



Study of Clinical, Social and Behavioral factors affecting Maternal Health in Bangladesh

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Dedicated To My Parents
&
Honourable Teachers

DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation, entitled “**Study of Clinical, Social & Behavioral factors affecting Maternal Health in Bangladesh**” is an authentic and genuine research work carried out by me under the guidance of Dr. Repon Kumar Saha, Assistant Professor, Department of Pharmacy, East West University, Dhaka.

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ABSTRACT

Globally, more than 500,000 women die each year because of complications related to pregnancy and childbirth. They die due to haemorrhage, sepsis, hypertensive disorders, unsafe abortion and prolonged or obstructed labour – complications that can often be effectively treated in a health system that provides skilled personnel facilities to handle emergencies when they occur and post-partum care. Prenatal care is known to improve the outcome of pregnancy and birth for both mother and child. It not only monitors the health of the mother and foetus but also allows for the identification of potential complications. MDG 5 (Millennium development goal 5) on improving maternal health is one of the goals towards which least progress has been made. Teenage pregnancy, pregnancy within 19 years of age, is a public health concern both in developed and developing countries. Most of the studies found that pre-term delivery, still birth, fetal distress, birth asphyxia, anaemia, low birth weight, pregnancy-induced hypertension (PIH) and spontaneous abortion were most frequently encountered complications during teenage pregnancies. As per a major survey by the Government of Bangladesh maternal mortality ratio in Bangladesh has dropped by 40% in the last nine years. However, as per this study conducted on 654 pregnant women, maternal health in Bangladesh is still under considerable risk. Majority of the participants 75% were married during their teen ages. 44% of the respondents first conceived during their teen ages. Pre-term delivery, still birth, fetal distress, birth asphyxia, anaemia, low birth weight, pregnancy-induced hypertension (PIH) and spontaneous abortion were most frequently encountered complications during teenage as per previous studies. 94% of the pregnant women had no understanding or knowledge of the different complications that may occur during pregnancy. 98% of the patients did not know the blood group of their husband and 59% of the patients did not know their own blood group along with their husband's. A close relation was found between education level, the marriage in teen age, age of 1st abortion as well as age when 1st time conceived.

List of Abbreviations

CMUD	Centre for Medical Ultrasound & Doppler
HIV	Human Immunodeficiency Syndrome
AIDS	Acquired Immune Deficiency Syndrome
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
IMR	Infant Mortality Rate
VTE	Venous Thromboembolism
PIH	Pregnancy-Induced Hypertension
UNDP	United Nations Development Programme
BRAC	Bangladesh Rural Advancement Committee
SNL	Saving Newborn Lives
NGO	Non-governmental Organization
GDI	Gender-related Development Index
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
MOHFW	Ministry of Health and Family Welfare
UHFWC	Union Health and family welfare centre
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
BMMS	Bangladesh Maternal Mortality Survey
ANC	Antinatal Care
PNC	Post-natal care
BDHS	Bangladesh Demographic and Health Survey
UHC	Upazila Health Complex
MCWC	Maternal And Child Welfare Centre
MCHTI	Maternal and Child Health Training Institute

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Chapter- One

Introduction



Introduction

1.1 Global Situation on Pregnancy related complications & maternal mortality

Globally, more than 500,000 women die each year because of complications related to pregnancy and childbirth. They are dying because they have no access or limited access to health care, or because the quality of care is poor. They die due to haemorrhage, sepsis, hypertensive disorders, unsafe abortion and prolonged or obstructed labour – complications that can often be effectively treated in a health system that provides skilled personnel facilities to handle emergencies when they occur and post-partum care. A woman's health and nutritional status, including HIV and anaemia, underlie these causes, along with societal factors such as poverty, inequity, women's low status and attitudes towards women and their needs. ¹

1.2 Importance Institutional delivery/delivery with the help of a birth attendant

Another important way to help more women survive pregnancy and childbirth is to provide them with access to skilled birth attendants such as trained nurse-midwives, trained traditional birth attendants or medical doctors. Skilled birth attendants can diagnose the need for emergency obstetric care and, if necessary, transfer the patient to a medical facility for treatment such as a caesarean section. A skilled birth attendant is essential to decrease maternal injuries, such as haemorrhages and obstructed labour that can result in fistula or death.

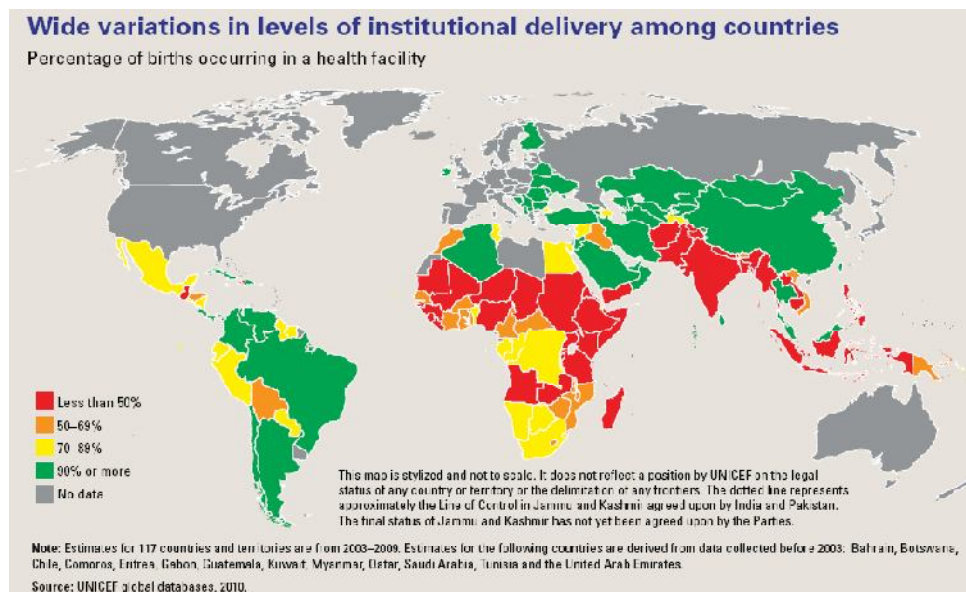


Figure 1.1: Wide variations in levels of institutional delivery among countries

The likelihood of a woman delivering her baby in a health facility also varied across sub-regions, but it has shown an increase in most of them (see table below). For the most recent period 2000–2007, births occurred almost solely in a health facility in Central Asia, Eastern Asia and Eastern Europe. In contrast, a minority took place in a health facility in Eastern, Middle and Western Africa, Southern Asia and South-Eastern Asia. It is worth noting that the proportion of women who delivered in health facilities increased markedly between 1996 and 2000–2007 in Northern Africa from 57 to 78 per cent and in Southern Asia from 28 to 46 per cent.

Women receiving prenatal care, deliveries attended by a skilled attendant and deliveries in health facilities, by region, 1996 and 2000–2008 (latest available)

	Percentage pregnant women receiving prenatal care (at least 1 visit)		Percentage deliveries attended by a skilled attendant		Percentage deliveries in health facilities	
	1996	2000–2008	1996	2000–2008	1996	2000–2007
Africa						
Northern Africa	65	80	66	82	57	78
Southern Africa	86	92	67	78	64	72
Eastern, Middle and Western Africa	66	79	42	53	37	48
Asia						
Eastern Asia	93	94	95	98	89	94
South-Eastern Asia	77	77	64	62	52	48
Southern Asia	49	68	39	52	28	46
Central Asia	90	94	93	96	92	91
Western Asia	82	91	82	89	79	86
Latin America and the Caribbean						
Caribbean	95	96	88	92	86	79
Central America	75	90	70	82	62	76
South America	79	91	80	86	76	85
Oceania	84	..	81	81	87	..
Eastern Europe	97	97	99	100	98	99

Sources: 1996 data from United Nations, *The World's Women 2000: Trends and Statistics* (2000), p. 61, figure 3.8; 2000–2007/8 computed by United Nations Statistics Division based on data from the United Nations Statistics Division MDG database (accessed in August 2009).

Note: Unweighted averages.

Table 1.1: Showing women receiving prenatal care, deliveries attended by a skilled attendant and deliveries in health facilities, by region, 1996 and 2000–2008

1.3 Importance of prenatal care

Prenatal care is known to improve the outcome of pregnancy and birth for both mother and child. It not only monitors the health of the mother and foetus but also allows for the identification of potential complications. In addition, it can provide women with information about needed nutrition during pregnancy and breastfeeding. As the data show, the levels of prenatal care that women received varied among sub-regions. In the period 2000–2008, the overwhelming majority (over 90 per cent) of women in Southern Africa, Central and South America, the Caribbean, Eastern Asia, Central Asia, Western Asia and Eastern Europe received prenatal care at least once while pregnant. In contrast, only 68 per cent of women in Southern Asia received prenatal care during their pregnancy. The percentage of women receiving prenatal care (at least one visit) is 77% in South East Asia which is second lowest compared to the whole world. In Bangladesh only 51% of pregnant women receive prenatal care.

The availability of health facilities with access to emergency obstetrics is critical in cases where the mother experiences complications in labour and can be key to lowering the number of maternal deaths. However, in many countries, especially in the less developed regions, lack of availability of health facilities, coupled with inadequate transportation infrastructure sometimes prevents pregnant women from getting to a medical facility and receiving the emergency care they need. ²

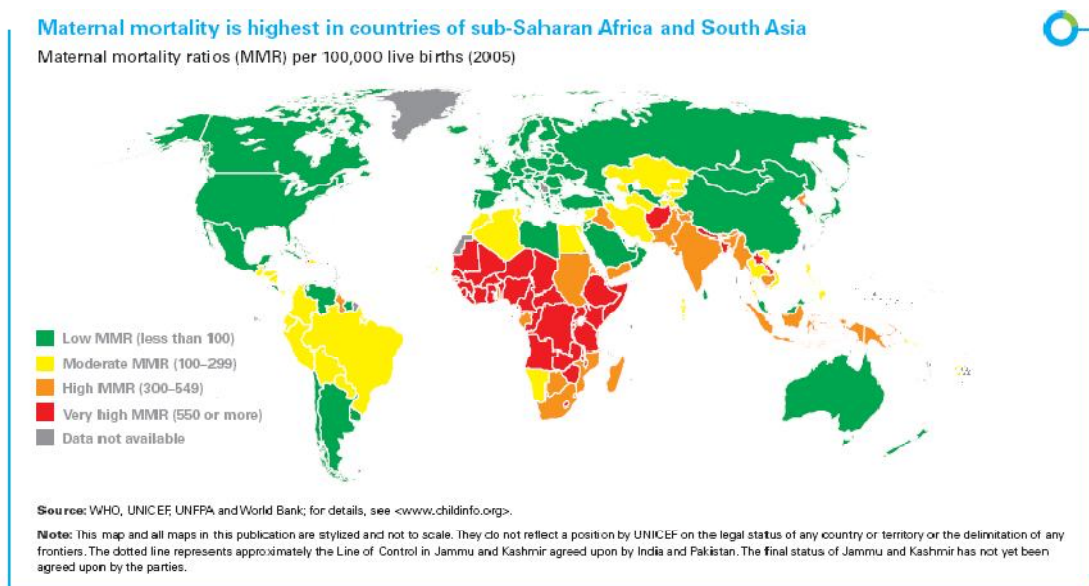


Figure 1.2: Map showing the maternal mortality ratios per 100,000 live births (2005)

1.4 Status on the progress of achieving millennium development goal 5

MDG 5 (Millennium development goal 5) on improving maternal health is one of the goals towards which least progress has been made.³ Gains in reducing maternal mortality remain slow in many developing countries, despite the fact that many deaths could be prevented if women had access to basic maternity and healthcare services. Thus, as of 2005, there were still an estimated 536,000 women who died of complications during pregnancy, childbirth or in the six weeks following delivery.

As per the Millennium Development Goal report of 2012, there have been important improvements in maternal health and reduction in maternal deaths, but progress is still slow.⁴

Maternal mortality has nearly halved since 1990, but levels are far removed from the 2015 target

Maternal mortality ratio, 1990, 2000 and 2010 (Maternal deaths per 100 000 live births, women aged 15-49)

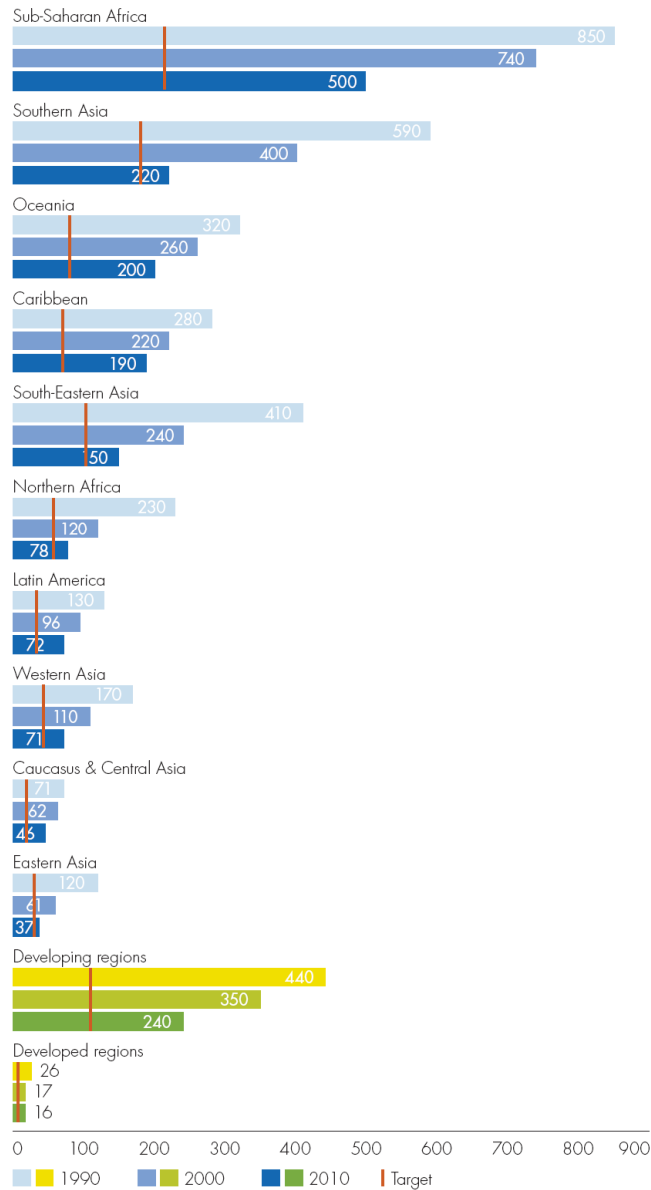


Figure 1.3: Bar diagram showing the maternal mortality ratio in 1990, 2000 and 2010

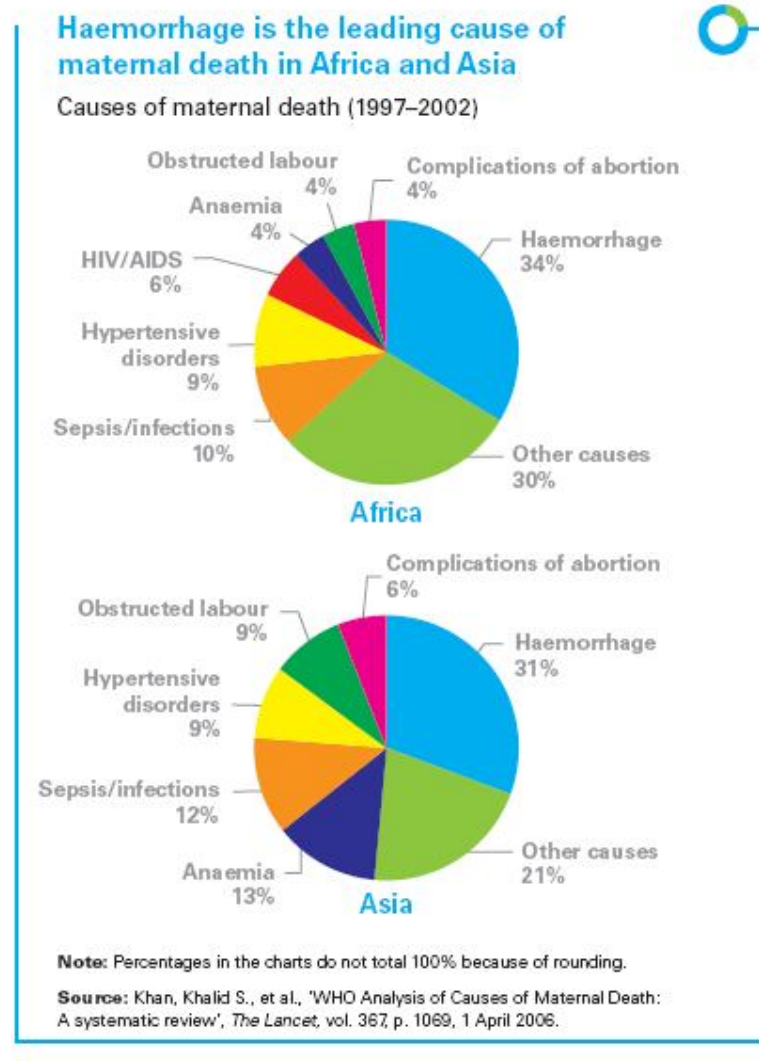
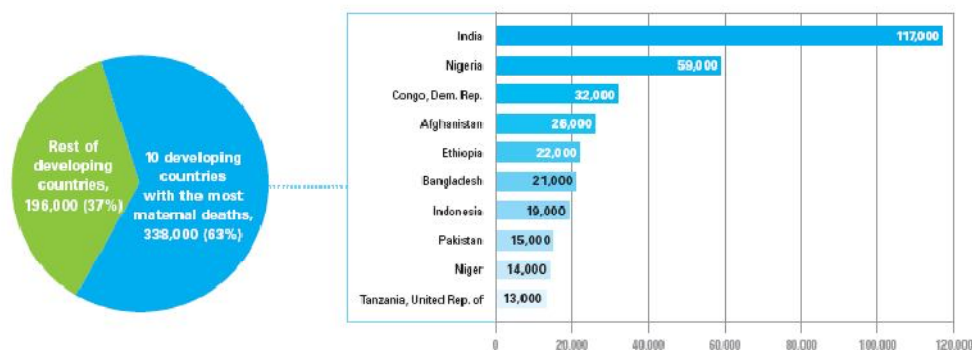


Figure 1.4: Pie chart showing causes of maternal death (1997-2002) in Africa and Asia

Most maternal deaths are caused directly by obstetric complications including post-partum haemorrhage, infections, eclampsia.⁵ Furthermore, gender inequality can also increase the chance of physical complications during pregnancy and childbirth as well as maternal mortality. For instance, women may be delayed or prevented from access to obstetric care in situations where they need the permission of a male relative to do so.²

10 countries account for almost two thirds of all maternal deaths in the developing world

Estimated annual number of maternal deaths (2005)



Source: WHO, UNICEF, UNFPA and World Bank; for details, see <www.childinfo.org>.

Figure 1.5: 10 leading countries in maternal deaths worldwide

Number of maternal deaths, maternal mortality ratio and lifetime risk of maternal death by region, 2005

	Number of maternal deaths	Maternal mortality ratio (MMR)	Lifetime risk of maternal death, 1 in:
World	536 000	400	92
More developed regions	960	9	7 300
CIS countries	1800	51	1 200
Less developed regions	533 000	450	75
Africa	276 000	820	26
Northern Africa	5 700	160	210
Sub-Saharan Africa	270 000	900	22
Asia	241 000	330	120
Eastern Asia	9 200	50	1 200
South-Eastern Asia	35 000	300	130
Southern Asia	188 000	490	61
Western Asia	8 300	160	170
Latin America and the Caribbean	15 000	130	290
Oceania	890	430	62

Source: WHO, *Maternal Mortality in 2005* (2007), p. 16, table 2.

Note: CIS (Commonwealth of Independent States) countries included are: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, the Republic of Moldova, the Russian Federation and Ukraine. Estimates for more developed regions and less developed regions exclude CIS countries.

Table 1.2: Showing the number of maternal deaths, maternal mortality ratio and lifetime risk of maternal death by region, 2005

As per a survey in UK (Nelson A.L., 2011), underestimation of pregnancy risks can lead to contraceptive method discontinuation, can decrease motivate to seek pre-conceptional care and can lead to greater medico legal liability for providers of obstetrical care. Over one quarter of women could not correctly name any health risk associated with pregnancy. When shown a list of potential health risks, only 13.3% correctly identified all the health problems that increased in pregnancy. Only 49% knew that risks of venous thromboembolism (VTE), diabetes and hypertension increase in pregnancy; 30.6% did not know that VTE risk increases.⁷ In Bangladesh perspective most pregnant women are less literate compared to women in UK. However, this article shows the importance on improving the knowledge on pregnancy related complications of pregnant women.⁷

1.4.1 Millennium Development Goal Indicators for Bangladesh

MILLENNIUM DEVELOPMENT GOAL INDICATORS

Millennium Development Goal Indicators by sex

Bangladesh 2011

Goal	Value		Total
	Female	Male	
1. Eradicate extreme poverty and hunger			
1.0 Prevalence of underweight children under five years of age	38.5	34.3	36.4
2. Achieve universal primary education			
2.1 Net enrollment ratio in primary education ¹	76.6	73.0	74.8
2.3 Literacy rate of 15-24 year olds	81.9	67.8	74.9
3. Promote gender equality and empower women			
3.1a Ratio of girls to boys in primary education	na	na	1.1
3.1b Ratio of girls to boys in secondary education	na	na	1.1
3.1c Ratio of girls to boys in tertiary education	na	na	0.6
4. Reduce child mortality			
4.1 Under-five mortality rate (per 1000 live births) ²	50	57	53
4.2 Infant mortality rate (per 1000 live births) ²	37	48	43
4.3 Proportion of 1 year-old children immunized against measles	86.8	88.3	87.5
5. Improve maternal health			
5.1 Proportion of births attended by skilled health personnel ³	na	na	31.7
5.2 Contraceptive prevalence rate ⁴	61.2	na	na
5.3 Adolescent birth rate ⁵	118.3	na	na
5.4a Antenatal care coverage: at least 1 visit by skilled health professional ³	54.6	na	na
5.4b Antenatal care coverage: at least 4 visits by any provider ³	25.5	na	na
5.5 Unmet need for family planning	13.5	na	na
6. Combat HIV/AIDS, malaria and other diseases			
6.1 Percentage of population 15-24 years with comprehensive knowledge of HIV/AIDS ⁶	11.9	14.4	13.1

na = Not applicable

¹ Net attendance ratio measured in BDHS approximates MDG indicator 2.1

² Expressed in terms of deaths per 1,000 live births

³ Rate refers to live births in the three years preceding the survey

⁴ Percentage of currently married women age 15-49 using any method of contraception

⁵ Equivalent to the age-specific fertility rate for women age 15-19, expressed in terms of births per 1,000 women age 15-19

⁶ Comprehensive knowledge means knowing that consistent use of condoms during sexual intercourse and having just one uninfected faithful partner can reduce the chance of getting the AIDS virus, knowing that a healthy-looking person can have the AIDS virus, and rejecting the two most common local misconceptions about AIDS transmission or prevention.

Table 1.3: Showing the Millennium Development Goal Indicators by sex

As per Koblinsky et al., 2008, Bangladesh is on its way to achieving the MDG 5 target of reducing the maternal mortality ratio by three-quarters between 1990 and 2015, but the annual rate of decline needs to triple. Although the use of skilled birth attendants has improved over the past 15 years, it remains less than 20% as of 2007 and is especially low among poor, uneducated rural women. Increasing the numbers of skilled birth attendants, deploying them in teams in facilities, and improving access to them through messages on antenatal care to women, have the potential to increase such use. The use of caesarean sections is increasing although not among poor, uneducated rural women. Strengthening appropriate quality emergency obstetric care in rural areas remains the major challenge. Strengthening other supportive services, including family planning and delayed first birth, menstrual regulation, and education of women, are also important for achieving MDG 5.⁶

1.5 Teenage pregnancy in Asia: Factors and implications

Teenage pregnancy, pregnancy within 19 years of age, is a public health concern both in developed and developing countries^{8,9}. Evidence in developing world indicates that one-third to one-half of women become mothers within 19 years of age, making pregnancy related causes as leading causes of death¹⁰.

South Asian countries (India, Pakistan, Sri Lanka, Nepal, Maldives, Bhutan and Bangladesh) have high proportions of teenage pregnancies, since early marriage is common and there is a social expectation to have a child soon after marriage.^{11,12}

A study showed that nearly 60% of all girls are married by the age of 18 years and one fourth are married by the age of 15 years in South Asia.¹³ Within South Asia, the recorded teenage pregnancy rate is highest in Bangladesh 35% followed by Nepal 21% and India 21%¹⁴. Although teenagers represent a large proportion of population in the developing countries, still relatively little is known about their sexual knowledge and experience and the risk associated with the teenage pregnancy. Teenage pregnancy can have significant effect on the level of education of women, their employment opportunities and marital stability and it increases their economic and social dependency on family and neighbours^{15,16,17}

Low involvement of teenage girls in decision making also contributed to early pregnancy. Most adolescent marriages (80%) were arranged by parents without the girl's consent¹⁸.

1.5.1 Consequences of teenage pregnancy

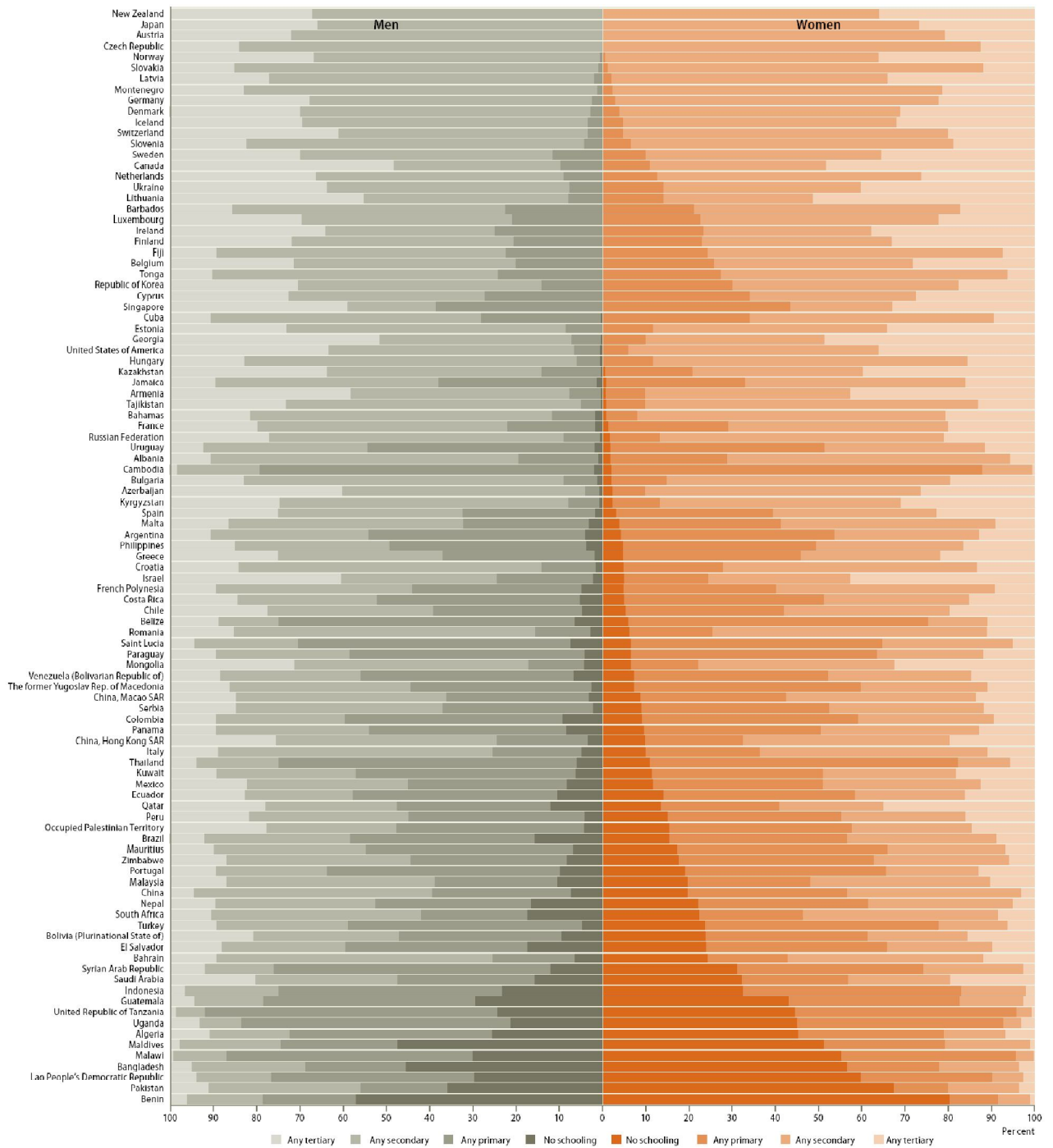
Most of the studies, nine out of ten, have examined the relationship between teenage pregnancy and its consequences. The studies found that pre-term delivery, still birth, fetal distress, birth asphyxia, anaemia, low birth weight, pregnancy-induced hypertension (PIH) and spontaneous abortion were most frequently encountered complications during teenage pregnancies, there are many adverse social consequences identified within this review. Lower access to higher education, high divorce rates, premature death of women, population growth, weak and unhealthy children and single motherhood are all negative consequence of teenage pregnancy^{19,20,21,22,23}

Sharma et al., identified that the risk of pregnancy complications was 2.5 times higher among pregnant teenagers compared to mothers in their twenties.²³

The likelihood of PIH (13%) and pre-eclampsia (5%) was significantly higher ($p < 0.001$ and $p = 0.03$) among pregnant teenagers compared to the women in their twenties (3% and 1% respectively) in a Sri Lankan study²¹. Of those studies investigating the link between teenage pregnancy and still birth, Khandait et al., found an association 3% ($p < 0.05$) compared to the mothers at 20-29 age years group (2%).²⁰

Two studies reported higher pre-term delivery among teenage mothers compared to older women. Shrestha reported 3% in teenage mothers compared to 1% in mature mothers and Goonewardene et al., in 2005 reported 19% in teenagers compared to 11% in older mothers, which was marginally significant ($p = 0.06$). A small hospital-based study found that fetal distress (6%) and birth asphyxia (2%) was commonly reported among pregnant teenagers. There are conflicting findings regarding the link between spontaneous abortion and teenage pregnancy. Shrestha has reported that spontaneous abortion was similar 15 (3%) among teenage mothers and mothers in their twenties. However, Ganatra et al.,³⁴ in 2002 noted that such likeliness is very low (2%) among teenage mothers and very high among matured mothers 166 (14%).^{18,21,24} Education could play a significant role in developing self-confidence, increasing age at first sexual intercourse and delaying marriage.²⁵

Distribution of population by sex and the highest level of education attained, 1995–2007 (latest available)



Source: Compiled by the United Nations Statistics Division from UNESCO Institute for Statistics (2009a) and United Nations, *Demographic Yearbook* data collections (2009).
 Note: Data refer to educational attainment of population aged 25 and over. The population whose education level is unknown has been proportionately distributed over the four categories of educational attainment.

Figure 1.6: Showing the distribution of population by sex and the highest level of education attained, (1995-2007)

Table 2.12.2 Educational attainment of the female household population

Percent distribution of the de facto female household population age six and over by highest level of schooling attended or completed and median years completed, according to background characteristics, Bangladesh 2011

Background characteristic	No education	Primary incomplete	Completed primary ¹	Secondary incomplete	Completed secondary or higher ²	Don't know/missing	Total	Number	Median years completed
Age									
6-9	24.1	75.6	0.0	0.1	0.0	0.0	100.0	3,923	0.0
10-14	4.1	55.6	4.4	35.8	0.1	0.0	100.0	4,597	3.5
15-19	5.8	12.5	9.6	52.8	19.3	0.0	100.0	4,383	6.9
20-24	9.8	11.4	12.5	44.9	18.3	0.0	100.0	4,136	6.5
25-29	18.7	18.8	11.8	33.5	17.2	0.0	100.0	3,664	4.9
30-34	30.9	20.8	10.6	21.8	15.8	0.0	100.0	2,717	3.8
35-39	41.3	10.7	10.0	17.0	12.3	0.0	100.0	2,297	1.9
40-44	49.0	10.7	10.4	13.4	0.5	0.0	100.0	2,200	0.0
45-49	54.4	18.9	10.0	10.9	5.8	0.0	100.0	1,876	0.0
50-54	62.2	16.7	9.3	8.1	3.7	0.0	100.0	1,305	0.0
55-59	67.9	12.2	8.9	7.6	3.3	0.0	100.0	1,208	0.0
60-64	73.9	13.7	6.7	4.4	1.2	0.0	100.0	1,001	0.0
65+	81.3	9.7	5.2	3.1	0.6	0.0	100.0	1,925	0.0
Residence									
Urban	22.0	24.0	9.0	27.3	18.7	0.0	100.0	8,676	4.4
Rural	31.7	29.2	8.3	24.4	6.5	0.0	100.0	26,465	2.3
Division									
Barisal	20.6	32.2	11.3	26.6	9.4	0.0	100.0	2,087	3.7
Chittagong	27.1	28.1	9.0	27.0	8.8	0.0	100.0	6,810	3.2
Dhaka	30.3	27.1	0.1	23.3	11.2	0.0	100.0	11,240	2.0
Khulna	26.7	27.6	6.7	29.3	9.6	0.0	100.0	4,022	3.4
Rajshahi	31.4	27.2	6.6	24.0	8.8	0.0	100.0	4,672	2.8
Rangpur	33.5	28.1	6.9	23.2	8.3	0.0	100.0	3,847	2.0
Sylhet	31.6	28.9	10.9	22.1	6.5	0.0	100.0	2,246	2.3
Wealth quintile									
Lowest	40.0	34.7	3.5	11.5	0.4	0.0	100.0	6,573	0.0
Second	34.7	32.1	3.7	21.9	2.7	0.0	100.0	6,915	1.0
Middle	28.2	27.9	9.6	26.7	5.7	0.0	100.0	7,153	3.2
Fourth	22.9	25.7	9.3	31.2	10.9	0.0	100.0	7,226	4.1
Highest	15.8	19.9	7.0	30.8	26.6	0.0	100.0	7,275	6.1
Total	29.3	27.8	9.2	25.1	9.6	0.0	100.0	35,141	2.9

Note: Total includes three women with missing information on age.

¹ Primary complete is defined as completing grade 5.

² Secondary complete is defined as completing grade 10.

Table 1.4: Showing the Educational attainment of the female household population

Table 2.12.1. Educational attainment of the male household population

Percent distribution of the de facto male household population age six and over by highest level of schooling attended or completed and median years completed, according to background characteristics, Bangladesh 2011

Background characteristic	No education	Primary incomplete	Completed primary ¹	Secondary incomplete	Completed secondary or higher ²	Don't know/missing	Total	Number	Median years completed
Age									
6-9	28.5	71.4	0.0	0.1	0.0	0.0	100.0	4,002	0.0
10-14	5.8	60.9	3.6	20.5	0.2	0.0	100.0	4,624	3.0
15-19	7.4	17.7	11.5	43.3	20.2	0.0	100.0	3,302	6.4
20-24	12.6	16.0	13.5	28.9	27.2	0.0	100.0	2,730	6.1
25-29	17.1	15.8	14.5	28.5	23.0	0.0	100.0	2,651	5.2
30-34	24.3	17.8	11.6	23.2	23.1	0.0	100.0	2,410	4.6
35-39	31.1	16.9	10.2	19.5	22.3	0.0	100.0	2,197	4.2
40-44	33.6	15.1	9.3	18.5	23.5	0.0	100.0	1,983	4.1
45-49	37.1	17.9	8.4	17.5	19.0	0.0	100.0	1,881	3.7
50-54	42.0	16.7	10.2	16.0	15.1	0.0	100.0	1,689	3.9
55-59	38.4	12.1	8.7	16.9	24.6	0.0	100.0	1,194	3.9
60-64	44.9	15.0	13.4	11.1	15.6	0.0	100.0	1,085	1.4
65+	50.4	15.1	10.5	14.1	10.0	0.0	100.0	2,419	0.0
Residence									
Urban	10.9	24.3	9.4	24.2	26.3	0.0	100.0	9,170	4.0
Rural	27.4	31.4	9.9	21.0	11.3	0.0	100.0	24,000	2.7
Division									
Barisal	17.9	34.1	9.1	24.2	14.7	0.0	100.0	1,821	3.7
Chittagong	22.2	33.0	8.7	22.7	13.5	0.0	100.0	5,809	3.3
Dhaka	26.6	27.5	8.5	20.4	17.1	0.0	100.0	10,374	3.3
Khulna	22.0	28.2	8.0	25.1	16.7	0.0	100.0	3,707	4.0
Rajshahi	25.5	27.9	8.3	21.6	15.8	0.0	100.0	4,623	3.3
Rangpur	27.6	29.0	9.3	21.4	12.7	0.0	100.0	3,764	3.7
Sylhet	24.4	34.5	11.3	19.9	9.9	0.0	100.0	2,080	2.7
Wealth quintile									
Lowest	45.0	37.1	7.6	9.3	1.0	0.0	100.0	6,143	0.0
Second	31.0	35.3	10.0	10.6	5.1	0.0	100.0	6,426	1.7
Middle	23.1	31.0	10.2	24.5	11.2	0.0	100.0	6,501	3.5
Fourth	15.9	26.0	9.4	20.0	19.0	0.0	100.0	6,306	4.6
Highest	9.2	18.4	5.7	27.2	37.5	0.0	100.0	6,721	7.6
Total	24.7	28.6	8.8	21.8	15.1	0.0	100.0	32,177	3.4

Note: Total includes one man with missing information on age.

¹ Primary complete is defined as completing grade 5.

² Secondary complete is defined as completing grade 10.

Table 1.5: Showing the Educational attainment of the male household population

Recently, reviews have been conducted on teenage pregnancies in developing countries. However, information related to risk factors affecting teenage pregnancy is absent in developing country context, including Bangladesh, although most of the marriages occurs before 18 years of legal age at marriage in this country.²⁶

As per Millenium development goals 2012, fewer teens are having children in most regions, but progress has slowed²⁷

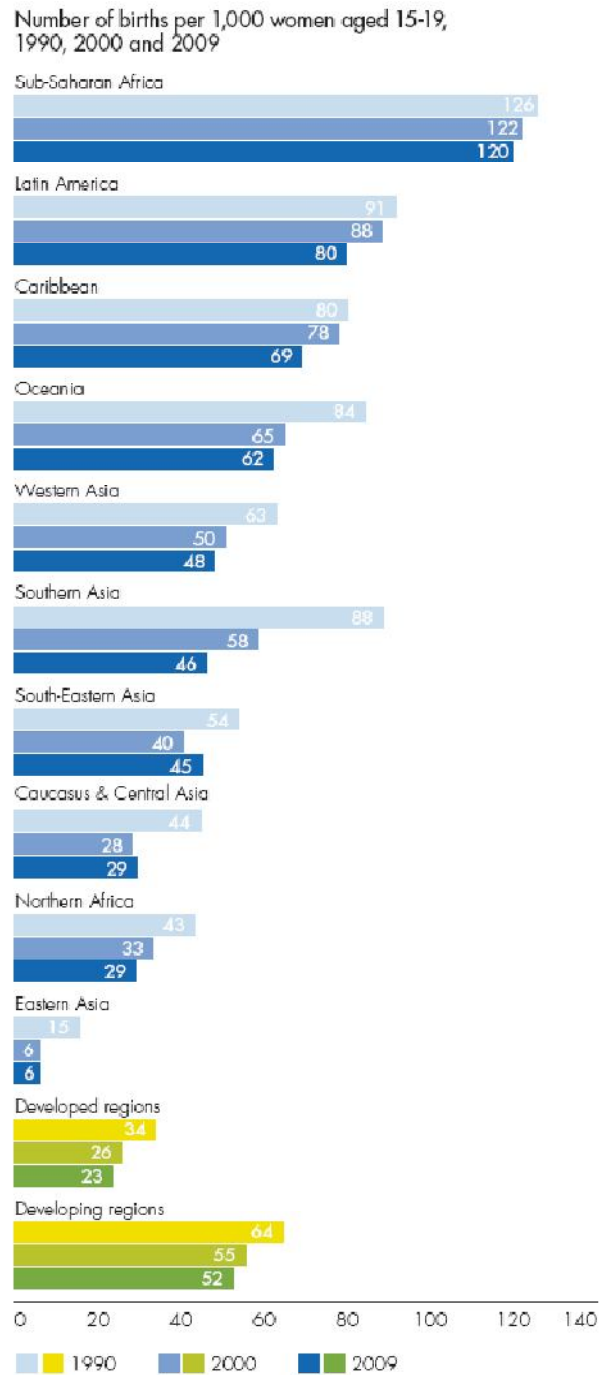


Figure 1.7: Bar diagram showing the number of births per 1000 women aged 15-19 in 1990, 2000 and 2009

Although the excess risk for birth defects among children of mothers with diabetes mellitus is well documented, there are few data concerning the risk for specific malformations. As per the Atlanta Birth Defects Case-Control Study, a population-based study, Infants of mothers with gestational diabetes mellitus who required insulin during the third trimester of pregnancy were 20.6 (95% CI = 2.5, 168.5) times more likely to have major cardiovascular system defects than infants of non-diabetic mothers. The absolute risk for infants of this group of diabetic mothers was 9.7%. No statistically significant differences were found among infants of mothers with gestational diabetes mellitus who did not require insulin during pregnancy. These results suggest a stronger association than previously reported between maternal diabetes mellitus and specific categories of major malformations and implicate gestational diabetes mellitus as a risk factor for major cardiovascular system defects.²⁸

1.6 Impact on economic growth on maternal health

The results indicate that better health has a positive effect on growth of output and that an extra year of life expectancy enhances the productivity of workers and increases output (real GDP) by 4%. This indicates that better health accounts for about 11% of the economic growth overall during the period 1960–1990. They also find that countries with higher initial levels of health (adult survival) realize more modest contribution to growth from better health than countries with lower initial health. Accumulation of physical capital (per capita measured in PPP conversion factors) and education (years of schooling attained per male between ages 15–60 years) accounts for 67% and 14%, respectively.²⁸

1.7 Demographic and socioeconomic profile of Bangladesh

Bangladesh is one of the most densely populated country with a land mass of 147,570 sq. km and a population of more than 149.8 million, 70% of whom live in rural areas. The population growth rate is 1.374% per annum According to UNDP, around 83% of the population live on less than US\$ 2 a day and 36% on less than US\$ 1 a day. Through continuous effort of the government and the non-government sectors, income poverty has declined from an estimated 58% of the population during 1983-84 to just below 50% in 2000 with one percent reduction every year³⁰

The majority of Bangladeshis who are age 6 and older have attended school. Only one in four men and about one in three women have never attended school.

There is no gender difference in primary education. However, men are more likely to have completed secondary school or have attained a higher education compared with women (15 percent versus 10 percent). There has been an increase in the proportions of men and women who have completed secondary or higher education since 2007. For men, the proportion has increased from 12 percent to 15 percent, and for women it has increased from 7 percent to 10 percent in 2011.³⁰

Demographic indicators from selected sources, Bangladesh, 2001 and 2011

Indicators	Census 2001	Census 2011
Population (millions)	130.03	149.8
Intercensal growth rate (percent)	1.54	1.374
Density (population/km ²)	881	1015
Percent urban	23.5	27.0
Life expectancy(year)*	2002	2010
Male	64.5	66.6
Female	65.4	68.8

Source: Bangladesh Bureau of Statistics (2012b)

* Source: BBS, 2011b

Table 1.6: Showing the Demographic indicators from selected sources in Bangladesh, 2001 and 2011

As per a study by BRAC, Bangladesh has achieved substantial gains in the field of health during the last three decades despite modestly declining poverty and inadequate health services. However, Infant Mortality Rate (IMR) and maternal mortality ratio (MMR) continue to be unacceptably high compared to many other developing countries, with persisting socioeconomic differentials.³¹ Intra-partum, post-natal and neonatal cares have the potential to save 20-40% of newborn lives. However to date, post-natal care for mothers and newborns has received relatively little emphasis in public health programmes in Bangladesh, with only a tiny minority of mothers and babies in high-mortality settings receiving post-natal care. Care at birth and in the first days of life not only saves the lives of mothers and newborns, but also reduces serious complications that may have long term effect. The Saving Newborn Lives (SNL) initiative demonstrated remarkable changes in all areas of maternal and newborn care, albeit still low.³¹

NGOs, meanwhile, have established non-formal education programmes, concentrating on children 8-15 years with a special emphasis on girls. Despite some progress in ranking of HDI, the status of women still remains low. The UNDP gender-related development index (GDI) ranks Bangladesh very low, at 105th position (out of 146 countries). It implies social inequalities i.e. inequalities in income and education between men and women. Women experience greater deprivation and vulnerability due to their subordinate position and low status in the society with patriarchal value system. Women are largely involved in the informal sector and subsistence activities. Violence against women in the form of rape, assault, trafficking and acid throwing is prevalent (UNICEF 2000; UNFPA 2003). Gender-based violence in the country aggravates the built-in gender discrimination.³¹

1.7.1 Demographic and health indicators

Although there has been considerable improvement in the health indicators, still more than 60% of the population has very little access to basic healthcare (MOHFW 2003). The number of qualified physicians and nurses in Bangladesh is quite low, compared to other low-income countries³². Around 26% of professional posts in rural areas remain vacant³³. Despite modestly declining poverty and inadequate health services, Bangladesh has achieved substantial gains in the field of health in the three decades since independence in the '70s, as evidenced in mortality and fertility declines in this low income country compared to other South Asian countries.³¹

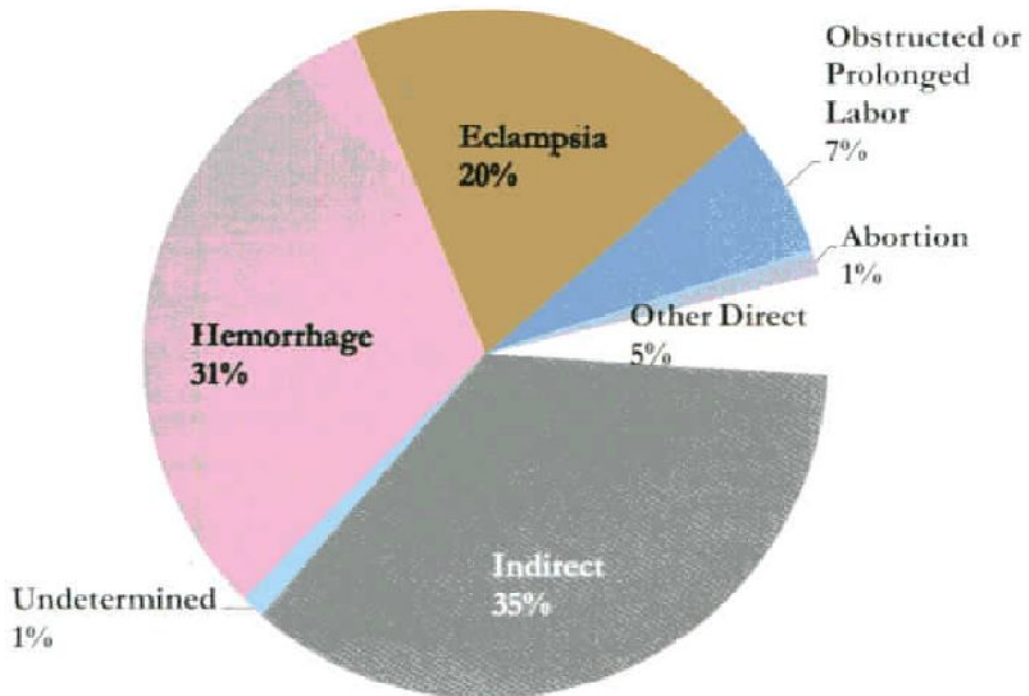
About a quarter of the population consists of adolescents and youths. Some of the problems concerning adolescents include early age at marriage, high fertility and low levels of secondary and tertiary education. The higher death rate among girls compared to boys aged 15- 19 (1.81 as against 1.55 per 1,000 population) is mainly due to maternal causes. Access to appropriate reproductive health information and services for this group is inadequate.

Although improving, in terms of national averages, maternal health status for many Bangladeshi women remains poor. Around 50% of Bangladeshi women were found to be chronically malnourished with a body mass index less than 18.5. Over 43% of pregnant women were iodine deficient and more than 2.7% developed night blindness during pregnancy.³⁰

1.7.2 Mortality Ratio Dropped 40% in Bangladesh

As per a major survey by the Government of Bangladesh, which received significant technical support from ICDDR, suggest that the maternal mortality ratio in Bangladesh has dropped by 40% in the last nine years. The survey findings suggest that maternal mortality declined from 322 in 2001 to 194 in 2010, a 40% decline in 9 years. The decline was driven partly by increases between 2001 and 2010 in the use of health facilities for deliveries (from 9 to 23 %) and for maternal complications (from 16 to 29 %). This was a consequence of improved access to care, substantially better education among women, improved awareness of services and the need for care and better economic conditions. In addition, declining fertility (from 3.2 to 2.5 children per women between 2001 and 2010) reduced high-risk higher parity births. Overall death rates have declined significantly among women in most reproductive age groups, while there have been large declines in deaths due to material causes, infections, circulatory conditions and even suicides. While there are substantial declines in all causes of direct obstetric deaths, haemorrhage and eclampsia are the dominant direct obstetric causes of deaths, together responsible for more than half of all maternal deaths. The predominance of haemorrhage and eclampsia deaths and deaths after delivery indicate a need to strengthen access to treatment for these two conditions, improve referral systems and improve referral level care. There have been reductions in deaths during pregnancy, during and after delivery, however, the main declines occurred for pregnancy and delivery.³⁴

Causes of maternal deaths: Bangladesh, 2010



Source: BMMS, 2010

Figure 1.8: Pie chart showing causes of maternal deaths in Bangladesh, 2010

1.7.2.1 Causes of maternal death in Bangladesh

Maternal death is caused by direct, indirect and other related factors. The major direct causes of maternal deaths in Bangladesh are postpartum haemorrhage, eclampsia, complications of unsafe abortion, obstructed labour, postpartum sepsis, and violence and injuries. About one-fourth of the total maternal death in rural Bangladesh is due to unsafe abortion and related complications.³⁰

1.7.2.2 Percentages of maternal death in Bangladesh

As per BMMS 2010, the 2 major causes of maternal death were haemorrhage (31%) and eclampsia (20%). Both of these complications require management at a facility by a trained provider.³⁴

1.8 Behaviour change in seeking healthcare amongst Pregnant women in Bangladesh

After persisting at very low levels, the proportion of women delivering in a facility has begun to rise in the past decade, from 9% in 2001 to 23% in 2010. Much of that increase has come through the private sector (2.7% to 11.3%). NGOs (Non-governmental organizations) remain a minor contributor for deliveries (0.6% to 2.0%) though more important for ANCs (Antinatal care)

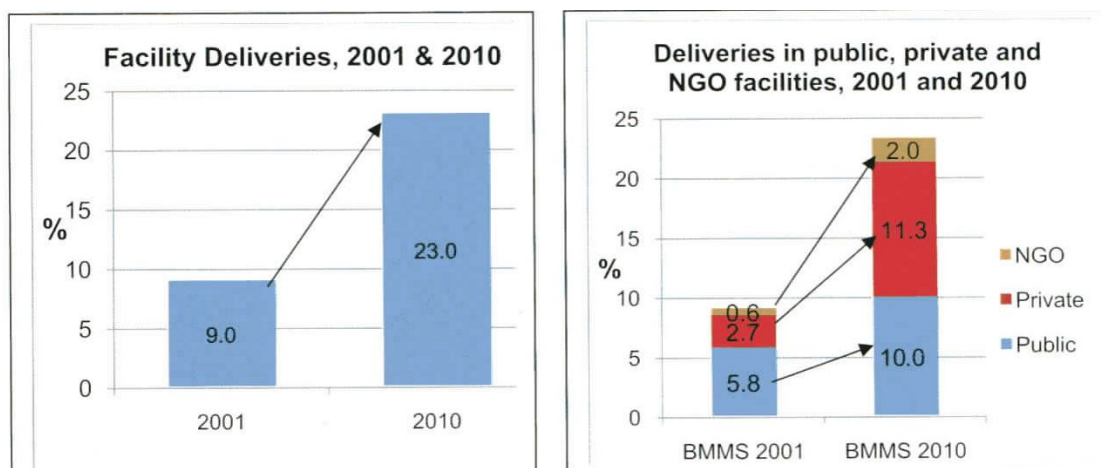


Figure 1.9: Percentage of facility deliveries in 2001 and 2010 (left) Contributions of different sectors in facility delivery (right)

Even after the increases in facility delivery has happened, it still leaves 2.4 million births at home annually. Some haemorrhage cases can be avoided by proper management of the placenta. However, while managing preeclampsia, C-section is needed to prevent fatal complications.³⁴

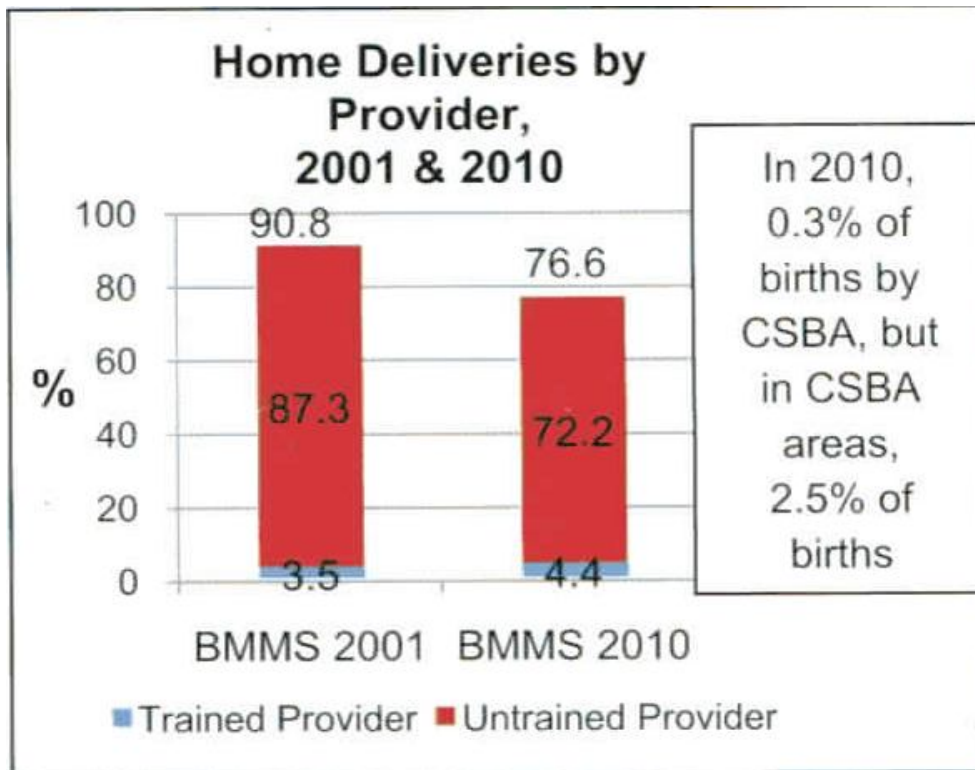


Figure 1.10: Percentages of home deliveries by trained and untrained provider

1.9 Post-natal care

Care after birth is seriously inadequate. Only 18% of mothers receive post-natal care (PNC) from a trained provider within six weeks after delivery. Among mothers who do not deliver at a health facility, only 8% receive PNC. The likelihood of receiving PNC for mothers has improved slightly, from 14% in 1999-2000 to 18% in 2004 (BDHS 2004). Only 15% of mothers with a birth in the past five years reported receiving a vitamin A dose during post-partum period.^{30,34}

The perinatal mortality rate is 65 per 1,000 pregnancies which is slightly higher than it was in 1999-2000 BDHS (57 per 1,000 pregnancies). Perinatal mortality is higher among teenage mothers and during first pregnancies. There are virtually no urban-rural differences in perinatal mortality and very little difference in infant mortality. Child mortality, however, is positively associated with no/low maternal education, rural residence and short birth interval.^{30, 34}

1.10 Level of care and type of health facilities in Bangladesh

Most of the country's health infrastructure and health service system are under the government's management and control. The health service delivery system in the public sector is divided into primary, secondary and tertiary levels. Table below provides a summary of health facilities available at different levels. At the local level, 3,275 UHFWCs (Union Health and family welfare centre) exist to serve 4,470 unions. There are UHC (Upazila Health Complex) with 31 beds in 391 rural *upazilas*, 64 district hospitals, and 16 government medical college hospitals, 6 post-graduate hospitals, and 25 specialized hospitals at tertiary level in the country. A further 89 MCWCs have been upgraded to provide EOC services, and other services (ANC, normal delivery, PNC and clinical contraception) at district, upazila and union level, one for every one to two million population. Nine more MCWCs are under construction at the district level. In addition, the government recently undertook an initiative to establish community clinics, one for every 6,000 peoples at the village level. Fifty-four MCWCs at the district level and six at the *upazila* level are equipped to provide 24-hour comprehensive EOC; the rest provide 24-hour basic EOC. In addition to the basic reproductive health and family planning (RH-FP) services, UHFWCs at present are offering surgical contraceptives, norplant, safe delivery, obstetric first aid, newborn care, and adolescent healthcare.^{30,35}

Level of care	Administrative unit	Health facility
Primary level	Village	Satellite clinic (8 per month per union) Community clinic (11,500) Skilled birth attendants NGO workers Community groups
	Union	Union Health & Family Welfare Centre (3275) MCWC (23) Hired clinic (300)
	Upazila	Upazila Health Complex (397): 31 beds each MCWC (12): 13 Beds each
Secondary level	District	District hospital (59): 50-150 beds each MCWC (54): 13 beds each MCWC (9): under construction MCH unit (3)
Tertiary level	Division or national or capital	Teaching hospital/institute (16): 250-1050 beds each Maternal & Child Health Training Institute (3) Mohammadpur Fertility Services and Training Centre (1)

Source: Programme implementation plan (PIP), HNPS, 2003; Pp 133-157.

Table 1.7: Level of care and type of health facilities in Bangladesh

The district hospitals in the district headquarters provide maternal services through an outpatient consultation centre and labour ward. Between 25-40% of hospital beds are reserved for maternity patients in every hospital. Many of the district hospitals are not providing 24-hour essential EOC services due to lack of trained staff and related support facilities. Similarly more than 80% of the UHCs (Upazila Health Complexes) are not ready to provide 24-hour EOC services.^{30,35}

The Maternal and Child Health Training Institutes (MCHTI), Azimpur, Dhaka is a 173 bedded hospital cum training centre. MCHTI provides safe motherhood services including comprehensive EOC, gynaecological services including hysterectomy, newborn care, child health care and FP services. They also provide training on EOC, SBA, midwifery and newborn care. There are two more MCHTIs in Rajshahi and Barisal. EOC services would also be started and expanded in phases in Mohammadpur Fertility Services and Training Centre, Dhaka. Besides the public sector, the private for-profit providers and private notfor-profit providers or NGOs also play great role in the Bangladesh health sector.

NGOs are mostly involved in the provision of primary healthcare in both rural and urban areas. A significant number of tertiary hospitals are run on a not-for profit basis. NGOs run a total of 613 health facilities, which have 11,271 beds.^{30, 35, 36}

Based on the above facts, figures and tables it can be seen that the pregnancy related complications are still a major problems in Bangladesh even though Bangladesh is well on its way towards achieving the millennium Development goal 5 (Improving maternal Health). Due to lack of proper facilities, awareness and education on these complications are extremely important to improving maternal health further. As a result this survey has been conducted to analyze the awareness as well as the behaviour of pregnant women within the study population in ensuring safe pregnancy. Study has also been conducted on the effect of the level of education on marital age and abortion.

Chapter- Two Methodology



Methodology

2.1 Study design

This is a cross sectional (descriptive study), where data was collected through interviews with a structured questionnaire as well as recorded data of each patient. The study protocol was reviewed and approved by the supervisor.

2.2 Study area

The study was carried out in CMUD (Centre for medical ultrasound and doppler) a education and research centre for ultrasound imaging techniques as well as analysis of blood samples, which is located in Dhaka Metropolitan City. CIMUD is affiliated with 3 NGOs BRAC, Shurjer Hashi, Shobuj and Maa o Shishu that send pregnant women for check up after their visit at the NGOs. The centre carries out ultrasound imaging as well as blood typing tests for free and also offers other diagnostic tests at 50% rate to the pregnant women.

2.3 Study Population

A total of 654 pregnant women were included in the study and interviewed as per the questionnaire. The patients were within 15-40 years of age and were mostly from low income families.

2.4 Data collection

During the study period at CMUD, patients coming for the ultrasound imaging were interviewed as per the questionnaire. Different clinical as well as generalized information including their address, monthly income, weight, height, blood pressure, awareness on pregnancy complications, number of children, abortions, sleeping time, history of asthma, vaccination, morning sickness, history of taking medicines during pregnancy, water retention, kidney diseases, bi-parietal diameter, femur length, expected date of delivery, positioning of the child in placenta, visual acuity of eye, eating habits and number of times visited facility during pregnancy were recorded for further analysis.

2.5 Statistical analysis

Data were organized, tabulated and aggregated using Microsoft excel. Means and proportions of the epidemiological, social, behavioural and clinical parameters were compared amongst the study population.

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Data were organized, tabulated and aggregated using Microsoft excel. Means and proportions of the epidemiological, social, behavioural and clinical parameters were compared amongst the study population.

Chapter- Three Results



Results

During the study period 654 patients were interviewed. The age of the patients ranged from 15 to 40 years. Majority of the patients were within the 20-25 year age group (50%), while 26% of the respondents were teenagers.

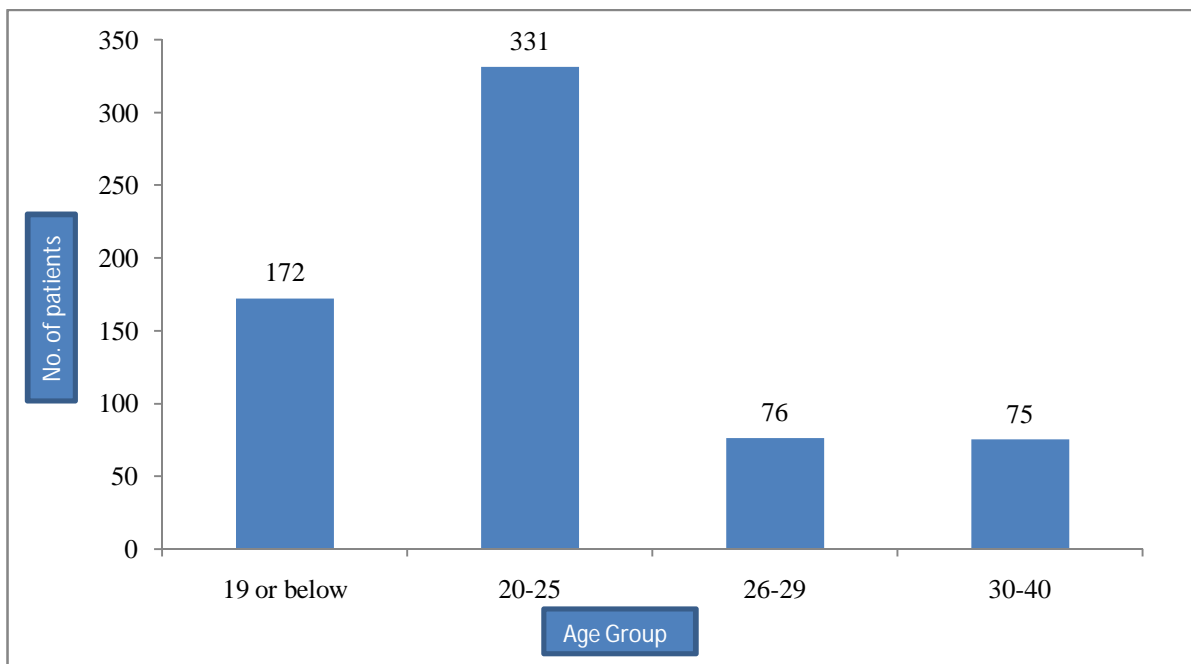


Figure 3.1: Bar diagram illustrating the different age group within the sample population

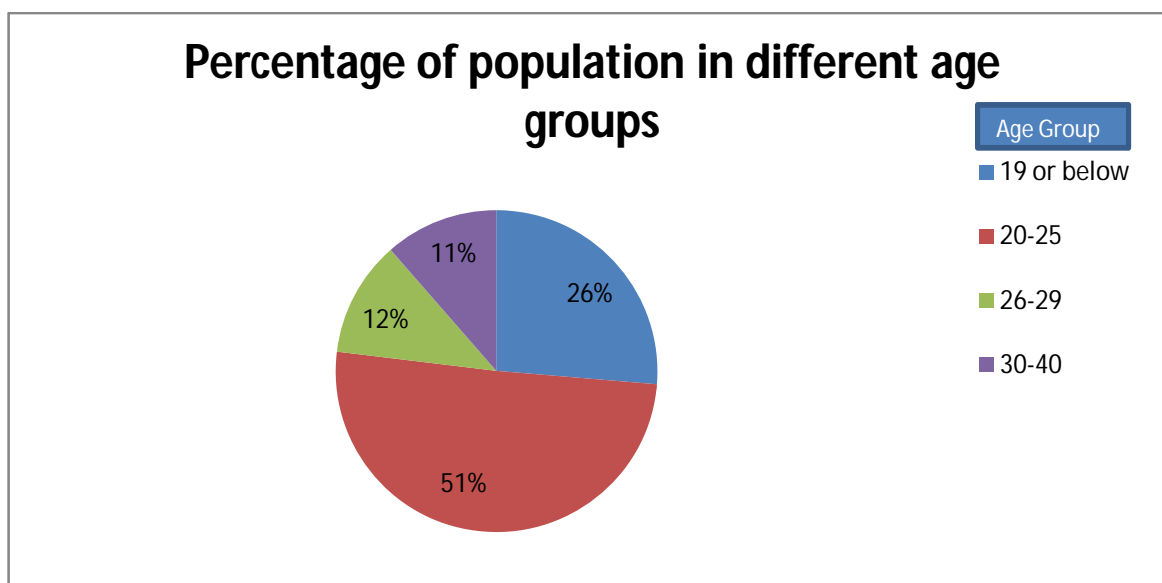


Figure 3.2: Pie chart illustrating the different age group within the sample population

Age of Marriage

Majority of the patients were married when they were teenagers (75%) or even before reaching teen age. Even though there are laws for preventing childhood marriages in Bangladesh, majority (93%) of the respondents got married before 19 years age.

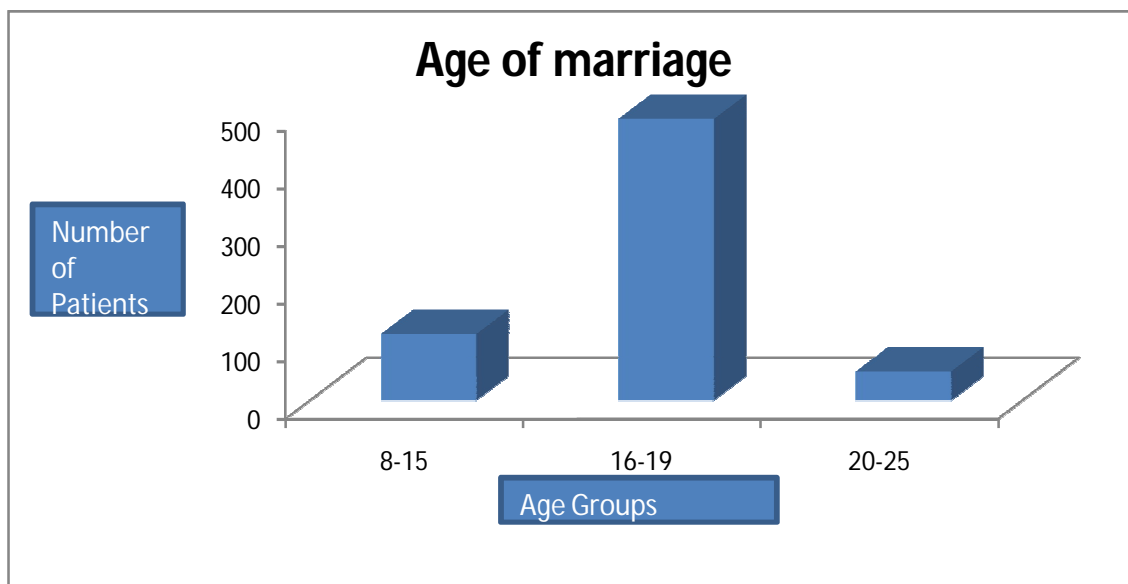


Figure 3.3: Bar diagram illustrating the different age groups of marriage within the sample population

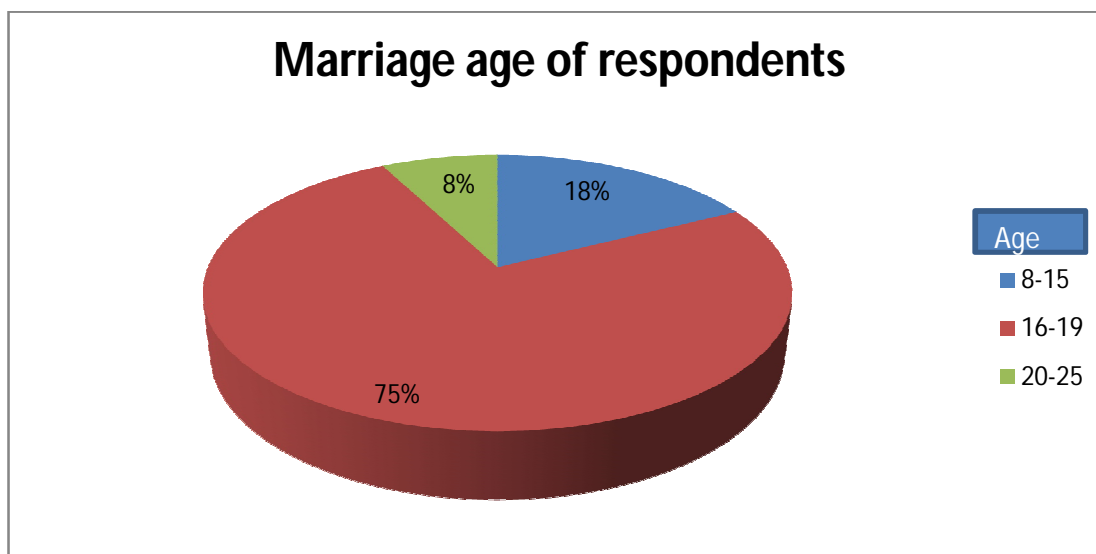


Figure 3.4: Pie chart illustrating the different age groups of marriage within the sample population

Level of education of the respondents

Level of education of the respondents were classified as no education, any primary (any education upto class 5), Any Secondary (class 6 to S.S.C. exams), Higher secondary (Upto H.S.C exams), Tertiary (any education higher than H.S.C.). Majority of the respondents (63%) were within any primary group, 26% has done any secondary education, while 7% of the respondents did no schooling.

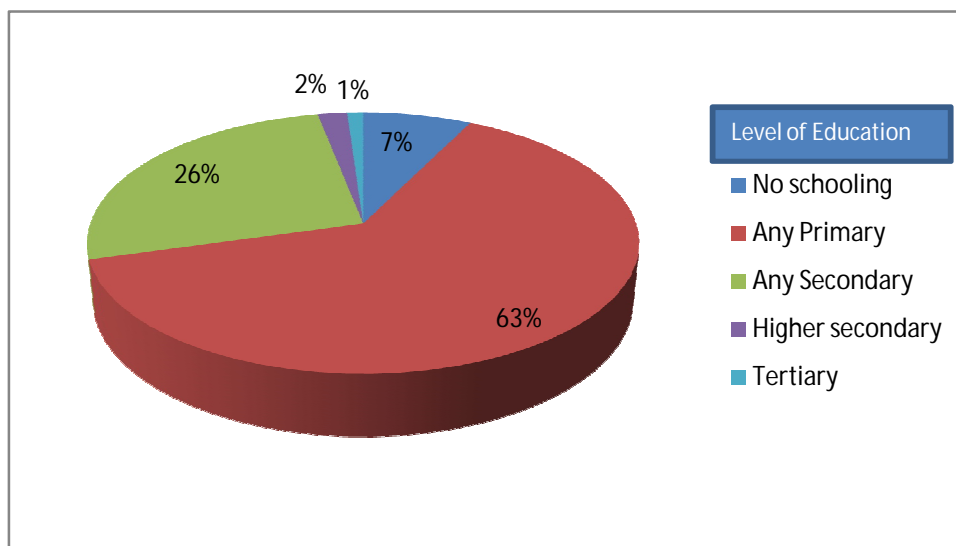


Figure 3.5: Pie chart illustrating the different level of education within the sample population

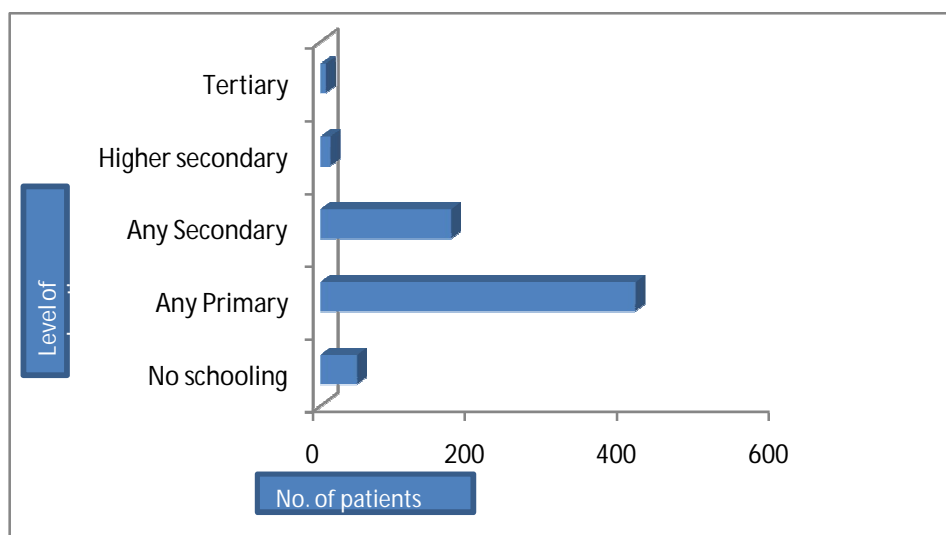


Figure 3.6: Bar diagram illustrating the different level of education within the sample population

Occupation of the respondents

Majority of the respondents were housewives (88%), other occupations were maid, garment worker, tailor, etc.

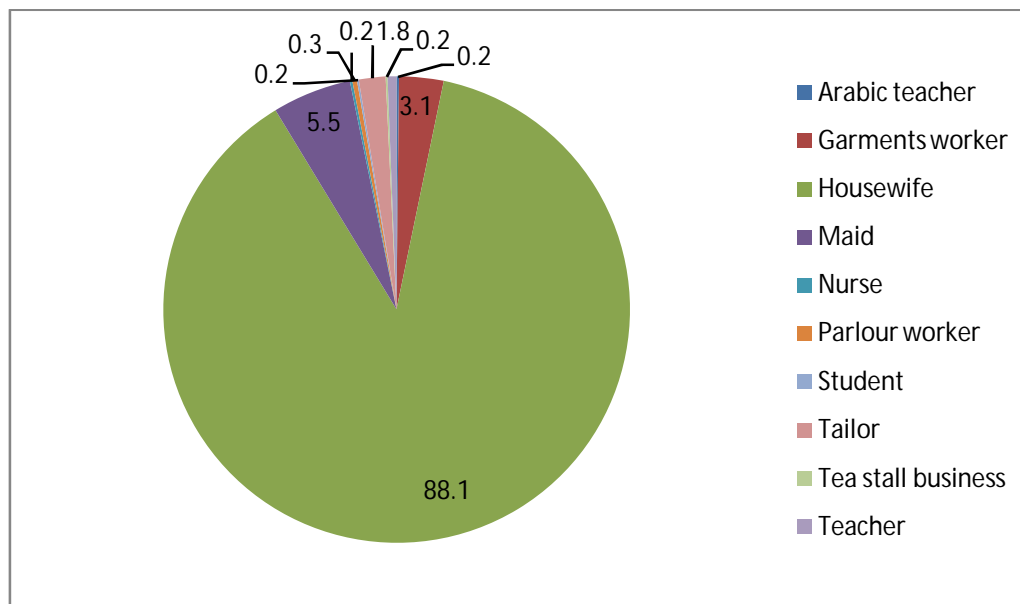


Figure 3.7: Pie chart illustrating the different occupation within the sample population

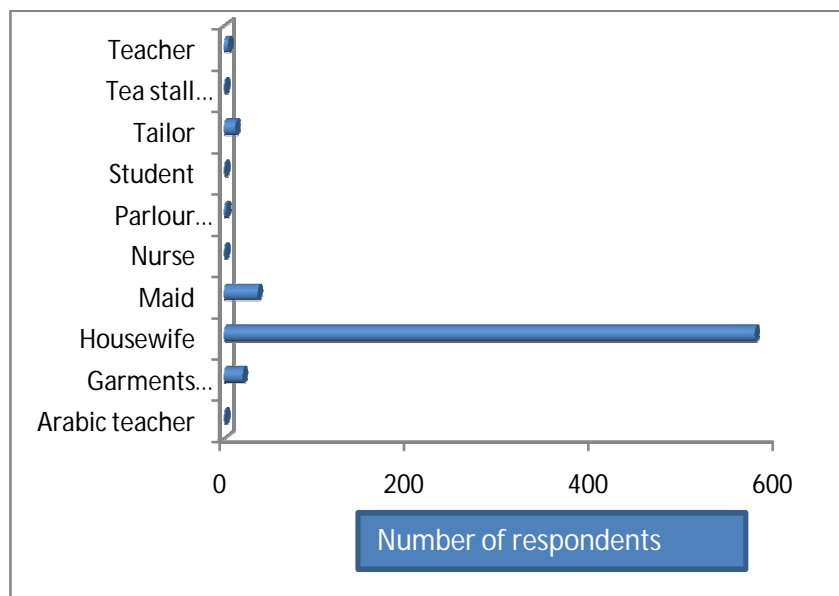


Figure 3.8: Bar diagram illustrating the different occupation within the sample population

Total income of the family

The respondents were asked for the total income of their families. Majority of the respondents were within the low income or lower middle class group.

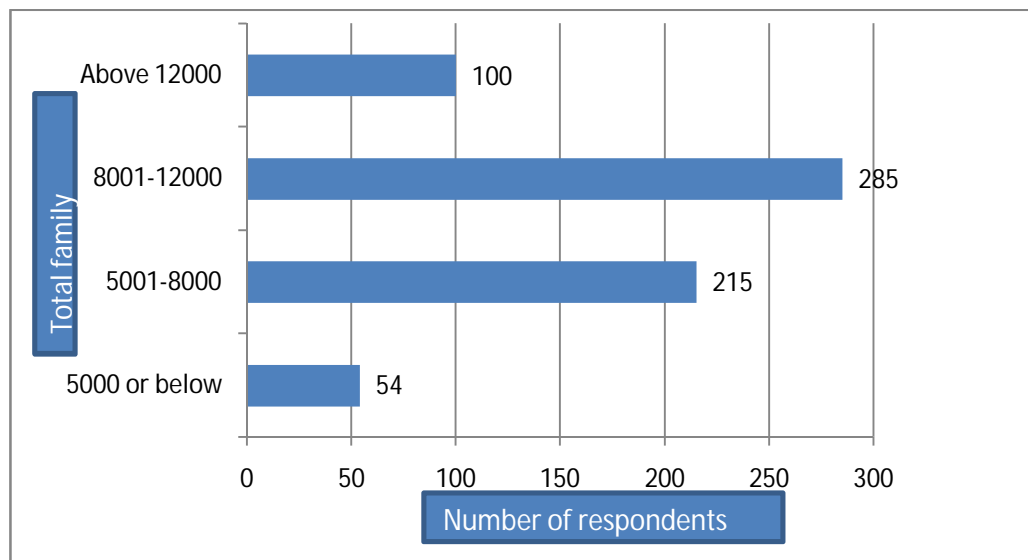


Figure 3.9: Bar diagram illustrating the monthly income of different family within the sample population

The national poverty line for Bangladesh is USD 2 per day (need reference). Accordingly, 86% of the respondents are below the poverty line.

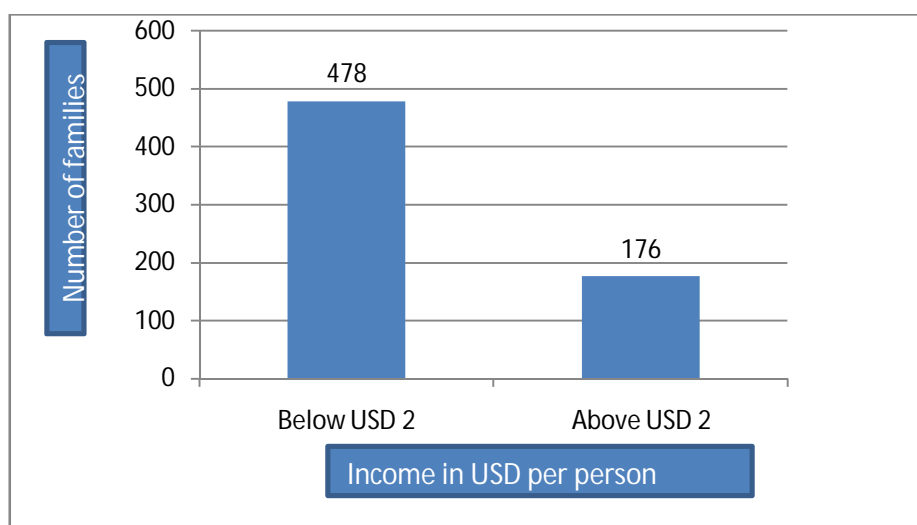


Figure 3.10: Bar diagram illustrating the number of families below and above poverty level within the sample population

Distribution of the sample population according to present address and permanent address:

The present address of majority of the sample population were within Dhaka or from rural areas close to Dhaka. However, the permanent address of the sample population is very well distributed and can be considered as fairly representative of the low income population in Bangladesh. This is because in Bangladesh majority of the population are gradually moving in from the villages and rural areas to urban areas due to better facilities and job opportunities.

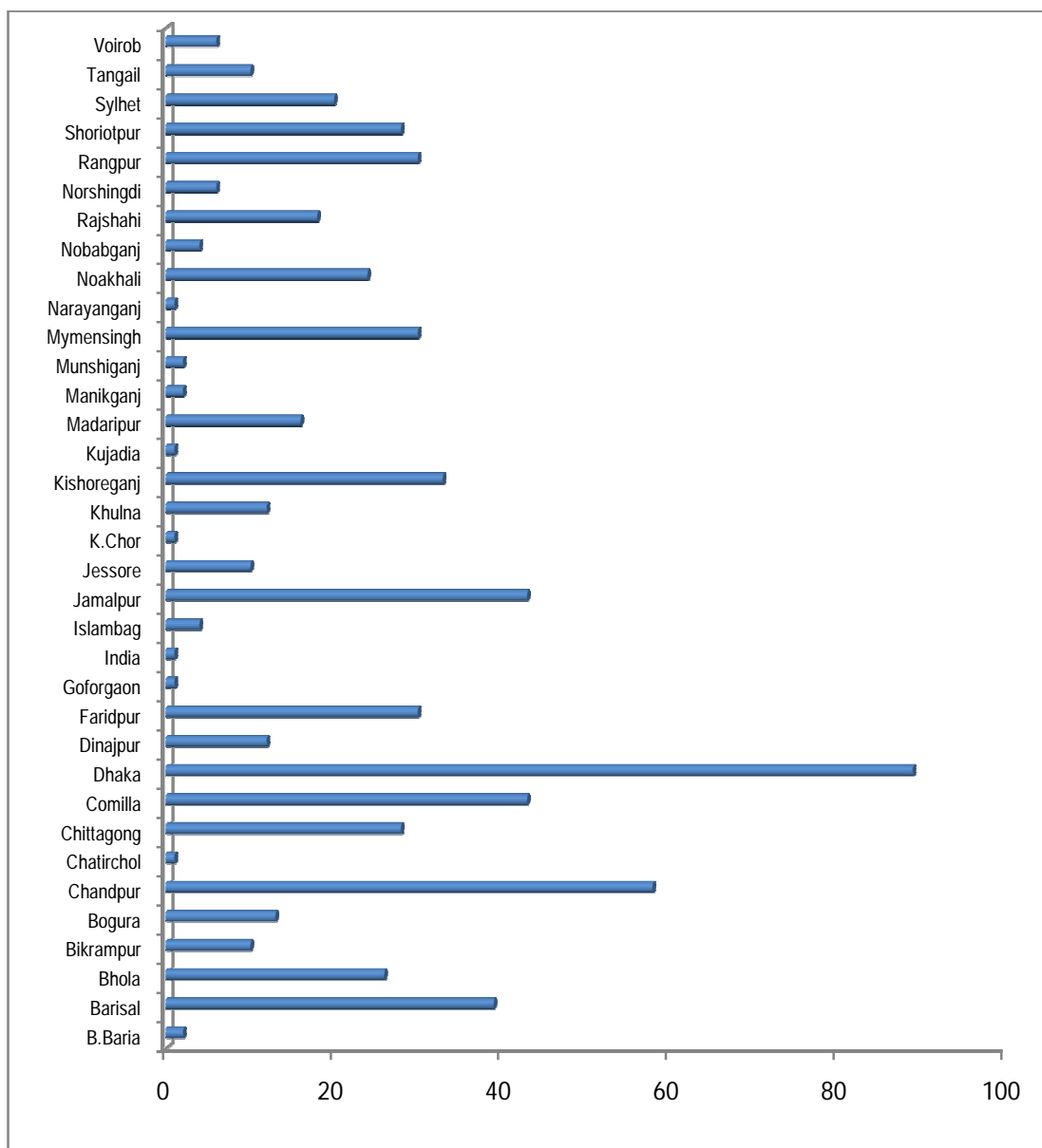


Figure 3.11: Bar diagram illustrating the permanent address within the sample population

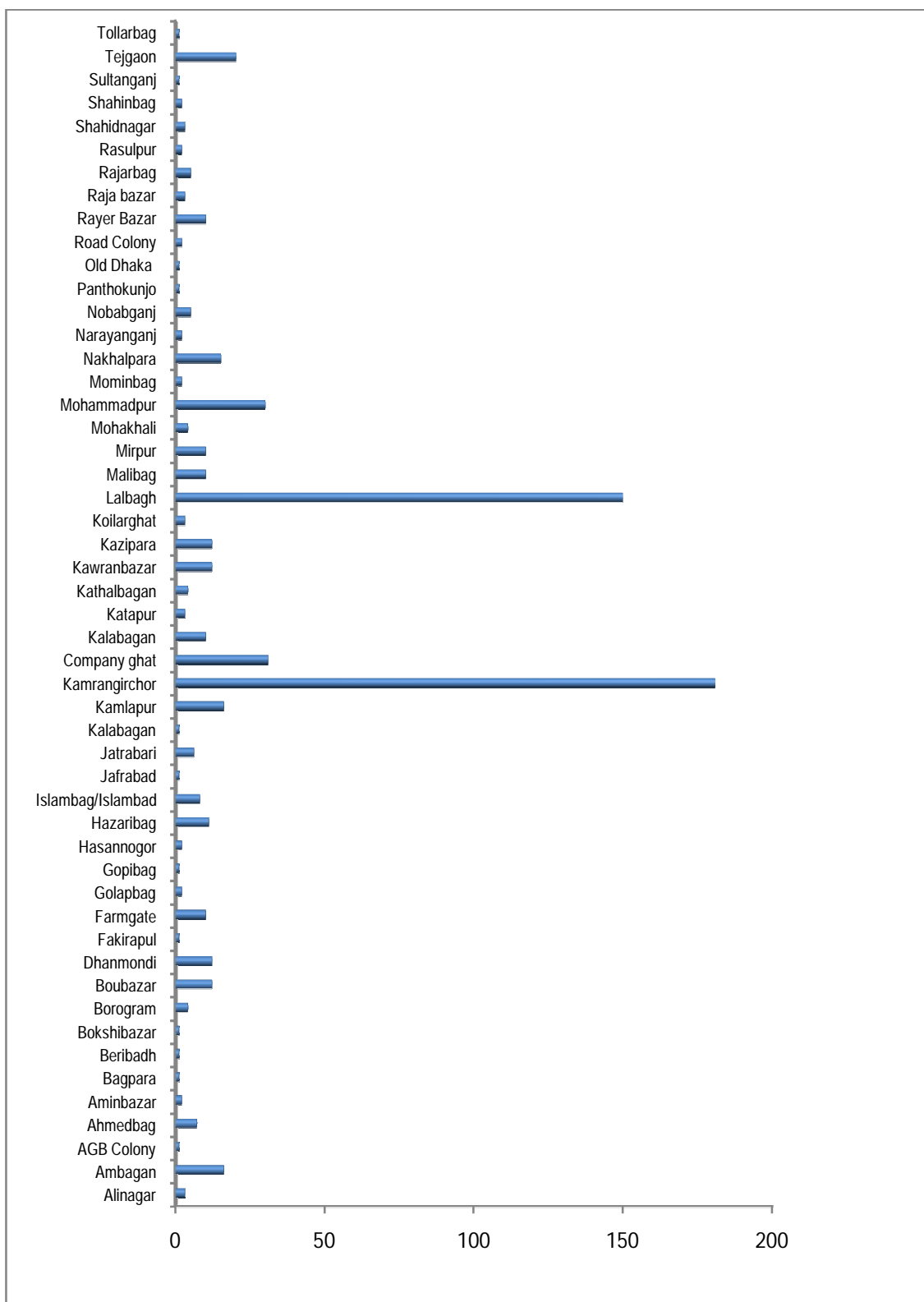


Figure 3.12: Bar diagram illustrating the present address within the sample population

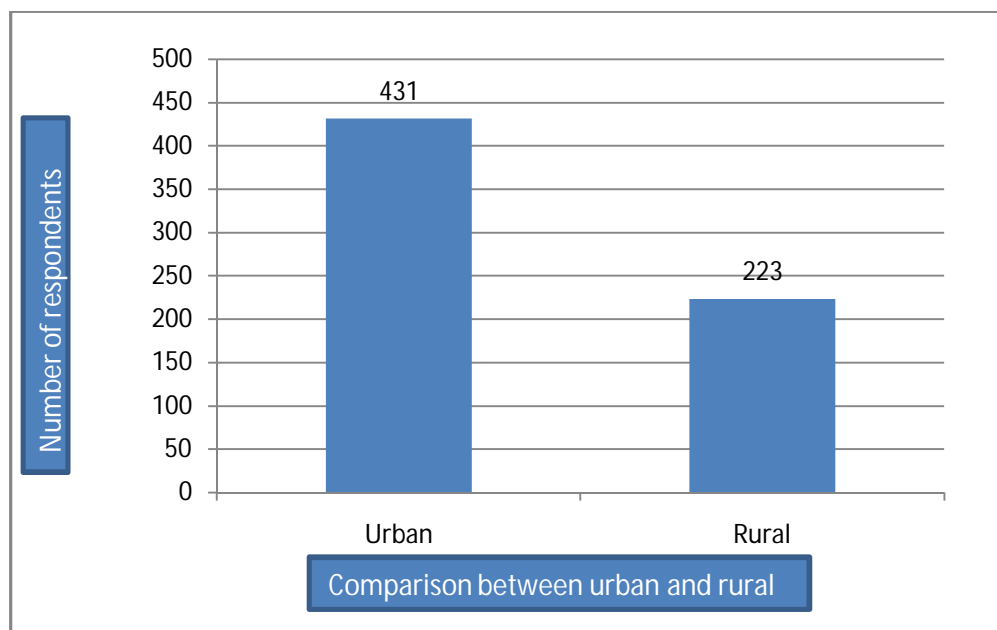


Figure 3.13: Bar diagram illustrating the comparison between urban and rural area within the sample population

Comparison of age when first conceived

The respondents were divided into 3 groups according to their age:

- 15-19
- 20-25
- Greater than 26

Majority of the respondents were found to conceive within 20-25 years age (56%). Alarminglly 44% of the respondents first conceived during their teen ages (15-19 age group).

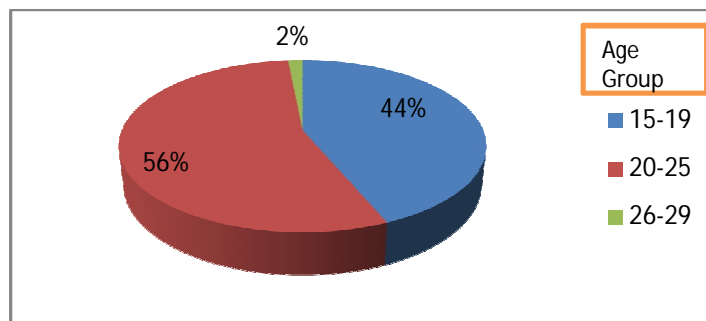


Figure 3.14: Pie chart illustrating the comparison of age when first conceived within the sample population

Number of abortions amongst the respondents

In the study, 63% of the respondents never had any abortions. 32% of the respondents had at least one abortion upto now.

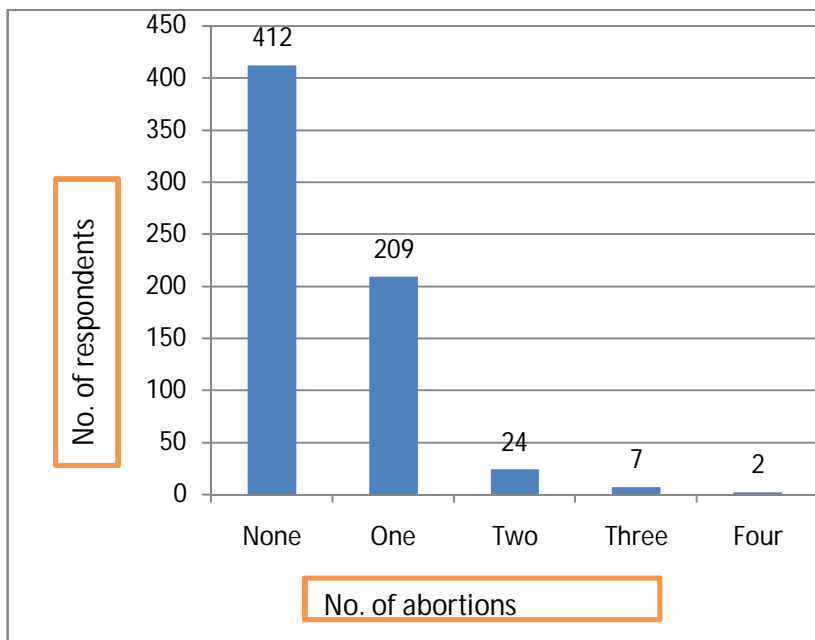


Figure 3.15: Bar diagram illustrating the number of abortions within the sample population

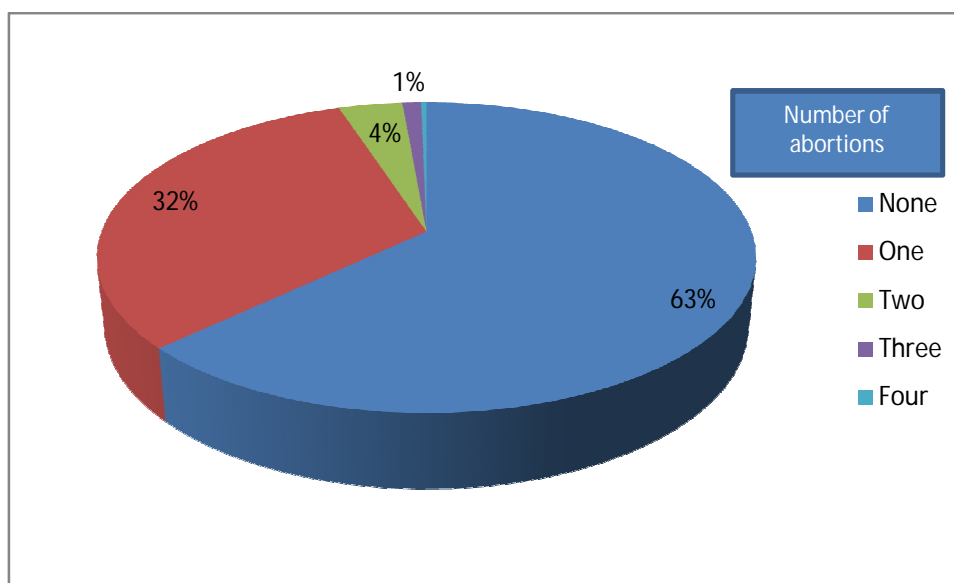


Figure 3.16: Pie chart illustrating the number of abortions within the sample population

Comparison of number of abortions with age

Out of 266 abortions reported by the respondents 158 abortions took place within the teenage age group (59%), placing this age group at a higher risk compared to the older pregnant women.

While comparing the age group with 1st time abortion, it was found that 64% of abortions took place within the age range 15-19 making this age group a high risk group.

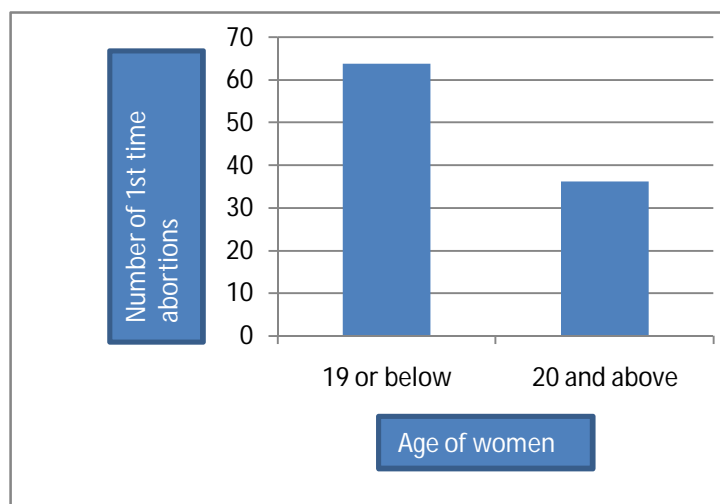


Figure 3.17: Bar diagram illustrating the comparison of the number of first time abortions with age within the sample population

Comparison of BMI of the pregnant women in the study population

BMI is the relationship between height and weight that can be used to help everyone stay within healthy weight without being under or overweight. In case of pregnancy, the ranges of BMI are as follows:

- BMI Less than 19.8: Underweight
- BMI 19.9-25.5: Healthy weight
- BMI 25.6-29.9: Mildly overweight
- BMI 30-35: Moderately overweight
- BMI Over 35: Seriously overweight

Amongst the study population, 82% of the pregnant women were found to be within healthy weight and 12% were found to be underweight.

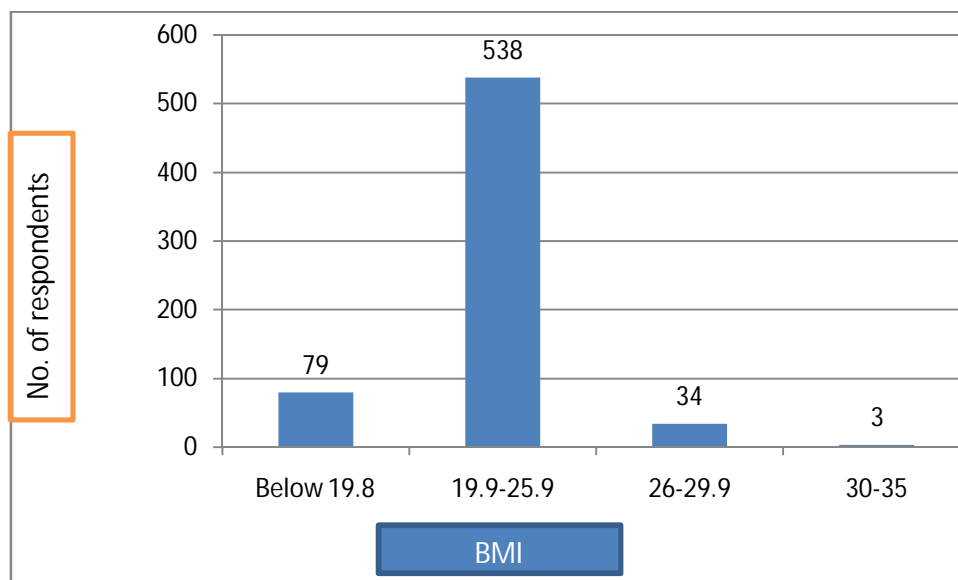


Figure 3.18: Bar diagram illustrating the comparison of BMI within the sample population

While comparing the age groups having lower BMI, 71% of pregnant women having low BMI were found to be of age 19 or below.

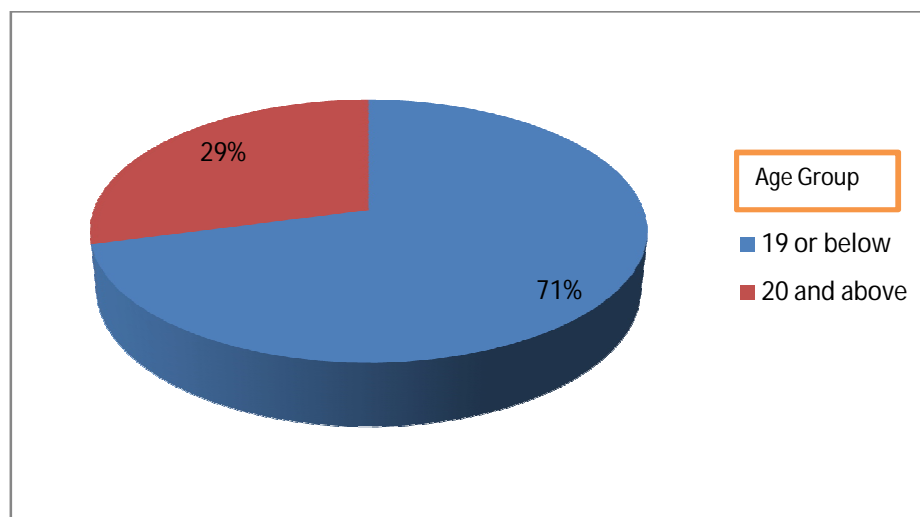


Figure 3.19: Pie chart illustrating the comparison of age groups of lower BMI within the sample population

Comparison between level of education, age of marriage, age when 1st conceived and age of 1st abortion

The age of marriage, age when 1st conceived and age of 1st abortion of the pregnant women within the study population were compared according to their level education.

In case of the respondents having no schooling, majority (65%) of got married within age of 15-19. Similar trends were seen in case of 1st time conceived and 1st abortions for this study

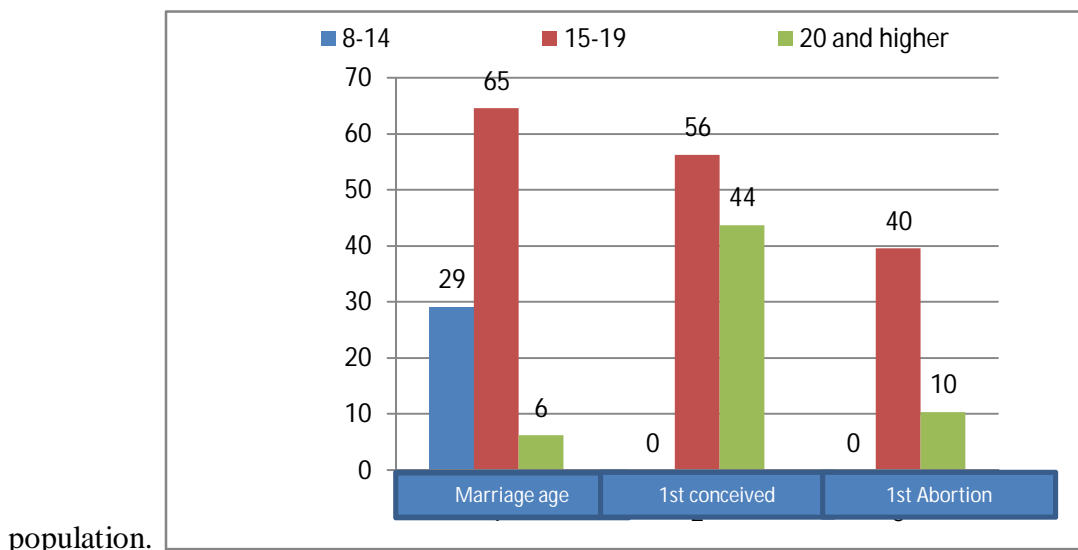


Figure 3.20: Bar diagram illustrating the percentage comparison among the age of marriage, first conceived and first abortion within the respondents who had no education

In case of the respondents completing any primary education, there was a decline in marriage age in age group 8-14 from 29% to 6%. However, the teenage marriage is still high. 92% of the respondents got married within 15-19 years age. The age of conceiving for the first time reduced moderately to 49% from 56%. Remarkably the 1st time abortion age also reduced in teenage from 40% to 26%. However, the percentage doubled to 23% from 10% in women 20 years or older.

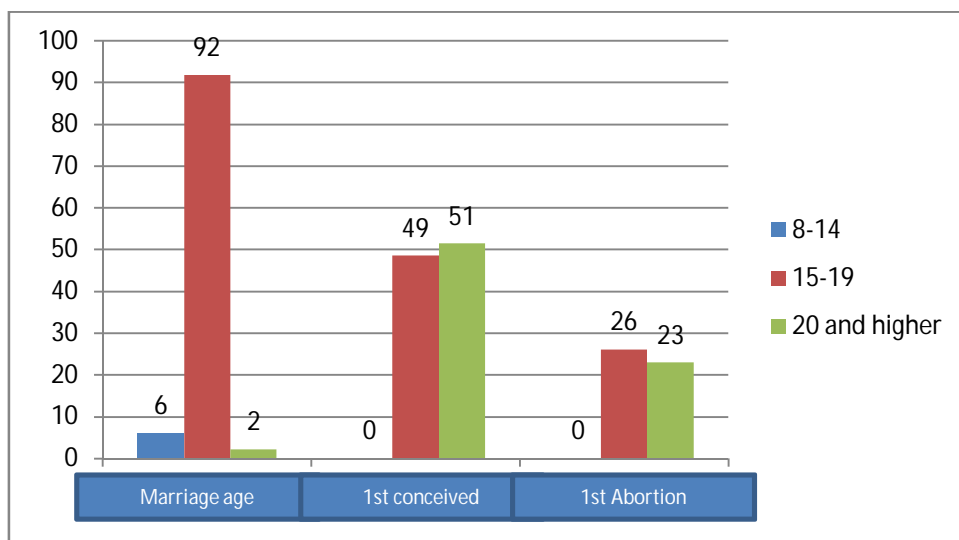


Figure 3.21: Bar diagram illustrating the comparison among the age of marriage, first conceived and first abortion within the respondents who had primary education

In case of the respondent group that completed any secondary education the percentage of women marrying at age group 20 and higher increased to 13%. The age of conceiving for the first time reduced moderately to 36% from 56% in women who had no education. Remarkably the 1st time abortion in teen age also reduced in teenage from 40% to 15%. The percentage of abortion in age 20 or older was similar to women having no education.

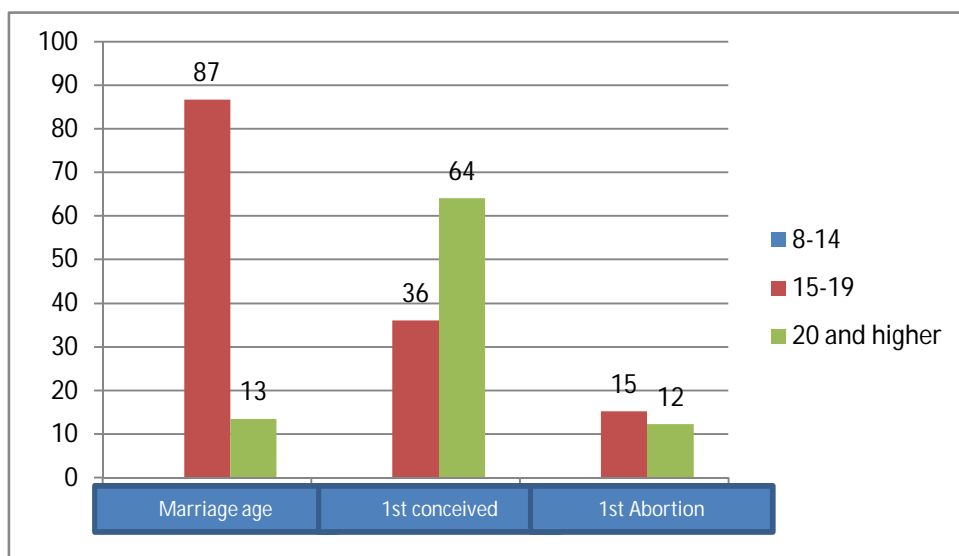


Figure 3.22: Bar diagram illustrating the comparison among the age of marriage, first conceived and first abortion within the respondents who had secondary education

Blood group of the patients

Out of 654 patients 391 patients (59%) had no idea what their blood group was even though most of them were in their last trimester of pregnancy. Also 645 out of 654 patients (98%) had no idea what their husbands blood group was. 30 out of 654 patients (4.5%) had Rh negative blood group.

Gestational diabetes amongst the respondents

Gestational diabetes was only found only amongst 3% respondents. However, this might not be the actual scenario since majority of the respondents did not screen their blood glucose levels. Blood glucose is only tested by the respondent when symptoms of diabetes are present. Additionally when asked about different risks (gestational diabetes, preeclampsia, hemorrhage, etc.) which they may face during pregnancy only 6% could address at least one problem correctly and the need for extra precautions/hospitalizations in such circumstances.

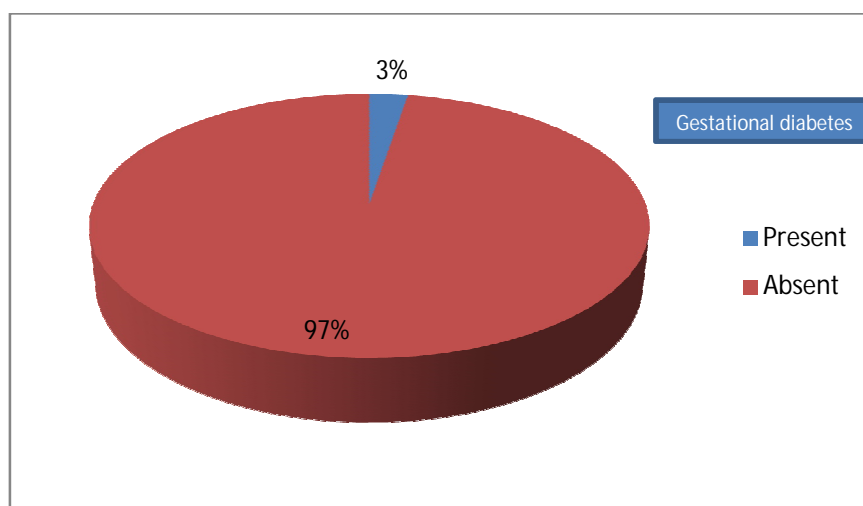


Figure 3.23: Pie chart illustrating the gestational diabetes within the sample population

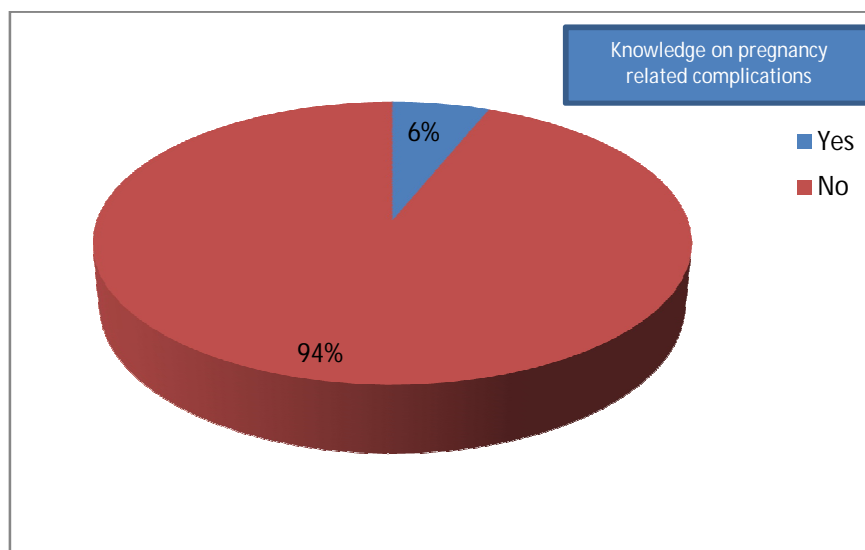


Figure 3.24: Pie chart illustrating the knowledge on pregnancy complications within the sample population

Torture from husband

Psychological as well as physiological stress can be affect maternal health badly. In this study 33% of the respondents were found to be facing physical as well as mental stress/torture from their husbands.

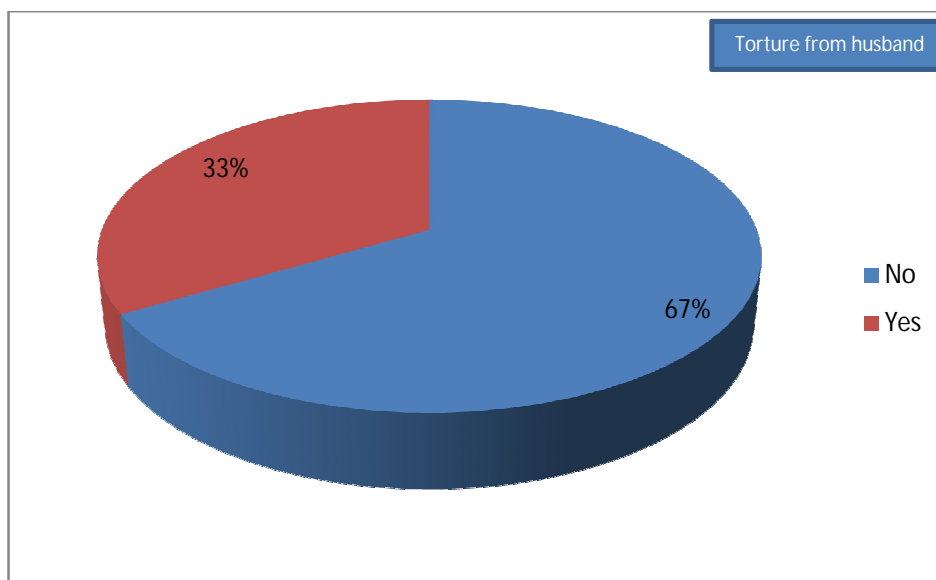


Figure 3.25: Pie chart illustrating the torture from husband within the sample population

Methods of contraception used amongst the study population

34.9% of the study population did not know about contraceptive methods. They were mostly teenagers. Condom + oral pill was found to be the most popular method of contraception. (28.4%). The second most popular choice were injectables and were mostly used by women having little or no education since it is difficult for them to keep count on the number of oral pills taken. Condom may not have gained more popularity due to the increased cost of its use.

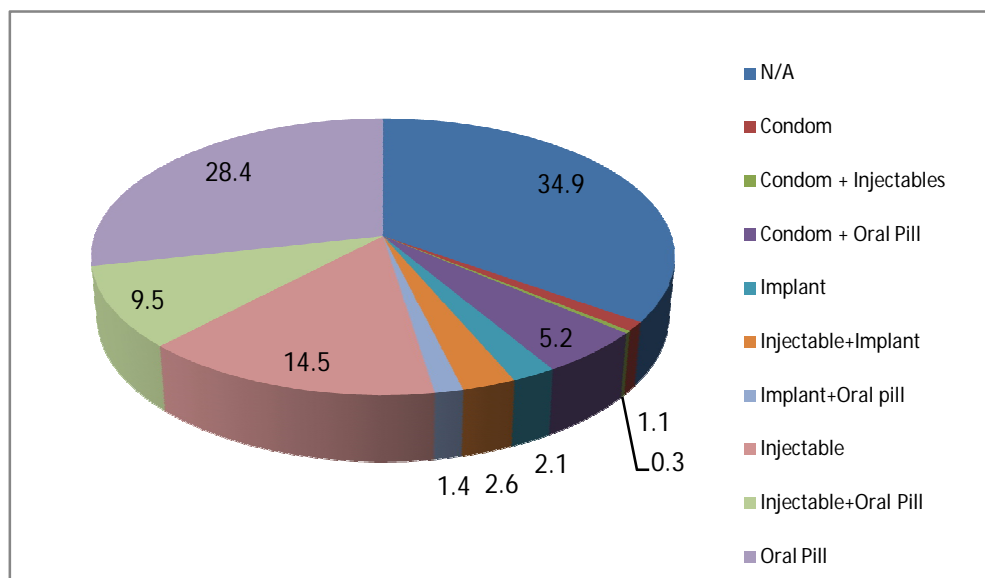


Figure 3.26: Illustrations on common methods of contraception used by the study population till date

Risk of abortion amongst methods of contraception used

The contraception methods were compared against the average number of abortions amongst the study population and the results are as follows:

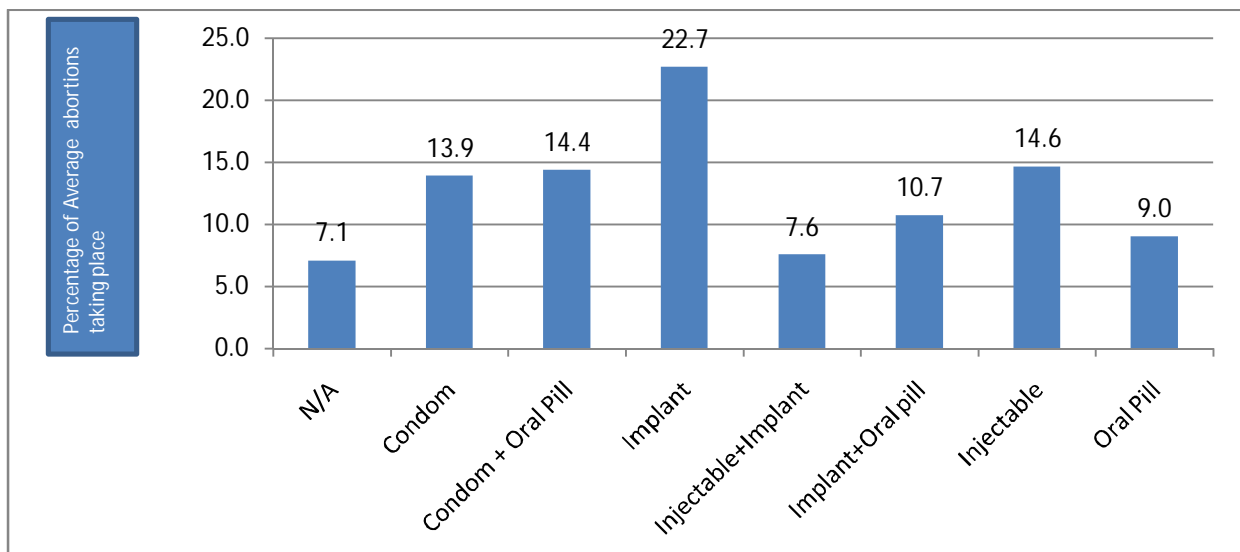


Figure 3.27: Percentage of average abortions occurring against method of contraception used.

The women using implants were found to have the highest percentage of average abortions (22.7%). Injectables were second highest in this regard. (14.6%)

Categorization of respondents according to trimester of pregnancy

Majority of the respondents were in their 3rd trimester (72%) while only (5%) of the respondents were in their 1st trimester.

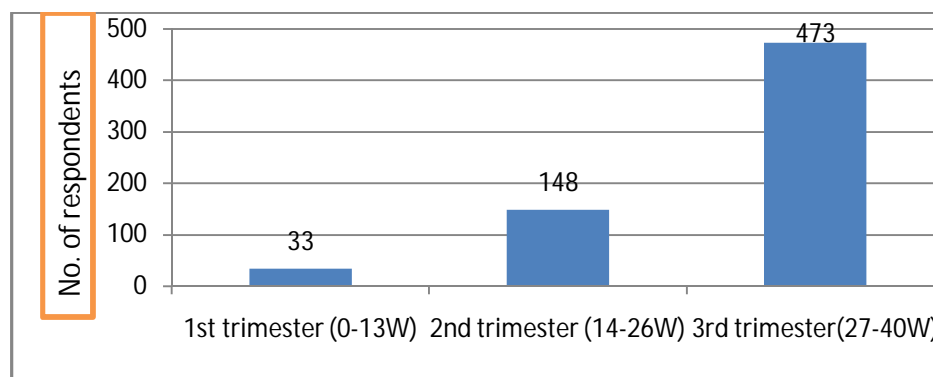


Figure 3.28: Bar diagram illustrating the different trimester of pregnancy within the sample population

Comparison of BPD and FL with Gestational age

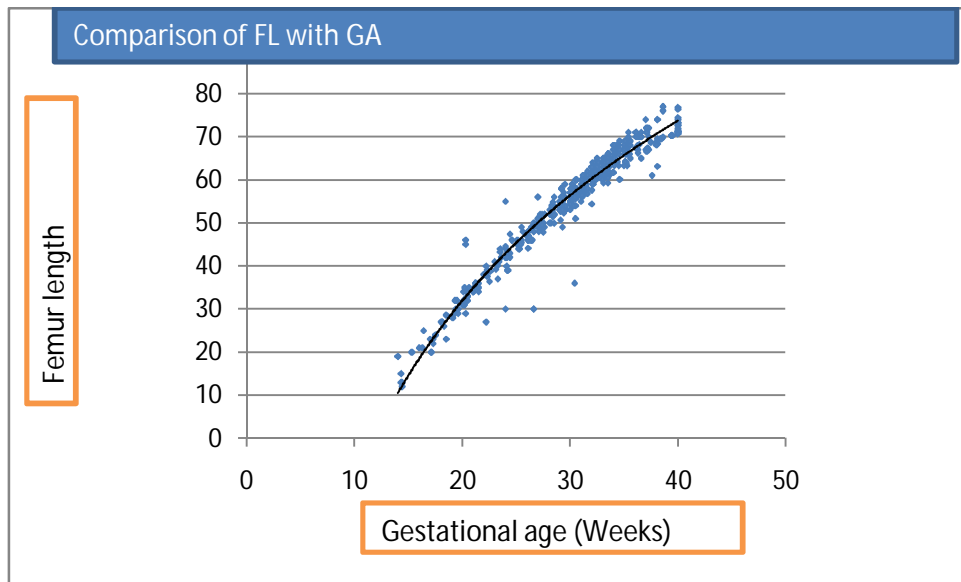


Figure 3.29: Graph illustrating the comparison of Femur Length with gestational age within the sample population

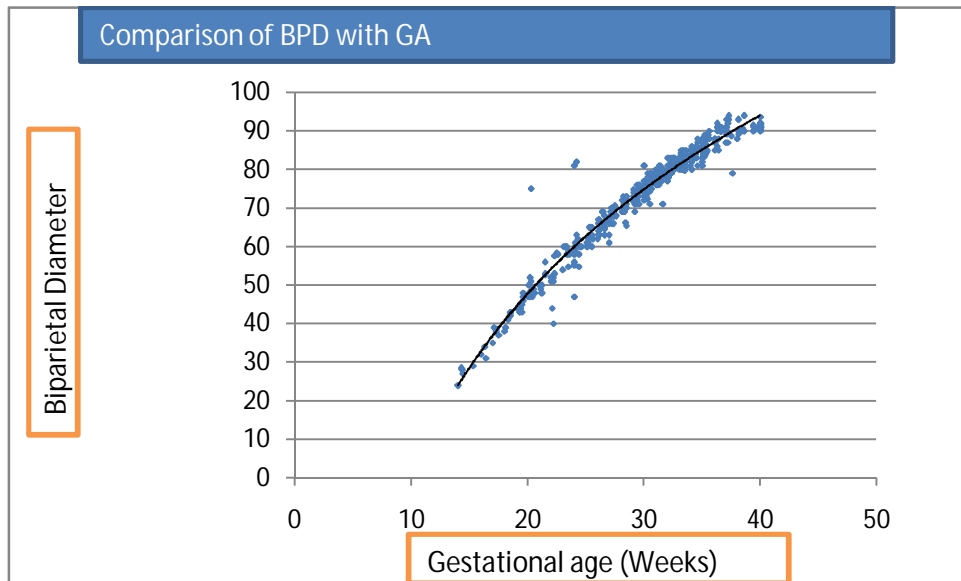


Figure 3.30: Graph illustrating the comparison of Bi-parietal Diameter with gestational age within the sample population

BPD and FL growth rate in comparison to gestational age

With gestational age BPD growth showed slight changes. However FL showed a positive trend in growth rate with increasing gestational age.

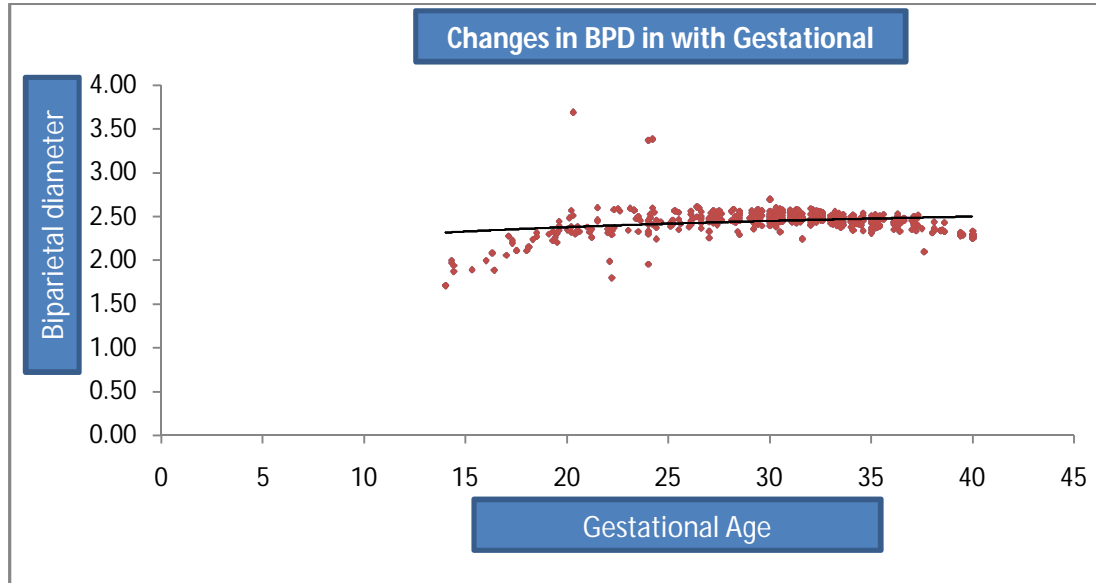


Figure 3.31: Graph showing the BPD growth rate with gestational age within the sample population

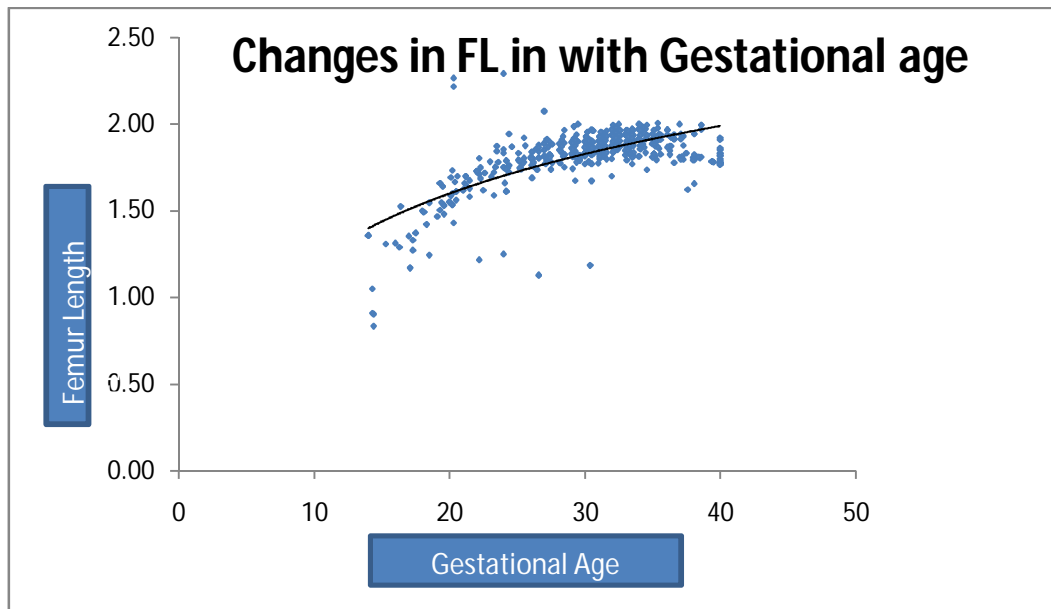


Figure 3.32: Graph showing the FL growth rate with gestational age within the sample population

BDP (Bi parietal diameter) and FL (Femur length) comparison against different trimester

Average BPD growth rate as well as Average FL growth rate was comparatively higher in the 3rd trimester compared to 2nd trimester.

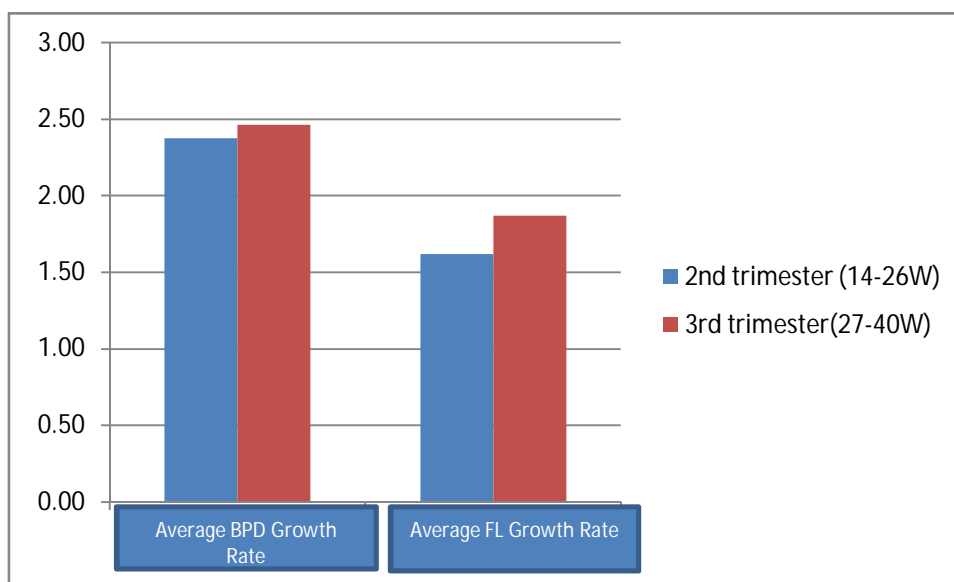


Figure 3.33: Bar diagram illustrating the comparison of BPD growth rate and FL growth rate against different trimester within the sample population

Comparison of BPD and FL growth rates in different trimesters with changes in BMI

2nd trimester

Both BPD and FL showed increased growth rates in patients having BMI 19.9 or higher in the 2nd trimester.

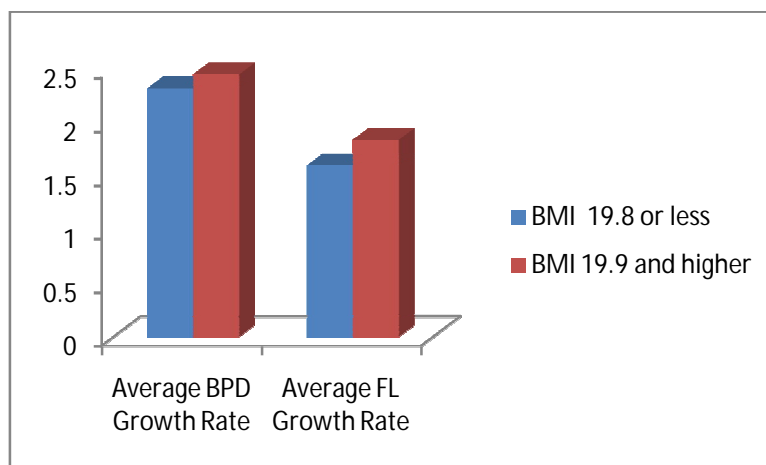


Figure 3.34: Bar diagram illustrating the differences in the BPD and FL growth rates of patients having different BMI in second trimester

3rd Trimester

BPD and FL showed moderately increased growth rates in patients having BMI 19.9 or higher in the 3rd trimester.

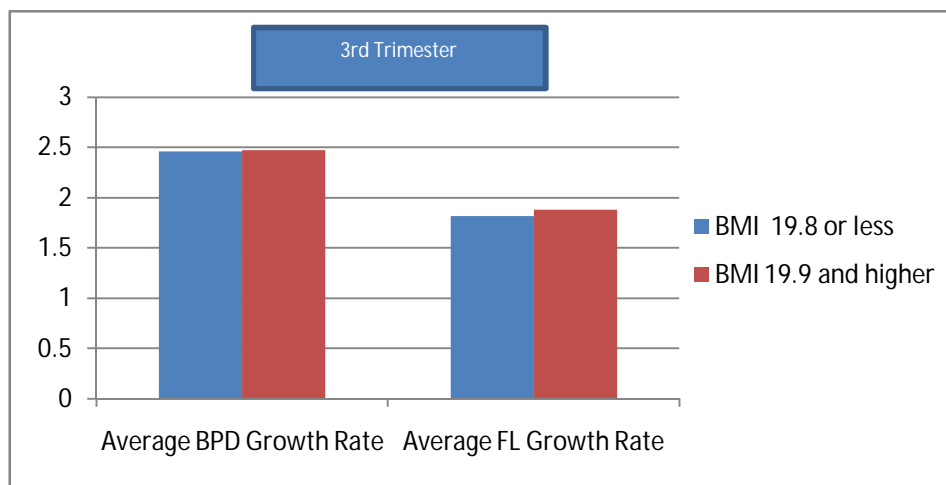


Figure 3.35: Bar diagram illustrating the differences in the BPD and FL growth rates of patients having different BMI in third trimester

Chapter- Four Discussion



Discussion

Even though the study was carried out from one centre only, the permanent address of all the participants are widely distributed throughout Bangladesh. In Bangladeshi perspective the population is gradually shifting towards urban areas from rural areas due to better job opportunities and utilities. Therefore, the study population can be used to draw an inference on maternal health amongst Bangladeshi women.

The study found that education level of the women are highly related with the age of marriage, age of first conception as well as the number of abortions amongst the study population.

63% of the respondents had completed up to any primary education but did not continue any further. 26% women were found to have completed upto any secondary. While 7% did no schooling.

Majority of the participants were housewives (88.1%) which suggests that majority of the women who completed upto primary or secondary education don't get a suitable job and lead their lives as housewives. As a result these women are largely dependent on other family members for income. This finding is in line with the previous studies.^{15,16,17}

Majority of the participants 75% were married during their teen ages (16-19). 18% of the patients got married within age 8-15. Approximately 73% of the women's families were below poverty line (earning below USD 2 per person in family)

Alarmingly 44% of the respondents first conceived during their teen ages (15-19 age group) which is in line with the age of early marriage. As per evidence from studies in developing world one-third to one-half of women become mothers within 19 years of age, making pregnancy related causes as leading causes of death¹⁰. Previous studies found that pre-term delivery, still birth, fetal distress, birth asphyxia, anaemia, low birth weight, pregnancy-induced hypertension (PIH) and spontaneous abortion were most frequently encountered complications during teenage.^{19,20,21,22,23} The likelihood of haemorrhage and pre-eclampsia was significantly higher among pregnant teenagers compared to the women in their twenties.²⁰ As a result this group of patients are at a higher risk of abortion or even maternal mortality.

Amongst 654 participants, 37% of the women had abortions previously and out of that 32% of the women had at least 1 abortion upto now. When comparing the total number of abortions, it was found that 59% of total abortions took place during teen age. The percentage further increases to 64% when comparing age of 1st abortion.

It is well known that the weight and nutrition of the mother is important in ensuring proper weight as well as development of the baby. Upon checking the BMI of the patients, it was found that 82% patients had normal weight but 12% were underweight. Additionally 71% of the patients who were underweight were found to be teenagers.

In order to further evaluate the relation we evaluated level of education, age of marriage, age when first conceived and age of 1st abortion.

It was found that amongst women who had no education, (65%) of got married within age of 15-19. Similar trends were seen in case of 1st time conceived (56%). 50% of these women had abortions and amongst them 40% had abortions during their teen ages.

In case of the respondents completing any primary education, there was a decline in marriage age in age group 8-14 from 29% to 6%. However, the teenage marriage is still high. 92% of the respondents got married within 15-19 years age. The age of conceiving for the first time reduced moderately to 49% from 56%. Remarkably the 1st time abortion age also reduced in teenage from 40% to 26%. However, the percentage doubled to 23% from 10% in women 20 years or older.

In case of the respondent group that completed any secondary education the percentage of teen marriage decreased slightly to 87%. No women got married before 15 years age and women marrying at age group 20 and higher increased to 13%. The age of conceiving for the first time reduced moderately to 36% from 56% in women who had no education. Remarkably the 1st time abortion in teen age also reduced in teenage from 40% to 15%.

This comparison shows that with increase in education levels, the marriage in teen age, 1st time abortion as well as 1st time conceived gets affected. The women get married at an older age, conceive for the first time at an older age and therefore at lesser risk of abortions. 50% of the women with no education had at least one abortion, whereas only 27% of the women having secondary education had an abortion.

Amongst the method of contraception use, condom and oral pill were found to be used highest while risk of abortion was highest with the use of implants.

Even more alarming is the fact that 94% of the pregnant women had no understanding or knowledge of the different complications that may occur during pregnancy. Also amongst the 3% of the patients who had gestational diabetes, it was found that majority of them (11 out of 17) had no idea about different complications that they may face during pregnancy. As per previous study, haemorrhage and eclampsia are the dominant direct obstetric causes of deaths, together responsible for more than half (51%) of all maternal deaths.³⁴

Therefore, it is highly probable that they will not be able to proactively understand the different symptoms that may require them to immediately seek medical care and place them in increased risk of abortion as well as maternal mortality.

Another crucial factor was that 98% of the patients did not know the blood group of their husband and 59% of the patients did not know their own blood group along with their husband's. 4.5% patients had an Rh negative blood group. These patients are presenting a higher risk to their foetus since they may develop haemolytic anemia after birth if the Rh factors of mother and child is not similar.³⁷

Prenatal care is known to improve the outcome of pregnancy and birth for both mother and child. It not only monitors the health of the mother and foetus but also allows for the identification of potential complications.² In this study, none of the respondents had visited a healthcare facility previously during the current pregnancy period. However, most of the women (72%) were in their third trimester when they had come to get a health check up in the NGOs which had sent them for the ultrasound imaging after the check up. This places them at an additional risk if any complications were to happen before the check up.

As per a number of studies psychological state of pregnant women also has a significant effect on the outcome of the pregnancy. In our study 33% of the women faced physical torture/mental stress from their husbands which may place them in psychologically vulnerable position.

BPD (Biparietal diameter) and FL (Femur length) were recorded as clinical parameters for measuring the foetal growth rate. BDP and FL increased gradually with increase in Gestational age. However, the growth rate for both BPD and FL were found to be lower in underweight patients compared to normal or overweight patients.

As per Koblinsky et al., 2008, Bangladesh is on its way to achieving the MDG 5 target of reducing the maternal mortality ratio by three-quarters between 1990 and 2015. However, based on this study there are a number of risk factors and behavioural, social issues that need to be addressed to ensure reduction in maternal mortality as well as ensuring appropriate maternal health.⁶

Chapter- Five Conclusion



Conclusion

Even though Bangladesh has made considerable progress in line with Millennium development goal 5, many important social and behavioural issues within the population need to be addressed before the maternal health of this country's population can be safeguarded. The major concern is preventing childhood marriages and ensuring proper education amongst the female population. This should prevent the number of teenage pregnancies which is the major factor in pregnancy related complications and risk to maternal health as well mortality.

At teen age the mothers do not have the kind of maturity or knowledge needed to be proactive in preventing abortions. In many cases the teen age mothers are not physically strong enough and are more prone to complications.

Government programmes as well as NGOs need to ensure increased campaign and training in helping the illiterate or low educated pregnant women regarding different risk factors that they need to be aware of in order to prevent the unwanted abortions. These steps should help improve maternal health considerably reducing maternal as well as child mortality. Married couples having low education should be given education/training in proper and safe techniques of contraception which should prevent unwanted pregnancies.

Chapter- Six Reference



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