths, including 75% of those due to impaired placentation and 23% of those that were due to other causes or unexplained, at false positive rate of 10%; within the impaired placentation group the detection rate of stillbirth at <32 weeks' gestation was higher than that of stillbirth at ≥ 37 weeks (88% vs 46%; $p < 0.001$). The performance of screening by the combined test was superior to that of selecting the high-risk group on the basis of UT-PI being above the 90th percentile for gestational age, which predicted 48% of all stillbirths, 70% of those due to impaired placentation and 15% of those that were due to other causes or unexplained. Second-trimester screening by a combination of UT-PI with maternal factors and fetal biometry can predict a high proportion of stillbirths and in particular those due to impaired placentation.⁴¹

Poon LC et. al. in their study have found that, the proportion of live births and stillbirths with birthweight <5th percentile according to our standard (5.6% and 37.2%, respectively) were significantly higher than and discordant to those according to the INTERGROWTH-21st standard (3.4% and 22.7%, respectively). Similarly, the proportion of live births and stillbirths with birthweight <10th percentile according to our standard (11.2% and 44.3%, respectively) were significantly higher than and discordant to those according to the INTERGROWTH-21st standard (6.9% and 32.6%, respectively). The INTERGROWTH-21st standard underestimates the proportion of SGA in live births and stillbirths in our population.⁴²

In English, Russian one study found that, spontaneous abortion happened in 81 (30.3%) cases, artificial one did in 186 (69.7%). The most common cause of stillbirth among extremely low weight fetuses was intrauterine asphyxia with a preponderance of antenatal asphyxia. Antenatal intrauterine infection constituted a high proportion in the structure of antenatal losses. In 2013-2014, the Voronezh Region showed a decline in the number of extremely low weight stillbirths due to induced pregnancy termination for congenital malformations after 21-22 weeks of pregnancy. Considering the fact that antenatal fetal death is a traumatic event for family and clinician, the causes of all stillbirths must be carefully analyzed.⁴³

In Western Australia, study revealed a significant decrease in the neonatal death rate from 1986 to 2010 (6.1 to 2.1 neonatal deaths per 1000 births; $p < .01$), while the overall stillbirth rate remained static. The stillbirth trend was driven by deaths in the extremely preterm period (20-27 weeks; which account for about half of all recorded stillbirths and neonatal deaths), masking significant decreases in the rate of stillbirth at very preterm (28-31 weeks), moderate to late preterm (32-36 weeks), and term (37+ weeks). For singletons, birth defects made up an increasing proportion of stillbirths and decreasing proportion of neonatal deaths over the study period—a shift that appears to have been largely driven by the increase in late pregnancy terminations (20 weeks or more gestation). After accounting for pregnancy terminations, we observed a significant downward trend in stillbirth and neonatal death rates at every gestational age.⁴⁴

Another study in rural Ethiopia found that, The attrition rate was 13.7% and was balanced across the 2 groups. The proportion of women consuming dairy, animal-source foods, fruits, and vegetables including vitamin A-rich ones was higher in the adequate than in the inadequate WDDS group ($P < 0.05$). The overall

incidence of maternal anemia increased from 28.6% to 32.4% during the follow-up period. The overall proportion of LBW, PTB, and stillbirth were 9.1%, 13.6%, and 4.5%, respectively. After control for baseline differences, women in the inadequate group had a higher risk of anemia [adjusted RR (ARR: 2.29; 95% CI: 1.62, 3.24], LBW (ARR: 2.06; 95% CI: 1.03, 4.11), and PTB (ARR: 4.61; 95% CI: 2.31, 9.19) but not of stillbirth (ARR: 2.71; 95% CI: 0.88, 8.36) than women in the adequate group ($P < 0.05$).⁴⁵

In Mexico one study show result that, The national stillbirth rate declined from 9.2 to 7.2 per 1000 births between 2000 and 2013 (i.e. -1.9% per year). The prevalence of stillbirths varied 3.9-fold between states. Stillbirths were associated, in particular, with: residence in Mexico City (odds ratio, OR: 1.71; 95% confidence interval, CI: 1.68-1.73) or central Mexico (OR: 1.36; 95% CI: 1.34-1.38); maternal education of 9 years or less (OR: 1.10; 95% CI: 1.08-1.11) or 10 to 12 years (OR: 1.16; 95% CI: 1.14-1.18); mothers younger than 15 years (OR: 1.64; 95% CI: 1.55-1.72) or older than 34 years (OR: 1.68; 95% CI: 1.66-1.70); and male fetal sex (OR: 1.20; 95% CI: 1.19-1.21). Overall, 51% (7348/14 344) of fetal deaths occurred intrapartum. The total stillbirth rate declined between 2000 and 2013, however geographical variations were observed. Stillbirths were associated with sociodemographic factors. The proportion of intrapartum stillbirths was relatively high, suggesting that health system performance could be improved, especially at places of delivery.⁴⁶

Another study in India, the proportion of live births (vs. stillbirth or abortion) was significantly higher among older adolescents aged 18-19 years (OR = 1.25, 95 % CI (1.08-1.44), $p < 0.001$) than among younger adolescent women of 15-17 years. The proportion of live births was also higher among women having 10 years or more education (OR = 1.26, 95 % CI (1.01-1.56), $p < 0.01$). The prevalence of live birth was significantly higher among women who had received some delivery advices (OR = 1.38, 95 % CI (0.96-1.95), $p < 0.01$), had consumed iron/folic acid tablets, (OR = 1.37, 95 % CI (0.89-2.11), $p < 0.05$), had received Tetanus Toxoid injection (OR = 2.29, 95 % CI (1.25-4.19), $p < 0.001$), while those with assisted vaginal delivery were significantly less likely to have a live birth (OR = 0.38, 95 % CI (0.21-0.68), $p < 0.001$). Adolescent women had 66.6 % delivery complications (i.e. any one problem) vs. 62.5 % among adult women (20-24 years), ($p < 0.001$). Stillbirth and abortion are more prevalent among younger adolescents than among older adolescents, and among all adolescents than among adult women. Delaying the first birth until age 20 appears to benefit both mothers and babies. Access to reproductive health services; timely and quality family planning services and safe abortion and delivery advice; tetanus toxoid and iron/folic acid for those married adolescents who do become pregnant could improve health outcomes.⁴⁷

Another study in United State found that, A total of 46 usable datasets were obtained (45 states and the District of Columbia). During the 7-year period, there was a continuous reduction in all geographic entities in the proportion of term deliveries that occurred before 39 weeks of gestation. The overall rate of term stillbirth, when we compared 2007-2009 with 2011-2013, increased significantly (1.103/1000 vs 1.177/1000, RR 1.067, 95% confidence interval 1.038-1.096). Furthermore, during the 7-year period, the increase in the rate of US term stillbirth appeared to be continuous (estimated slope: 0.0186/1000/year, 95% confidence interval 0.002-0.035). Assuming 3.5 million term US births per year, and given 6 yearly "intervals" with this rate increase, it is possible that more than 335 additional term stillbirths occurred in the United States in 2013 as compared with 2007. In addition, during the 7-year period, there was a progressive shift in the timing of delivery from the 40th week to the 39th week. Absent this confounding factor, the magnitude of association between the adoption of the 39-week rule and the increase in rate of term stillbirth might have been greater.⁴⁸

One cross sectional syudy in Dublin, Ireland have showed that, there was no decrease in the rate of fatal fetomaternal hemorrhage over the past 25 years ($p = 0.29$), despite a decline in overall antepartum deaths ($p = 0.0049$). Fetomaternal hemorrhage accounted for 4.1% (34/828) of antepartum stillbirths. A higher proportion of these stillbirths occurred at term gestations (74%; 25/34) compared with other causes (40%; 321/794; $p = 0.0003$). Female infants were statistically more likely to be involved than males [odds ratio (OR) 2.33, 95% confidence interval (CI) 1.08-5.47, $p = 0.02$). Multiple gestations were up to six times as likely to be affected as singleton pregnancies (OR 6.52, 95% CI 1.67-18.50, $p = 0.005$). Over the past 25 years there has been no reduction in rates of fatal fetomaternal hemorrhage. Female infants and multiple gestations remain at higher risk of antepartum death from fatal fetomaternal hemorrhage.⁴⁹

Ptacek I et al. in their study they found that, different causes of stillbirth, particularly FGR, cord accident and hypertension had altered placental morphology compared to healthy live births. FGR stillbirths had increased SNAs and trophoblast area and reduced proliferation and villous vascularity; 2 out of 10 stillbirths of unknown cause had similar placental morphology to FGR. Stillbirths with FGR had reduced vascularity, proliferation and trophoblast area compared to FGR live births. Ex vivo perfusion did not reproduce the morphological findings of stillbirth.⁵⁰

Nan C et.al. in their studies reported that, GBS-related stillbirth rates varying from 0.04 to 0.9 per 1000 births, with the proportion of stillbirths associated with GBS ranging from 0 to 12.1%. Most studies reported data from before the year 2000 and from high-income countries.⁵¹

In Nepal a case-control study was conducted between July 2012 and September 2013. During the study period, 4567 women who delivered at the hospital were enrolled as referents, of which 62 had antepartum stillbirths and were re-categorized into the case population. In total, there were 307 antepartum stillbirths. An association was found between the following risk factors and antepartum stillbirth: increasing maternal age (aOR 1.0, 95 % CI 1.0-1.1), less than five years of maternal education (aOR 2.4, 95 % CI 1.7-3.2), increasing parity (aOR 1.2, 95 % CI 1.0-1.3), previous stillbirth (aOR 2.6, 95 % CI 1.6-4.4), no antenatal care attendance (aOR 4.2, 95 % CI 3.2-5.4), belonging to the poorest family (aOR 1.3, 95 % CI 1.0-1.8), antepartum hemorrhage (aOR 3.7, 95 % CI 2.4-5.7), maternal hypertensive disorder during pregnancy (aOR 2.1, 95 % CI 1.5-3.1), and small weight-for-gestational age babies (aOR 1.5, 95 % CI 1.2-2.0).⁵²

Another comparative cohort study was conducted from 1(st) October 2010 to 30 September 2012. Total 200 gravid women 100 were overweight and 100 normal weight pregnant women with gestational age for 08-40 weeks were included. Women having BMI (25 - 29.9 Kg/m²) were measured overweight and included in group A and 100 women having normal BMI of 18.5 to 24.9 as controls were in-group B. Chi-square test was applied to compare the proportion of maternal and fetal outcomes. Significant P - value of < 0.05 was considered. The age range was between 30 to 45 years with mean age of 30±4.1 years in both groups. Overweight pregnant women had significantly high frequency of pre-eclampsia (27% versus 9% in controls), PIH (24% versus 8% in controls), gestational diabetes mellitus (22% versus 5% in controls), prolonged labour (4% versus 6% in controls), Caesarean section (44% versus 16% in controls), Wound infection (3% versus 2% in controls) and Postpartum Hemorrhage (5% versus 2% in controls). P-value < 0.001 was considered significance. Fetal complications in overweight pregnant women compared to controls i.e. Still birth (13% versus 2%), Early neonatal death (11% versus 1%), shoulder dystocia (5% versus 1%) and NICU admission (47% versus 10%). Results were statistically significant except shoulder dystocia.⁵³

A secondary analysis of the South African Perinatal Problems Identification Program (PPIP) database for the Province of Mpumalanga was undertaken for the period October 2013 to January 2014, inclusive. Data on each individual late perinatal death was reviewed. There were 23503 births and 687 late perinatal deaths (stillbirths of ≥ 1000 gr or ≥ 28 weeks gestation and early neonatal deaths up to day 7 of neonatal life) in the study period. The rate of maternal complication in macerated stillbirths, fresh stillbirths and early neonatal deaths was 50.4%, 50.7% and 25.8% respectively. Mothers in the other late perinatal deaths were healthy. Maternal hypertension and obstetric haemorrhage were more likely in stillbirths ($p = < 0.01$ for both conditions), whereas ENNDs were more likely to have a healthy mother ($p < 0.01$). The main causes of neonatal death were related to immaturity (48.7%) and hypoxia (40.6%). 173 (25.2%) of all late perinatal deaths had a birth weight less than the 10(th) centile for gestational age.⁵⁴

In Africa, Berhan Y, Berhan A found that, African countries with relatively small population sizes and with middle to high income were found to have above 90% skilled person attended deliveries. Several African countries with a high proportion of skilled person attended deliveries (60%-100%) were able to reduce the MMR to the range of 56-370/100,000 live births. Several Sub Saharan African (SSA) countries were far from their northern counterparts. The regression analyses demonstrated a negative correlation of the proportion of skilled health personnel attended deliveries with the MMR, stillbirth rate and neonatal mortality rate. According to the national data of the included African countries, skilled delivery attendance was associated with significant reduction of maternal, fetal and neonatal mortality.⁵⁵

Another study of Berhan Y, Berhan A showed a strong association of perinatal mortality with lack of antenatal care (OR=3.2), prematurity (OR=7.9), low birth weight (OR=9.6), and marginal association with primigravidity (OR=1.5) and male sex (OR=1.2). The regression analysis also showed down-going trend lines of stillbirth and neonatal mortality rates in relation to the proportion of antenatal care. The metaanalysis showed that there was no association between mode of delivery and perinatal mortality.⁵⁶

Another study in Ethiopia, Sub Saharan Africa have found that, The PMRs reported from ten hospital based studies were in the range of 66 to 124 per 1000 births. The reports of the large scale community based PMRs were in the range of 37 to 52 per 1000 births. The proportion of stillbirths and early neonatal deaths reported from the hospital based and community based studies was very high (60-110 and 20-34/1000 births); the regression lines demonstrated that SBRs in the hospitals were mirror reflections of ENMRs in the community. The neonatal mortality rate (NMR), however, declined by more than 40% between 1990 and 2011.⁵⁷

In another study Mondal D, Galloway TS, Bailey TC, Mathews F found that, the crude mean rate (stillbirths/1,000 total births) was 6.23 for males and 5.74 for females. The pooled relative risk was 1.10 (95% confidence interval (CI): 1.07-1.13). The attributable fraction in the whole population was 4.2% (95% CI: 3.70-4.63), and the attributable fraction among male fetuses was 7.8% (95% CI: 7.0-8.66). Study populations from countries with known sex-biased sex selection issues had anomalous stillbirth sex ratios and higher overall stillbirth risks than other countries, reflecting increased mortality among females.⁵⁸

In Peru Bradley H et.al. Information was found on 123 575 births from 2000 - 2010 and syphilis test results were available for 99 840 births. Among those 99 840 births, there were 1 075 maternal syphilis infections (1.1%) and 619 stillbirths (0.62%). Among women with syphilis infection in pregnancy, 1.7% had a stillbirth, compared to 0.6% of women without syphilis infection. Much of the information needed to estimate the proportion of stillbirths attributable to maternal syphilis was available in the SIP, with the exception of syphilis treatment information, which was not collected. However, SIP data collection is complex and time-consuming for clinicians. Data were unlinked across hospitals and not routinely used or quality-checked. Despite these limitations, the SIP data examined were complete and valid; in 98% of records, information on whether or not the infant was stillborn was the same in both the SIP and clinical charts. Nearly 89% of women had the same syphilis test result in clinical charts and the SIP.⁵⁹

In Nigeria between December 1, 2012 through January 31, 2013 et. al. find out in their study that, correct knowledge of excessive and decreased fetal movement was found in 47% and 31.1% of respondents, respectively. Majority of women (87.6%) either had no knowledge of normal parameters of fetal activity or did not recall being told that movement frequency and strength should increase in the third trimester. The proportion of women who expressed concern over excessive and decreased fetal movement was 31.1% and 21.8%, respectively. Maternal education was significantly associated with correct knowledge of decreased fetal movement ($P = 0.026$). Almost 36% of respondents had knowledge of at least one potential consequence of abnormal fetal movement.⁶⁰

In another study Zheng XJ, Deng XL, Liu XY find that, (1) Maternal/fetal outcome: 17 pregnancies (31.4%) resulted in full term delivery, 7 (12.9%) in stillbirth, 16 (29.6%) in spontaneous abortion, 10 (18.5%) in premature birth due to eclampsia or severe preeclampsia or signs of placental insufficiency, 4 (7.4%) received therapeutic termination of pregnancy due to eclampsia or severe preeclampsia. In 27 live birth cases, 8 (29.6%) were fetal growth restriction, 4 (14.8%) were low birth weight infants, and 3 (11.1%) were very low birth weight infants. (2) Influence of treatment on the pregnancy outcomes and complications: 24 APS patients were given the treatment of aspirin or aspirin combined with low molecular weight heparin, and 30 patients received no treatment. Compared with the untreated group, the treated group had lower rate of fetal loss, higher rate of full-term delivery, increased gestational age and birth weight, decreased incidence of preeclampsia / eclampsia and thrombocytopenia. There was a significant difference between the two groups ($P < 0.05$). (3) Possible risk factors of unsuccessful pregnancy: there were 17 successful pregnancies and 37 unsuccessful pregnancy. The rate of double APL positive and antibody titers \geq three times the upper limit of normal were higher in the unsuccessful pregnancy group than the successful pregnancy group. Antibody negative rate before pregnancy proportion of patients received treatment and the level of complement 4 were lower in the unsuccessful pregnancy group.⁶¹

In Babol, Hajian-Tilaki K et.al. found that, Stillbirth rate was reduced significantly from 10.51 in 1999 to 8.57 per 1000 deliveries in 2008 ($p = 0.001$). A significant association was found between preterm delivery ($p = 0.001$) and preeclampsia ($p = 0.01$) with stillbirths. Although the proportion of stillbirths was higher among mothers with history of diabetes, abortion and maternal age of more than 35 years.⁶²

In South Africa and United Kingdom, Allanson ER et.al. found that 344/689 (50%) deaths occurred antepartum, 11% ($n = 74$) intrapartum and 39% ($n = 271$) in the early neonatal period. In the UK 4377/9067 (48.3%) deaths occurred antepartum, with 457 (5%) intrapartum and 4233 (46.7%) in the neonatal period. Antepartum deaths were due to unspecified causes (59%), chromosomal abnormalities (21%) or problems related to fetal growth (14%). Intrapartum deaths followed acute intrapartum events (69%); neonatal deaths followed consequences of low birthweight/ prematurity (31%), chromosomal abnormalities (26%), or unspecified causes in healthy mothers (25%). Mothers were often healthy; 53%, 38% and 45% in the antepartum, intrapartum and neonatal death groups, respectively. Where there was a maternal condition, it was most often maternal medical conditions, and complications of placenta, cord and membranes.⁶³

Deb-Rinker P et. al. found that, proportion of live births < 22 weeks varied substantially: Sweden (not reported), Iceland (0.00%), Finland (0.001%), Denmark (0.01%), Norway (0.02%), Canada (0.07%) and United States (0.08%). At 22-23 weeks, neonatal mortality rates were highest in Canada (892.2 per 1000 live births), Denmark (879.3) and Iceland (1000.0), moderately high in the United States (724.1), Finland (794.3) and Norway (739.0) and low in Sweden (561.2). Stillbirth:live birth ratios at 22-23 weeks were significantly lower in the United States (79.2 stillbirths per 100 live births) and Finland (90.8) than in Canada (112.1), Iceland (176.2) and Norway (173.9). Crude neonatal mortality rates were 83% higher in Canada and 96% higher in the United States than Finland. Neonatal mortality rates among live births ≥ 28 weeks were lower in Canada and United States compared with Finland. Post-neonatal mortality rates were higher in Canada and United States than in Nordic countries.⁶⁴

A study in Sub-Saharan Africa have declared that, The Western Pacific region has the greatest reduction in stillbirth with a 3.8% annual decline between 1995 and 2009; however, the annual decline in the African region is less than 1%. Caesarean delivery is still uncommon, especially in rural areas: 1% of births in

rural Sub-Saharan Africa and 5% in rural South Asia are by caesarean delivery; 62% of stillbirths occurred during the intra-partum period; 61.4% of stillbirths are attributable to obstetrical complications. Preventive measures aimed at reducing the incidence of intra-partum foetal death entail all measures aimed at improving quality antenatal care and preventing intra-partum asphyxia. This review discusses intra-partum foetal deaths from a Sub-Saharan African perspective. It explores the contribution of research within the region to identifying its impact on new-born health and potential cost-effective policy interventions.⁶⁵

Another study in Sub-Saharan Africa have declared that, for all 43 sub-Saharan Africa countries, the estimated incidence of adverse pregnancy outcomes was 205,901 (95% confidence interval [CI], 113,256-383,051) per year, including stillbirth (88,376 [95% CI, 60,854-121,713]), neonatal death (34,959 [95% CI, 23,330-50,076]), low birth weight (22,483 [95% CI, 0-98,847]), and congenital syphilis (60,084 [95% CI, 29,073-112,414]), resulting in approximately 12.5 million DALYs. Countries with the greatest burden are (in DALYs, millions) Democratic Republic of the Congo (1.809), Nigeria (1.598), Ethiopia (1.466), and Tanzania (0.961). Attaining World Health Organization targets could reduce the burden by 8.5 million DALYs.⁶⁶

Wilkins A et.al. found in their study that, One hundred and fifty-three stillbirths were identified, producing a stillbirth rate of 29 per 1000 births. Of stillbirths with known timing, 70 (66.7%) occurred antepartum and 35 (33.3%) intrapartum. Cause of death could not be ascertained in 62.7% of cases due to poor or missing records. Where identified, the three most commonly classified causes of death were intrapartum fetal asphyxia, maternal infection and maternal hypertensive disorder.⁶⁷

III. Research Methodology

Study Design:

The study was a descriptive type of cross sectional study.

Target population and sample population:

Target population:

All mothers who gave birth of baby in a tertiary level hospital in Dhaka city, Bangladesh.

Sample population:

The sample populations were all the mothers, who were present at the time of data collection in the selected hospital in Dhaka city, Bangladesh.

Study site:

The study was carried out at Dhaka Medical College Hospital, Dhaka. It established in 1946 during the British colonial rule. It is situated in the Bakshibazar area of the Bangladesh University of Engineering and Technology. It is the biggest hospital in Bangladesh (2300 beds), occupying an area of 4, 50,000 square feet in the heart of Dhaka city. It has played a pioneering role in the development of medical science, health care delivery and in nation building activities of the country.

Study area:

The study was conducted in Department of Gynae & Obstetrics of a tertiary level hospital (DMCH) of Dhaka city in Bangladesh.

Study Period:

Study period was from September to 2016 to December 2016.

Sample Size:

The sample size was calculated by using the following formula:

$$n = \frac{Z^2 pq}{d^2}$$

Here,

n= required sample size

z=the standard normal deviation usually set at 1.96 which corresponds to 95% CI

p= Prevalence of still birth was = 3.6%⁶⁸= 0.036

q= 1-p so, 1-0.036=0.964

d= degree of accuracy set or margin of error 5%=0.05

The required sample size is:

$$n = \frac{Z^2 pq}{d^2}$$

$$n = \frac{1.96^2 \times 0.036 \times 0.964}{0.05^2}$$

$$= 33.3$$

Inclusion and Exclusion Criteria:**Inclusion criteria:**

- Mother who gave birth in selected tertiary level hospital in Dhaka city.
- The respondents who was willing to participate in the study.
- Mentally sound health

Exclusion criteria:

- Respondent who did not give consent.
- Respondents who was mentally retarded or handicapped.

Sampling Technique:

Non randomized purposive sampling technique was applied for the study.

Data Collection Tools:

Data was collected by pretested and modified, self-administered semi-structured questionnaire.

Data collection technique:

Data was collected by face to face interview.

Data management and analysis plan:

- All questionnaires were checked for its completeness and correctness.
- Coding and classification was done.
- The analysis was carried out with the help of SPSS (Statistical package for social science) Windows software program version 7. Descriptive statistics was used for the interpretation of the findings. Cross tabulation and association was determined by use of chi-square test.

Quality control and quality assurance:

Filled questionnaires were checked daily for completeness and consistency of the responses to eliminate possible errors.

Ethical consideration:

- Permission from Ethical Review Committee of Northern University of Bangladesh and from study place.
- Written informed consent was obtained prior to the interview.
- Confidentiality of the respondents was maintained.
- Respondents, have rights to refuse and with draw from the study at any time.

Limitation of the study:

The following was the limitation of the study:

- Limitation of the fund
- Small study area could not represent the whole.

IV. Results

The cross sectional type of descriptive study was conducted to assess the proportion of still birth among the attended patients in a selected tertiary level hospital of Dhaka city with a sample size of 181. A pre tested modified interviewer administrated semi structured questionnaires was used to collect the information. All the data were entered and analyzed by using Statistical packages for social science (SPSS) software version 16.0 (Chicago).

Table 1: Distribution of the respondents by age (n=181)

Age (years)	Frequency	Percentage (%)
15-24	46	25.4
25-34	106	58.6
35-44	22	12.2
45-54	7	3.9
Mean ± SD	27.95 ± 6.949	

Age distribution of the respondents shows in table no 1. 58.6% of the respondents were in the age group 25-34 years, 25.4% followed by in 15-24 years, 12.2% in 35-44 years and 3.9% in 45-54years with the mean age 27.95 ± 6.949 .

Table 2: Distribution of the respondents by their marriage age (n=181)

Age (years)	Frequency	Percentage (%)
14-18	71	39.2
19-23	81	44.8
24-28	24	13.3
29-33	5	2.8
Total	181	100.0
Mean \pm SD	19.78 ± 3.836	

Table 2 shows that 44.8% of respondents got marriage at the age 19-23 years. While 39.2% marriage age was 14-18 years, 13.3% was 24-28 years and 2.8% was in 29-33 years with the mean marriage age was 19.78 ± 3.836 .

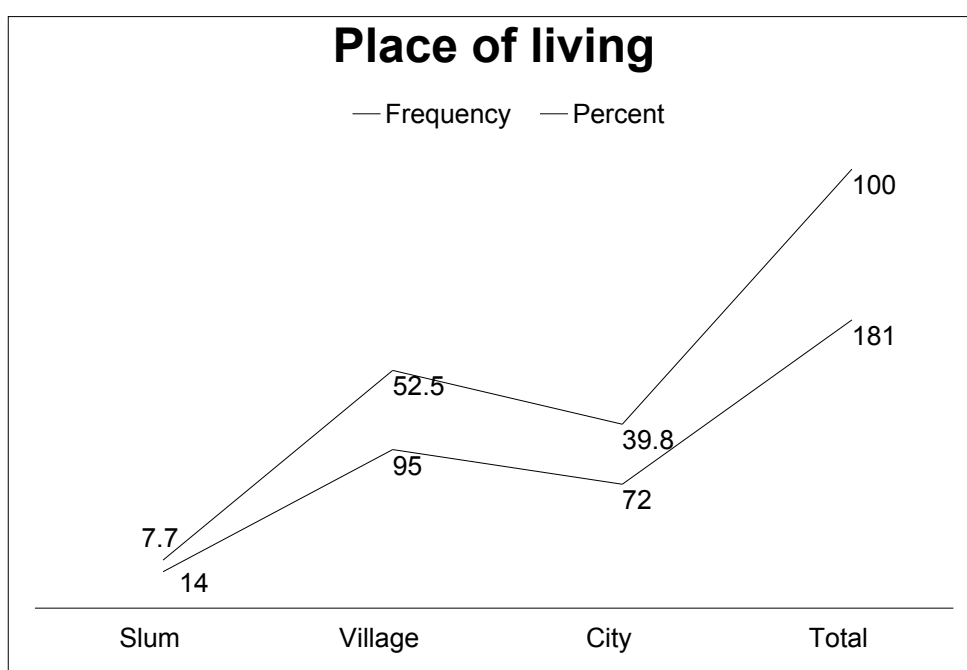


Figure 1: Distribution of the respondents by their place of living (n=181)

Figure no 1 reveals that among the respondents 39.8% live in city, 52.5% live in village and 7.7 % live in slum area.

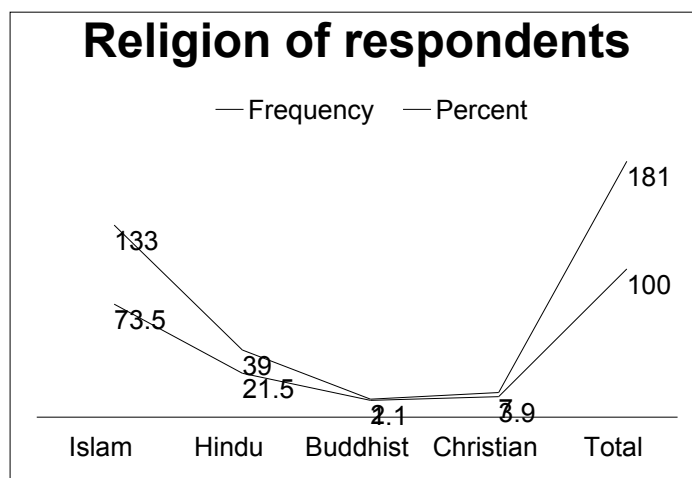


Figure 2: Distribution of the respondents by their religion (n=181)

Figure no 2 finds that among the respondents 73.5% was Muslim, 21.5% was Hindu, 1.1 was Buddhist and 3.9 was Christian.

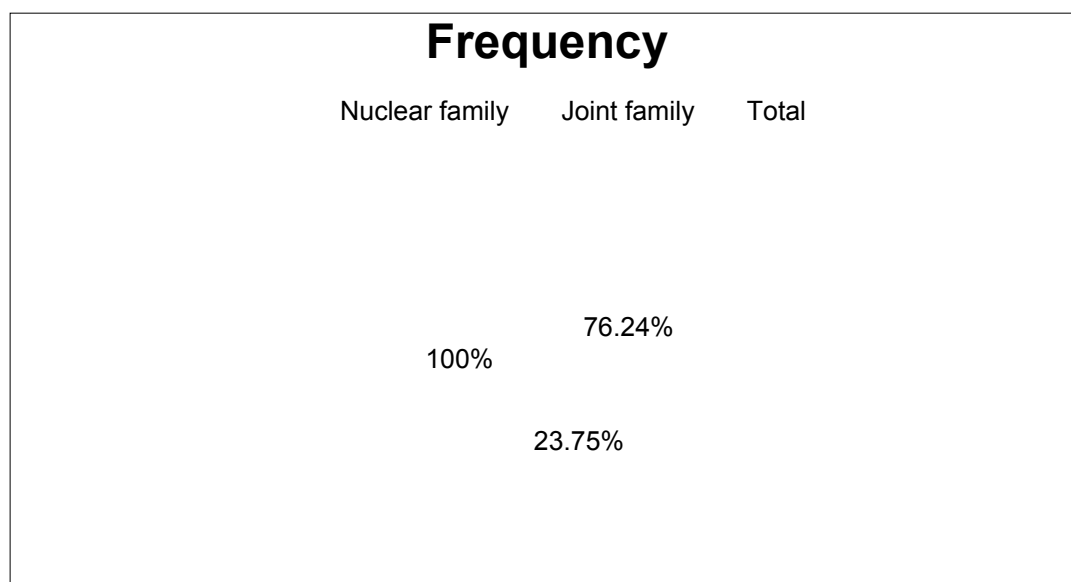


Figure 3: Distribution of respondents by type of family (n=181)

Figure no 3 reveals that majority of the respondents (76.2%) live in nuclear family while 23.8% in join family.

Table 3: Distribution of the respondents by the gender head of family (n=181)

Gender head	Frequency	Percent
Parents in law	23	12.7
Husband	158	87.3
Total	181	100

Table 3 finds that majority of the respondents (87.3%) husband is the gender head of their family and rest (12.7%) is parents in law.

Table 4: Distribution of the respondents by level of education (n=181)

Level of education	Frequency	Percent
Illiterate	12	6.6
Primary	74	40.8
Secondary	51	28.3
Higher secondary	21	11.6
Graduation and above	23	12.7
Total	181	100

Table no 4 shows that 40.8% of the respondents had primary education and 28.3% had secondary. Another 12.7%, 11.6% and 6.6% of the respondents were graduation or above degree, higher secondary and illiterate respectively.

Table 5: Distribution of the respondents by occupation (n=181)

Occupation	Frequency	Percent
House wife	132	72.9
Day labor	22	12.1
Service holder	24	13.3
Others	3	1.7
Total	181	100

Table no 5 finds that majorities (72.9%) of the respondents were house wife, 13.3%, 12.2%, and 1.7% of the respondents were in service holder, day labor and in other field respectively.

Table 6: Distribution of the respondents by their husbands occupation (n=181)

Occupation	Frequency	Percent
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Day labour	59	32.6
Service holder	96	53
Business man	26	14.4
Total	181	100

Table no 6 finds that 53% of the respondent's husbands were service holder, 32.6%, and 14.4% of the respondents husband were day labor and in business respectively.

Table 7: Distribution of the respondents by monthly family income (n=181)

Monthly income	Frequency	Percent
<5000	43	23.8
5000-15,000/-	70	38.7
15,001-30,000/-	39	21.5
30,001-45,000/-	17	9.4
>45,000/-	12	6.6
Total	181	100
Mean \pm SD	17322.65 \pm 13906.86	

Table no 7 shows that among 181 respondents 23.8%, 38.7%, 21.5%, 9.4% and 6.6% had monthly family income as BDT <5000, 5000-15,000, 15,001-30,000, 30,001-45,000 and BDT >45,000 respectively with the mean monthly family income 17322.65 \pm 13906.86.

Table 8: Distribution of the respondents by their knowledge about care during pregnancy (n=181)

Knowledge about care during pregnancy	Frequency	Percent
Yes	158	87.3
No	23	12.7
Total	181	100

Table no 8 shows that among 181 respondents 87.3% had knowledge about pregnancy care and 12.7 did not know about it.

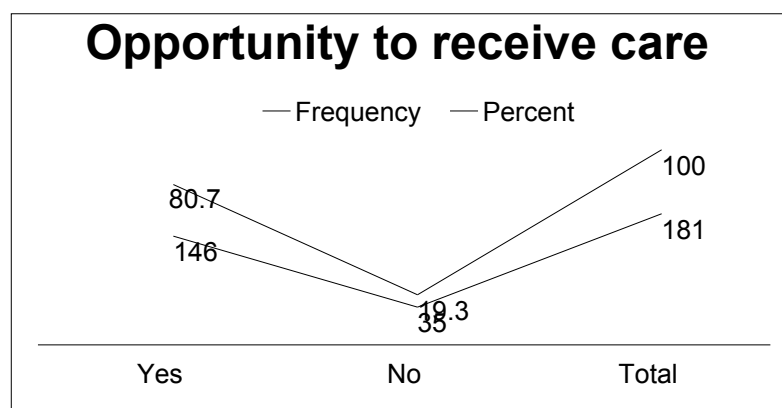


Figure 4: Distribution of respondents by opportunity to receive care during pregnancy (n=181)

Figure no 4 shows that 80.7% of the respondents got opportunity from family to receive care during pregnancy and 19.3% did not get.

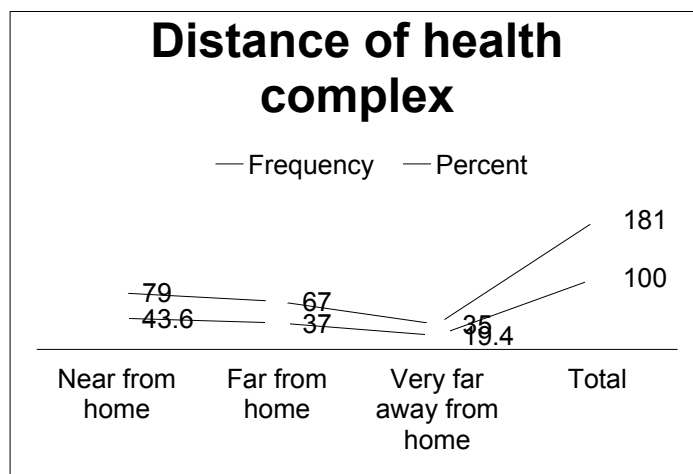


Figure 5: Distribution of respondents by the distance of health complex from their home (n=181)

Figure 5 shows that 43.6% of the respondents had health complex near their home, 37% mentioned that it's far and 19.4% said that it's very far from home.

Table 9: Distribution of the respondents by transport facility to reach health complex (n=181)

Way to go health complex	Frequency	Percent
By Walking	37	20.4
By Rickshaw/ van	61	33.8
By Boat	8	4.4
By CNG	75	41.4
Total	181	100

Table 9 shows that 41.4% of the respondents went to health complex by CNG, 33.8% by rickshaw/van, 20.4% by walking, and 4.4% by boat.

Table 10: Distribution of respondents by their ability to bear pregnancy related cost (n=181)

Pregnancy related cost	Frequency	Percent
Easily	71	39.2
Difficult	69	38.1
Very Difficult	41	22.7
Total	181	100

Table no 10 shows that 39.2% of the respondents had ability to bear pregnancy related cost easily, 38.1% found it difficult and for 22.7% mentioned it as very difficult to bear cost.

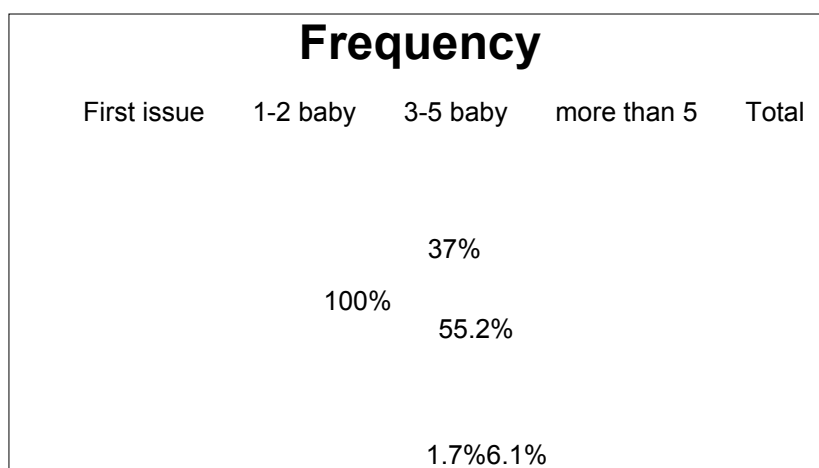


Figure 6: Distribution of respondents by their number of children (n=181)

Figure 6 revealed that more than half (55.2%) of the respondents had 1-2 baby, 37% of the respondents it was 1st issue, 6.1% and 1.7% had 3-5 and more than 5 baby respectively.

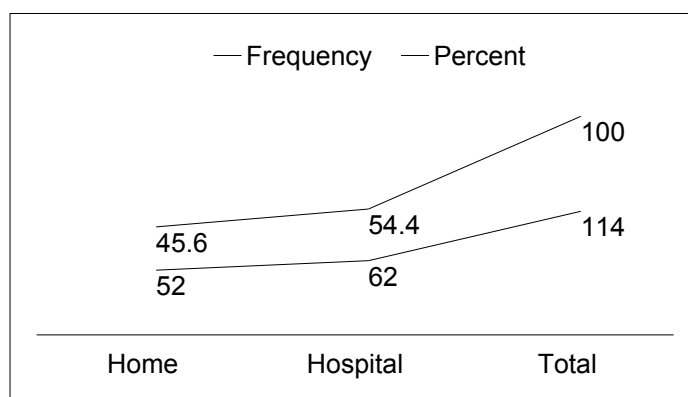


Figure 7: Distribution of respondents by their previous delivery conducted place (n=114)

Figure 7 shows that 54.4% of the respondents previous delivery was conducted at hospital & 45.6% were in home.

V. Discussion

A descriptive type cross sectional study was conducted in order to find out the proportion of still birth among the patients admitted in a selected tertiary level hospital of Dhaka city. A pre tested semi structured questionnaire was designed to collect the information among 181 mothers who were interviewed by their socio-demographic condition such as Age, Marriage are, Place of living, Religion, Types of family, Gender head of family, Educational status, Occupation of respondent, Occupation of husband, Monthly income, After that cause related factor including Antenatal intrauterine infection Heavy bleeding, Headache, Prolapsed cord, Multiple pregnancies, Previous still birth, Hypertensive disorder, DM, Low wt fetus, more over Risk Factor of Stillbirth such as Immunization, Knowledge about ANC, Mode of delivery, Birth attended, low wt. fetus and health care facility.

It was found that among 181 study respondents 58.6% of the respondents were in the age group 25-34 years, 25.4% followed by in 15-24 years, 12.2% in 35-44 years and 3.9% in 45-54 years with the mean age 27.95 ± 6.949 . Overall 44.8% of respondents got marriage age was 19-23 years. While 39.2% marriage age was 14-18 years, 13.3% was 24-28 years and 2.8% was in 29-33 years with the mean age 19.78 ± 3.836 . These findings were almost similar to the finding of a study carried out by McClure EM et.al.in 2006²

The study showed that the respondents 39.7% live in city, 52.5% lives in village and 7.7% live in slum area. Among the respondents 73.5% was Muslim, 21.5% was Hindu, 1.1 was Buddhist and 3.9% was Christian. These findings were dissimilar to the finding of a study carried out by MacDorman M F et. al.in 2006-2012 in United State⁵. These finding are quite dissimilar possible cause for this cultural variation between countries.

The majority of the respondents (76.2%) lived in nuclear family while 23.8% in join family. From those 87.3% husband was the gender head of their family and rest (12.7%) was parents in law. So for literature search has found no such finding, so researcher couldn't draw any comparison here.

It is found from the study that 40.8% of the respondents had primary education and 28.3% had secondary. Another 12.7%, 11.6% and 6.6% of the respondents were graduation or above degree, higher secondary and illiterate respectively. These findings from education it indicate that even though the govt. of Bangladesh gives priority for female education still they are lagging behind specially in rural area. These findings were closely nearer to the finding of a study carried out by Fatema K et.al. in 2014 in Africa.³⁷

Study found that 72.9% of the respondents were house wife, 13.3%, 12.2%, and 1.7% of the respondents were in service holder, day labor and in other field respectively. It was found from the study that 53% of the respondent's husbands were service holder, 32.6%, and 14.4% of the respondents husband were day labor and in business respectively. These findings were dissimilar to the finding of a study carried out by Poon LCet.al. in 2016⁴²

Study showed that among 181 respondents 23.8%, 38.7%, 21.5%, 9.4% and 6.6% had monthly family income as BDT <5000, 5000-15,000, 15,001-30,000, 30,001-45,000 and BDT >45,000 respectively with the mean monthly family income 17322.65 ± 13906.86 . These findings were quite similar to the finding of a study carried out by Fatema K et.al. in 2014 in Africa.³⁷

Study revealed that 87.3% had knowledge about pregnancy care and 12.7 did not know about it. From those 80.7% of the respondents got opportunity from family to receive care during pregnancy and 19.3% did not get. 43.6% of the respondents had health complex near their home, 36.1% mentioned that it's far and 19.3% said that it's very far from home. The result also showed that 41.4% of the respondents went to health complex by CNG, 33.8% by rickshaw/van, 20.4% by walking, and 4.4% by boat. So for literature search has found no such finding, so researcher couldn't draw any comparison here.

Study showed that 39.2% of the respondents had ability to bear pregnancy related cost easily, 38.1% found it difficult and for 22.7% mentioned it as very difficult to bear cost. These findings were similar to the finding of a study carried out by Fatema K et.al.³⁷

Study revealed that more than half (55.2%) of the respondents had 1-2 baby, 37% of the respondents it was 1st issue, 6.1% and 1.7% had 3-5 and more than 5 baby respectively. These findings were similar to the finding of a study carried out by Allanson ER et.al. in 2014 in South African.⁵⁴

Study further showed that 54.4% of the respondents previous delivery was conducted at hospital & 45.6% was in home and more than half of the respondent (57%) delivery was conducted by trained birth attended and 43% by untrained birth attended. These findings were closely similar to the finding of a study carried out by Watson-Jones D et.al.in 2007 in WHO.³⁰

Study revealed that 54% of the respondents had normal vaginal delivery, 35.9% had cesarean section and 9.7% had an instrumental delivery. These findings were almost similar to the finding of a study carried out by Feresu S et.al.in 2004 in Zimbabwe.²⁸

Study further revealed that 63.5% of the respondents suffered from pregnancy related complication and 36.5% did not suffer and almost half of the respondents (45.9%) had suffered from abdominal pain, 35.4%, 32.6%, 15.5%, 14.9%, 14.4%, 11.0%, 10.5%, and 10.5% had suffered from high BP, breathing difficulty, headache, blurred vision, urinary infection, convulsion, DM, and bleeding respectively. These findings were almost similar to the finding of a study carried out by Allanson ER et.al. in 2015 in South Africa.⁵⁴

Study showed that 64.3% of the respondents took management to reduce complication and 35.7% did not take any management. 62.3% of the respondents went to hospital, 22.8% took herbal medicine and 14.9% applied home treatment as management. 43.9% respondent did not go for management due to lack of necessary knowledge, 21.9% due to family problem, and 34.2% due to financial problem. These findings were quite similar to the finding of a study carried out by Berhan Y¹ et.al. in 2014.⁵⁵

Study revealed that 42.9% respondents delivered still baby in their previous issue and 57.1% was live birth and 28.2 % of the respondent had dead baby in the current delivery while 71.8% did not face so. These findings were closely nearer to the finding of a study carried out by Olagbuji BN et.al.in 2014⁶⁰

Study showed that 76.8% of the respondents receive TT vaccine and 23.2% did not receive TT vaccine in their last pregnancy and 79.1% of the respondents received full dose of TT and 20.9% did not complete full dose also 66.6% of the respondents did not receive TT vaccine due to lack of awareness, 16.7% due to lack of information from doctor and 16.7% due to financial problem. These findings were quite similar to the finding of a study carried out by Deb-Rinker P et.al. in 2015⁶⁴

Study found that 17.7% still birth was reported due to heavy bleeding, 9.9% for twin baby and low wt. fetus, and 9.4% for breach presentation, and 6.1% for placental problem & prolapsed cord respectively. These findings were almost similar to the finding of a study carried out by Ptacek I et.al. in 2016⁵⁰

The study find association between educational status and previous delivery place where it is found that those are illiterate all chose home delivery and those are higher educated all chose hospital delivery. In another association between educational status and person by whom their previous delivery were conducted where it is found that who are illiterate all conducted their delivery by untrained birth attendant and who are graduate all conducted their delivery by trained birth attendant. In another association between educational status and receive TT vaccine where it is found that those who educated are conscious about receiving TT vaccine. (p=0.00) and association between age and still birth where it is found that those who are aged had more still birth than other aged. (p=0.02)

VI. Conclusion And Recommendations

Conclusion

Stillbirth remains one of the most common adverse outcomes of pregnancy, yet is among the least studied. Many stillbirths remain undocumented and historically have not been included among the international health indicators. Registration of all births and stillbirths, together with evaluation of cause of stillbirths are important initial steps for developing countries. In order to understand stillbirth rates and causes between locations, as well as over time, a standard classification system would be important to documenting the etiology of stillbirth in developing countries. Finally, access to appropriate essential obstetric care and reduction of infection are interventions most likely to significantly reduce global stillbirth rates. Stillbirths were associated with socio-demographic factors. The proportion of stillbirths was relatively high, suggesting that health system performance could be improved, especially at places of delivery. There is an urgent need to educate pregnant women about risk factors for stillbirth during antenatal visits. Encouraging women to deliver at health facilities and better management of obstetrical complications may help reduce the burden of stillbirth in Bangladesh.

Recommendations

Based on study findings following recommendations are given below for reduce still birth

- Increase female education.
- Increase awareness about maternal health.
- Increase community awareness on and importance of family planning.
- Provide training to service provider of community clinic and upazilla health complex to improve their skills to rural women in order to provide quality services and counseling in a friendly manner.
- Health education should be strengthened through mass media and health services to educate the rural women about adequate information of pregnancy and delivery.
- Government should plan and implement the intensive awareness program throughout the country covering all the women's of reproductive age group through information, education and communication program.
- Strengthen and improved family planning service delivery system.
- Regular follow up to doctors.

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