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Consequences of Maternal Mortality in Bangladesh Rural Families an Experience of Gonoshasthaya Kendra (GK) 2008-2018

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ABSTRACT

An estimated 529,000 women, from developing countries including Bangladesh, continue to die each year from maternal causes (www.thelancet.com, 2006). In contrast, progress in reducing levels of maternal mortality, making pregnancy and childbearing safer for women, despite being a central element of the Millennium Development Goals (MDGs), has been much slower. To achieve this goal the GK has been working since 1972, to reduce the maternal mortality and to provide better health services. The objective of this paper is to examine the success rate and to provide the facts that helping to reduce maternal mortality in GK areas. GK has increased its coverage to more than 1.2 million rural population with 43 PHC centers in 631 villages across the country with 5 referral hospitals. This paper discusses maternal mortality in rural Bangladesh, using maternal mortality registration data from 19 Gonoshasthaya health programme areas along with 10 health sub-centers for the period from 2008-2018. After registration of pregnant women paramedics follow up by offering antenatal and post natal care services. The study was conducted by analyzing the panel data in the period of 14th April, 2008 to 13th April, 2018. The findings showed out of 3125236 female population, aged 15-49, 16711 died during the study period yielding an adult death rate 0.64 per 1000 female population. This finding suggests that maternal mortality would reduce further if women had access to adequate health care during pregnancy and child birth.

Keywords: Consequences, Maternal Mortality, Rural Families, Experience, MDGs, and Gonoshasthaya Kendra.

INTRODUCTION:

More than 50 million women suffer from poor reproductive health and severe pregnancy related illness all over the world. In addition to that 500,000 women die every year from pregnancy complications and child birth. Of the deaths of the women 99% occur in developing countries bringing serious consequence for the family, community and economy as a whole. Many deaths could be saved if women had access to adequate care during pregnancy and child birth. Maternal morta-

lity shows the disparities and in equities between men and women and women's role in societies (World Bank, 2003).

Socio-economic condition of women has impact on maternal death. Pregnant women in developing countries have higher risk of maternal mortality than developed countries at 80 to 600 times respectively. The life time risk of dying due to maternal causes includes pregnancy, delivery and other related complications are in Asia 1 in 132, in Africa 1 in 19; and in more

developed countries only 1 in 2976 (UNFPA, 2002). Although, the number of births attended by trained health workers have slightly increased from 48% in 1985 to 55% in 1996, the maternal mortality ratios at the global level remained moderately constant (World Bank, 2003). According to Bangladesh Maternal Mortality and Health care survey 2010 the maternal mortality ratio is 193 per 100000 live births (NIPORT, 2010).

From the news published on 23.11.2017, in The Prothom Alo, it is observed from the survey that the rate of maternal mortality has been increased in the country. In the last survey on “The maternal mortality and the Public Health Services, conducted in 2016,” the Govt. said the 196 mothers died in producing 1 (one) lac babies. The first survey on the maternal mortality was held in 2001 in the country while the mortality rate was 322 but that in 2010 decreased to 194. Researcher said that the lack of the proper steps with devotion and monitoring of the death rate is increasing. The results of the survey were published formally at the joint venture of the national population control forum and the training organizations under the Health Ministry. Here the technical supports were offered by the International Centre for Diarrhoeal Diseases Research, Bangladesh (ICDDR, B) and the major Evaluation an Organization based on the population Research of the USA, financed by the donors of the USA (US AID) and the U.K. (U.K AID). While doing cluster survey in 1(one) thousand and 922 urban areas of the country where 2,98,284 Households and 3,21,214 women of the age from 13 to 49 were interviewed. The surveys were conducted by the trained surveyors since 22nd August, 2016 up to the 10th February, 2017. Where the causes of the death were ascertained by the physicians. The causes of the maternal deaths are mainly Post-Partum Hemorrhage (PPH). Besides, among the other causes there are eclampsia, obstetric and prolonged labor, complication due to abortion and others. The survey in the country conducted on maternal mortality and public health, shows the 31% babies are caesarians. According to World Health Organization 10% to 15% may be common risky cases where caesarian section should be used for the safety of life. But in Bangladesh more than double numbers of babies are caesarians than the

number given by the WHO. Now the researchers are afraid observing commercialized 31% caesarians now which was 12% in 2010 and 3% in 2001.

According to survey 10 lac babies are caesarians in the country where 31 lac babies are born in a year. 7 lac 50 thousand babies are caesarians in the private hospitals and clinics, 43 thousand in NGO and the rest are in the Govt. hospitals. In the Health Centers situated among 615 villages of 15 upazillas in the 13 districts of the country, under the study areas of Gonoshasthaya Kendra, the primary health care services are offered where the patients of the fatal cases are usually sent to 5 (five) referral hospitals. In the health programme of the Gonoshasthaya Kendra’s study areas in 2018, among the total number of 12,54559 people 8181 are identified as Ultra poor, 634203 as poor 3,62,603 as lower middle class, 1,50037 as middle class, 67784 as upper middle class and 31,751 as the rich. The Demographic and Health services, information have been collected from among those people are mentioned below.

METHODOLOGY:

Gonoshasthaya Kendra (GK) is operating since war of liberation 1971. During that time it was a hospital only called Bangladesh Field Hospital which used to treat injured and sick freedom fighters and refugees in the eastern border of India. Following independence on 16 December, 1971 Bangladesh Field Hospital was re-named as GK or People’s Health Center with head office in a Savar Village, 40 km. North of Dhaka the capital of Bangladesh and was registered as public Charitable Trust.

During the last four decades, GK has increased its health care services including reproductive and child health care from about 50,000 people in 50 villages in 1972 to more than one million rural people in 592 villages (Chowdhury and Chowdhury, 2007). Now the area further expanded and covers with 29 health Centers, 13 districts, 17 upazilla’s and 647 villages across the country with 5 referral hospitals. The population is divided into 6(six) socioeconomic groups such as Ultra poor (Aw) Poor (Ka) Lower Middle Class (Kha) Middle Class (Ga) Upper Middle Class (Gha) Rich Class (Umo).

The health care services provided by GK trained health workers called Paramedic. Each paramedic is responsible for total health care of 5000 to 6000 population. Paramedics visit every family once in a month and fill out the event registration forms. The paramedics also provide reproductive and health care and family planning services in its programme areas. These services include (a) registration of pregnant women to provide ANC related services like measurement of height, weight, circumference of the ankle and lower leg, 2-3 inches above the ankle to check the oedema, blood pressure, and check jaundice and anemia. They also test urine for sugar, albumin and examine eyes, ears and teeth, foetal movement and foetal heart sound; (b) They also distribute iron and calcium tablets and immunized pregnant women against tetanus and children under age one year against six deadly diseases: diphtheria, whooping cough, tetanus, polio, tuberculosis and measles; (c) Identification of high-risk mothers through regular follow-up for the referral to medical professional as an when needed; (d) They also suggested the family members of the mal nutrients and lactating pregnant women for balanced diet; (e) They arrange meeting with family members and villagers about the possible causes of maternal death and how maternal death could have been prevented; (f) Organize special camps for treatment of pregnant women.

The works of paramedics are verified by the field monitoring officer in a routine basis. They also manually prepare a list of those events and send it to Savar office for the documentation and preparation of monthly statistical report. If needed the health workers visit more frequently. Ante Natal Care, Postnatal care are very important component of universal PHC Services. During ANC, the paramedics identify high-risk pregnant women. She is given extra care and attention. A medical doctor will see all high-risk mother at least once in their gestation period either in the clinic or in the community, 76% newborn babies checked by paramedics within first seven days of delivery, supervisors could check 50% of new born within first week of birth. Physician usually could visit 30% newborn in their neonatal period.

ANC and PNC is a very important component of GK's service. GK's trained personnel conduct over 70%

delivery in GK service area. Most paramedics are young women with 8-12 years of education. GK brought Traditional Birth Attendants (TBAs) in the mainstream of its health service delivery system which further enriched MCH care. Health education with community participation is one of the major activities of GK. Every infant and maternal death is discussed in the community to draw lesson to improve health service and social and household community action. Besides integrated health care programmes (Homeopathy, Traditional system of medicine- Ayurvedh and Physiotherapy (non drug therapy) basic School, women skill development and health orientated publications, GK runs a number of manufacturing industries (essential drug related). Profits are invested in social development programme. GK also provides both home based and hospital based care. On the basis of statistical report field monitoring officer immediately visit each village of the events collected to check the inconsistency if any. Moreover, after completion of entry of vital events data across checking is done with statistical report to see any omission or addition of births, deaths, including neonatal/infant and maternal deaths.

In this study the maternal mortality data used for a period of 11 years from the 14th April, 2008 to 13th April 2018 of the G.K health services programme areas covered 13 districts, 17 upazillas and 647 villages is now one of the largest health service provider's outside the Govt. of Bangladesh (BDS Paper no-14 Dhaka, 2007). The study explains the GK's experience in primary health care and examines its impact on reduction of maternal mortality on the years. This kind of study on maternal mortality is rare in Bangladesh that used longitudinal data, in which several cohorts were followed from the time of conceptions until the outcome of pregnancies.

RESULTS:

In the present study **Table 1** shows the types of delivery during the last 11(2008-2018) years within GK working areas. During this time total deliveries occurred 1,49,337. Of the total deliveries 1,27,816 (85.59%) normal, 19,367(12.97%) Caesarian, 2,089 (1.40%) episiotomy, 27(0.02%) vacuum and only 38 (0.03%) forsaf.

Table 1: Type of Delivery (live birth& still birth), 1414-1424(2008-2018)

Year	Normal	Total Delivery %	Caesarian	%	Episiotomy	%	Vacuum	%	Forsafe	%	Total Delivery	Total Delivery %
1414 (2007-2008)	15277	95.03	670	4.17	126	0.78	2	0.01	1	0.01	16076	100
1415 (2008-2009)	13230	95.03	604	4.34	77	0.55	10	0.07	1	0.01	13922	100
1416 (2009-2010)	11901	93.64	685	5.39	114	0.90	7	0.06	2	0.02	12709	100
1417 (2010-2011)	12800	93.08	842	6.12	108	0.79	0	0.00	1	0.01	13751	100
1418 (2011-2012)	12325	92.34	801	6.00	201	1.51	7	0.05	13	0.10	13347	100
1419 (2012-2013)	11404	88.46	1282	9.94	192	1.49	0	0.00	13	0.10	12891	100
1420 (2013-2014)	10630	82.95	2072	16.17	113	0.88	0	0.00	0	0.00	12815	100
1421 (2014-2015)	10540	79.84	2494	18.89	166	1.26	0	0.00	1	0.01	13201	100
1422 (2015-2016)	9524	74.15	3008	23.42	310	2.41	0	0.00	3	0.02	12845	100
1423 (2016-2017)	9343	72.03	3279	25.28	347	2.68	0	0.00	2	0.02	12971	100
1424(2017-2018)	10842	73.21	3630	24.51	335	2.26	1	0.01	1	0.01	14809	100
Total	127816	100	19367	100	2089	100	27	100	38	100	149337	100
Percent		85.59		12.97		1.40		0.02		0.03		100%

Table 2: Total Live Birth Delivery Place by Socio-economic Status 1414-1424 (2008-2018)

Delivery Place	S E S group							Total
	Destitute	Ultra-poor	Poor	Lower-Middle class	Middle-class	Uper Middle-Class	Rich	
Home Delivery	59 (88.06%)	301 (93.19%)	89959 (83.82%)	20563 (58.85%)	1841 (51.68%)	62 (29.11%)	45 (33.58%)	112830 (76.99%)
Institutional Delivery	8 (11.94%)	22 (6.81%)	17360 (16.18%)	14380 (41.15%)	1721 (48.32%)	151 (70.89%)	89 (66.42%)	33731 (23.01%)
Total	67 (100%)	323 (100%)	107319 (100%)	34943 (100%)	3562 (100%)	213 (100%)	134 (100%)	146561 (100%)

Table 2 shows the number of delivery according to Socio economic status of the families. Among 146561 deliveries, 67 are in the destitute group of which 59 (88.06%) are home delivery and 8(11.94%) are institutional delivery. Among the Ultra-poor 323 deliveries occurred, of them 301(93.19%) are home delivery and 22(6.81%) institutional delivery. In the poor families out of 107319 deliveries, 89959(83.82%) are home delivery and 17360(16.18%) are institutional delivery. Among 34943 deliveries of lower middle class families, 20563(58.85%) are home delivery and 14380 (41.15%) are institutional delivery. In the middle class out of total deliveries 3562, 1841 (51.68%) are home delivery and 1721(48.32%) are institutional delivery.

Among the upper middle class total 213 deliveries, 62(29.11%) are home delivery and 151(70.89%) are institutional delivery. In case of rich families, 45 (33.58%) are home delivery and 89(66.42%) are institutional delivery. On the whole it is found that the

highest number of 93.19% home deliveries occurred among the ultra-poor families on the contrary lowest 29% in the Uper middle class.. Among the total deliveries 76.99% conducted in home delivery and 23.01% are institutional deliveries.

Table 3 and **Fig 1** show the year wise maternal mortality rates (per 100000 live births) by socio-economic status of Gonoshasthaya Kendra's Health and Demographic Surveillance areas in 1414-1424 (2008-2018). During these 11 years, total live birth 146561 and maternal mortality is 205. According to social economic status, 2(2985.7) maternal mortality found in destitute group, 1(309.60) in Ultra poor, 154 (143.12) in poor, 45(330.00) in lower middle class and 3(83.40) maternal death occurred in middle class families. There were 5 socio-economic groups during 1414-1419 and since 1420 socio-economic groups have been classified into six.

Table 3: Year wise socio-economic status of maternal mortality rate of GKs health and demographic surveillance areas in Bangladesh, 1414-1424 (2008-2018)

Year	Socio-economic Status																					Total Birth	Total Death	MMR
	Birth Av	Death AV	Rate	Birth Ah	Death Ah	Rate	Birth Ka	Death Ka	Rate	Birth Kha	Death Kha	Rate	Birth Ga	Death Ga	Rate	Birth Gha	Death Gha	Rate	Birth Umno	Death Umno	Rate			
1414 (2007-2008)	3	0	0.00	133	0	0	13191	27	204.69	2367	7	295.73	180	0	0.00	0	0	0	0	0	0	15874	34	214.19
1415 (2008-2009)	3	0	0.00	75	1	1333.33	11196	15	133.98	2210	1	45.25	99	0	0.00	0	0	0	0	0	0	13583	17	125.16
1416 (2009-2010)	3	0	0.00	44	0	0	10216	13	127.25	2234	0	0.00	109	0	0.00	0	0	0	0	0	0	12606	13	103.13
1417 (2010-2011)	1	0	0.00	18	0	0	10552	14	132.68	2248	2	88.97	137	0	0.00	0	0	0	0	0	0	12956	16	123.49
1418 (2011-2012)	0	0	0.00	31	0	0	11078	9	81.24	1928	3	103.73	159	0	0.00	0	0	0	0	0	0	13196	12	90.94
1419 (2012-2013)	2	0	0.00	22	0	0	10357	14	135.17	2098	4	190.66	256	0	0.00	0	0	0	0	0	0	12735	18	141.34
1420 (2013-2014)	21	0	0.00	0	0	0	8888	12	112.51	3259	3	92.05	427	0	0.00	76	0	0	25	0	0	12696	15	118.15
1421 (2014-2015)	15	1	6666.67	0	0	0	8399	12	142.87	4071	7	171.95	519	1	192.68	21	0	0	34	0	0	13059	21	160.81
1422 (2015-2016)	13	1	7692.31	0	0	0	7693	11	116.99	4140	2	48.31	641	0	0.00	28	0	0	28	0	0	12543	14	111.62
1423 (2016-2017)	6	0	0.00	0	0	0	7830	13	166.03	4440	5	112.61	447	2	447.43	19	0	0	14	0	0	12756	20	156.79
1424 (2017-2018)	0	0	0	0	0	0	8201	14	170.71	5621	11	195.69	623	0	0	78	0	0	34	0	0	14557	25	171.74
Total	67	2	2985.07	323	1	309.60	107601	154	143.12	34616	45	330.00	3597	3	83.40	222	0	0	135	0	0	146561	205	139.87

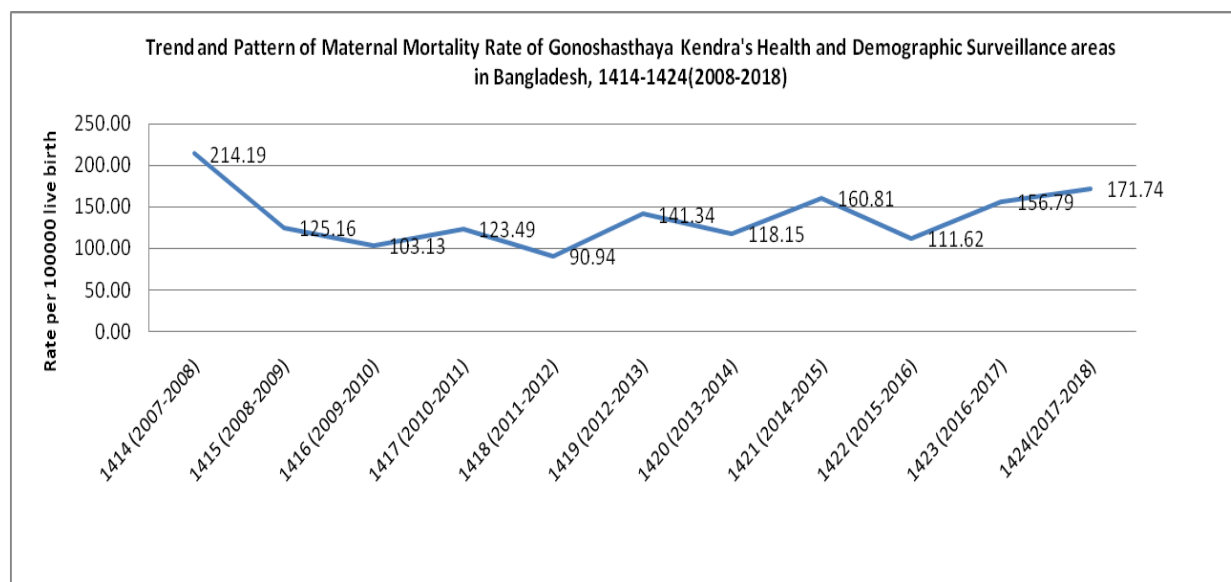


Fig 1: Trend and Pattern of Maternal Mortality Rate of Gonoshasthaya Kendra’s Health and Demographic Surveillance areas in Bangladesh, 1414-1424 (2008-2018).

Note: After spot verification monitoring officers found 5 misreporting cases 1 in 1418(2011-2012), 2 in 1420(2013-2014) and 2 in 1422(2015-2016).

According to the information of Gonoshasthaya Kendra, during the last 11 years (1414-1424) the ratio of Maternal Mortality was 2007-08: 214.19, 2008-09: 125.16, 2009-10: 103.13, 2010-11: 123.49, 2011-12: 90.94, 2012-13: 141.34, 2013-14: 118.15, 2014-15: 160.81, 2015-16: 111.62, 2016-17: 156.79 and 2017-18: 171.74. The MMR was 111.62 in GK working area during 2015-16 which was less than the targeted rate of MDGs. This achievement is a blessing for the people of GK working areas. To achieve this, the health workers of Gonoshasthaya Kendra contacted with the local TBA and co-ordinate with pregnant mothers along with timely follow-up, supplying medicine and all other necessary consultation.

If any complication be seen, at once they take necessary steps to solve the problems of pregnant mothers and her children. As a result both of the mother and her children saved from death. The MMR in 2016-17 was 156.79 increased to 40.47 percent from the preceding year. The MMR in 2017-18 was 171.74 also increased but the increasing rate is less 9.54% than the preceding year (**Fig 1**).

The reasons of increasing MMR are given below –

- 1) Increase caesarean section deliveries.
- 2) Influenced by the broker to go in the private clinic.

- 3) After conducting Ultra sonography, doctors of that clinic influence the pregnant mother and her guardian at once to conduct caesarean delivery otherwise her patient or her baby may die. It is the business strategy of private clinic.
- 4) Unskilled doctors conduct caesarean delivery, and sometimes heavy bleeding occurs, which cannot control the unskilled doctor and refer to other hospital, and in maximum cases the patient died on the way.
- 5) Sometimes trained TBA also takes the pregnant mother to the private clinic or hospital in spite of a chance of normal delivery at home. Because in case of normal delivery at home she may get at best Tk. 500 but if she takes her in the private clinic, the authority of the clinic gives her at least Tk.1000 per delivery. The clinic agents have contact with the TBA in this respect.
- 6) Now the financial condition of general people has increased; they take decision for caesarean delivery from the beginning. Besides, there are some misconceptions about caesarian delivery and broker or other agents mislead the mother and her guardian. This is one of the main reasons of increasing MMR.

Table 4: Causes of Maternal Deaths by Socio-economic Status, 1414 -1424 (2008-2018)

Causes of death	Socio-economic Status								Total	Percent of Direct causes	Percent of all direct causes of death
	Destitute	Ultra-poor	Poor	Lower-middle class	Middle-class	Upper Middle-class	Rich				
Direct causes of death	PPH without retained placenta	1	0	42	15	0	0	0	58	35.37	28.29
	PPH with retained placenta	1	0	30	8	0	0	0	39	23.78	19.02
	Post partum Eclampsia	0	0	14	8	1	0	0	23	14.02	11.22
	Ante partum Eclampsia	0	1	8	5	1	0	0	15	9.15	7.32
	Ante partum Haemorrhage	0	0	10	0	1	0	0	11	6.71	5.37
	Septicemia	0	0	4	2	0	0	0	6	3.66	2.93
	Obstructed labour	0	0	5	0	0	0	0	5	3.05	2.44
	Ruptured uterus	0	0	3	0	0	0	0	3	1.83	1.46
	Pre-Eclampsia	0	0	3	0	0	0	0	3	1.83	1.46
	Prolonged labour	0	0	0	1	0	0	0	1	0.61	0.49
Total	2	1	119	39	3	0	0	164	100	80.00	
Not directly related to maternal death	Anaemia	0	0	7	0	0	0	0	7	17.07	3.41
	Hypertension	0	0	6	1	0	0	0	7	17.07	3.41
	Cardiac Failure	0	0	5	0	0	0	0	5	12.20	2.44
	oedema+Jaundice	0	0	3	1	0	0	0	4	9.76	1.95
	Respiratory failure	0	0	4	0	0	0	0	4	9.76	1.95
	Typhoid fever	0	0	2	0	0	0	0	2	4.88	0.98
	Asthma	0	0	1	1	0	0	0	2	4.88	0.98

Blood reaction	0	0	2	0	0	0	0	2	4.88	0.98
Renal failure	0	0	1	1	0	0	0	2	4.88	0.98
Anaesthetic hazard	0	0	1	0	0	0	0	1	2.44	0.49
Hepatic edima+tuberculosis	0	0	0	1	0	0	0	1	2.44	0.49
Intestinal Obstruction	0	0	0	1	0	0	0	1	2.44	0.49
Post partum DCM with LVF	0	0	1	0	0	0	0	1	2.44	0.49
Hung to Death	0	0	1	0	0	0	0	1	2.44	0.49
Unknown	0	0	1	0	0	0	0	1	2.44	0.49
Total	0	0	35	6	0	0	0	41	100	20.00
Grand total	2	1	154	45	3	0	0	205	100	100

Table 4 shows the causes of maternal deaths by socio-economic status. During last 11 years there were total 205 maternal deaths within the GK working areas. The first and main cause of maternal death is Post Partum Hemorrhage (PPH) and the rate is 59.15% among the total death. Second highest 23.17% is the cause of post and pre partum eclampsia and the third highest 6.71% is the reason of Ante Partum Hemorrhage (APH).

Among the total maternal death, 108 have been died by ante partum hemorrhage and post partum hemorrhage with and without retained placenta. On the basis of location the most 35(32.41%) have been died in the government hospital. Besides, 21(19.44%) in the private hospital, 21(19.44%) on the way to hospital, 19(17.59%) in the husband's house,

9(8.33%) in the father's house and 3(2.78%) maternal death occurred in the GK hospital (**Table 5**)

Table 6 show that 38 maternal deaths occurred before and after delivery for the reason of eclampsia. On the basis of place of death, the most of 14(36.84%) died in Government hospital. Besides, second highest 10(26.32%) in the private hospital, 7(18.42%) on the way to hospital, 5(13.16%) in the husband's house, 1(2.63%) in the father's house and 1(2.63%) maternal death occurred in the GK hospital.

Table 7 show that 38 maternal deaths happened before and after delivery for the reason of Eclampsia. On the basis of their economic status, 22(57.89%) were poor families. 15(39.47%) were lower middle class and only 1(2.63%) was in the destitute family.

Table 5: Causes of Maternal Deaths by PPH, 1414 -1424 (2008-2018)

Causes of Death PPH	Place of Death						Total
	Husband Home	Father's Home	GK. Hospital	Govt. Hospital	Private Hospital	Way to hospital	
Ante Partum Haemorrhage	1	1	0	7	1	1	11
Post Partum Haemorrhage with Retained Placenta	7	2	2	6	9	13	39
Post Partum Haemorrhage without Retained Placenta	11	6	1	22	11	7	58
Total	19	9	3	35	21	21	108
Percent	17.59	8.33	2.78	32.41	19.44	19.44	100

Table 8 showed that 38 maternal deaths occurred due to Eclampsia. Before and after delivery for the reason of On the basis of their educational qualifications, 5(13.2%) were illiterate. Besides, Primary passed 16 (42.1%), secondary school educated 13(34.2%) and college and other educated 4(10.5%).

Table 9 showed that 38 maternal deaths occurred before and after delivery for the reason of Eclampsia. On the basis of their number of pregnancy, 18 (42.11%) mother died who were 1to 2 times pregnant. Besides, 12(13.16%) were first pregnant, 6(34.21%) were 3 to 4 times pregnant and 2(10.53%) were 5 to 6 times pregnant died at the time of delivery.

According to the place of death, at best 63(30.73%) mothers died in the government hospital, 53(25.85%) at home, 42(20.49%) on the way to hospital 40 (19.51%) in private hospital and only 7 (3.41%) died in GK hospital.

According to the causes of death 108 (52.68%) died due to postpartum and ante partum hemorrhage. Second causes of death are eclampsia before and after delivery. 38 (18.54%) died due to pre and post eclampsia and the remaining died for other reasons (**Table 10**).

Table 6: Causes of Maternal Deaths by Eclampsia, 1414 -1424 (2008-2018)

Causes of Death Eclampsia	Place of death						Total
	Husband Home	Father's Home	GK. Hospital	Govt. Hospital	Private Hospital	Way to hospital	
Ante partum Eclampsia	0	0	1	8	2	4	15
Post partum Eclampsia	5	1	0	6	8	3	23
Total	5	1	1	14	10	7	38
Percent	13.16	2.63	2.63	36.84	26.32	18.42	100

Table 7: Causes of Maternal Deaths by Eclampsia and Socio-economic Status, 1414 -1424 (2008-2018)

Causes of Death Eclampsia	Socio-economic status							Total
	Destitute	Ultra-poor	Poor	Lower-middle class	Middle-class	Upper Middle-class	Rich	
Ante partum Eclampsia	0	1	8	6	0	0	0	15
Post partum Eclampsia	0	0	14	9	0	0	0	23
Total	0	1	22	15	0	0	0	38
Percent	0	2.63	57.89	34.21	0	0	0	100

Table 8: Causes of Maternal Deaths by Eclampsia and Education of Wife, 1414 -1424 (2008-2018)

Causes of Death Eclampsia	Education of Wife				Total
	Illiterate	Primary	High School	College & above	
Ante partum Eclampsia	1	9	3	2	23
Post partum Eclampsia	4	7	10	2	38
Total	5	16	13	4	100
Percent	13.16	42.11	34.21	10.53	15

Table 9: Causes of Maternal Deaths by Eclampsia and Total Number of Pregnancy, 1414 -1424 (2008-2018)

Causes of Death Eclampsia	Number of pregnancies			Total
	0	1-2	3-4	
Ante partum Eclampsia	8	7	0	15
Post partum Eclampsia	4	11	6	23
Total	12	18	6	38
Percent	13.16	42.11	34.21	100

Table 10: Causes of Maternal Deaths by Place of Death, 1414 -1424 (2008-2018)

Causes of Death	Home	GK. Hospital	Govt. Hospital	Private Hospital	Way to Hospital	Total	Percent
Post Partum Haemorrhage without Retained Placenta	17	1	22	11	7	58	28.29
Post Partum Haemorrhage with Retained Placenta	9	2	6	9	13	39	19.02
Post partum Eclampsia	6	0	6	8	3	23	11.22
Ante partum Eclampsia	0	1	8	2	4	15	7.32
Ante Partum Haemorrhage	2	0	7	1	1	11	5.37
Anaemia	3	1	0	0	3	7	3.41
Hypertention	3	0	0	1	3	7	3.41
Septicemia	0	0	3	2	1	6	2.93
Obstructed Labour	2	0	1	0	2	5	2.44
Cardiac Failure	3	0	0	1	1	5	2.44

Oedema+Jaundice	0	0	3	1	0	4	1.95
Respiratory Failure	3	0	0	0	0	3	1.46
Ruptured Uterus	0	1	2	0	0	3	1.46
Pre-Eclampsia	1	0	1	0	1	3	1.46
Renal failure	1	0	0	1	0	2	0.98
Typhoid fever	0	0	1	1	0	2	0.98
Asthma	1	0	0	0	1	2	0.98
blood reaction	0	1	0	0	1	2	0.98
Brain stroke	0	0	0	0	1	1	0.49
Prolonged labour	0	0	0	1	0	1	0.49
Unknown	1	0	0	0	0	1	0.49
Livara pani +TB	0	0	1	0	0	1	0.49
Intestinal Obstruction	0	0	0	1	0	1	0.49
Post partum DCM with LVF	0	0	1	0	0	1	0.49
Hung to Death	1	0	0	0	0	1	0.49
Anesthetic hazard	0	0	1	0	0	1	0.49
Total	53	7	63	40	42	205	100
Percent	25.85	3.41	30.73	19.51	20.49	100	

Table 11: Type of Delivery, 1414 -1424 (2008-2018)

Type of Delivery	No. of Maternal Deaths	Percent
Died before delivery(Baby not delivered)	35	17.07
Lower Uterine Caesarian Section	48	23.41
Normal vaginal delivery	122	59.51
Total	205	100.

During the last eleven years (1414-1424) total maternal deaths were 205 within the GK catchment areas. Among them 35(17.07%) mothers died before delivery, 48(23.41%) died during and after caesarian section deliveries. On the other hand 122(59.51%) died during and after normal vaginal deliveries (**Table 11**).

Table 12 Shows the number of live birth and maternal death during the last eleven years from 1414 to 1424. Within these eleven years, total live births and maternal deaths were 146561 and 205 respectively.

Among these 205 maternal deaths 48(23.4%) occurred during and/or after caesarian section deliveries. The maximum 8 mothers died due to caesarian section deliveries in the year, 1419 and second highest 7 mothers died in 1424 for the same causes. 35(17.1%) mother died before delivery of the baby due to various pregnancy related complications. The highest number of maternal deaths 7(20%) occurred before delivery in 1414.

Table 12: Year wise Type of Maternal Death and Year wise Caesarean 1414-1424(2008-2018)

Year	Total Live Birth	No. of Total Maternal Death	Percent of Maternal Death	Year wise Maternal Death by C/S	Percent of C/S Death	Died Before Delivery	Percent of Died before Delivery
1414 (2007-2008)	15874	34	16.59	2	4.17	7	20.00
1415 (2008-2009)	13583	17	8.29	2	4.17	3	8.57
1416 (2009-2010)	12606	13	6.34	1	2.08	4	11.43
1417 (2010-2011)	12956	16	7.80	2	4.17	6	17.14
1418 (2011-2012)	13196	12	5.85	6	12.50	1	2.86
1419 (2012-2013)	12735	18	8.78	8	16.67	0	0.00
1420 (2013-2014)	12696	15	7.32	3	6.25	6	17.14
1421 (2014-2015)	13059	21	10.24	6	12.50	2	5.71

1422 (2015-2016)	12543	14	6.83	5	10.42	2	5.71
1423 (2016-2017)	12756	20	9.76	6	12.50	1	2.86
1424(2017-2018)	14557	25	12.20	7	14.58	3	8.57
Total	146561	205	100	48	100	35	100

Table 13: No. of Maternal Deaths (Died before delivery of Child) by Place of Death, 1414-1424 (2008-2018)

Place of Death	Total Delivery	No. of Maternal Deaths	Percent of Death
Home	112830	10	28.57
Hospital	33731	13	37.14
Way to Hospital	0	12	34.29
Total	146561	35	100

Table 13 Showed that out of 146561 home deliveries 35 maternal deaths occurred before delivery. Among the maternal deaths 10 (28.57%) died at home, 13(37.10%) died in the hospital and 12(34.29%) died on the way to hospital.

Table 14 Showed that of the total146561 deliveries 122 mothers died at the time of normal vaginal delivery. Among them 44(36.07%) mother died at home and 78(63.93%) mother died in the hospital.

Table 15 Showed the information of delivery place and delivery attendants. Among 122 mother, 87 (71.31%) delivered by TBA at home, 10(8.20%) by doctors at hospital, 9(7.38%) delivered by nurses (1 is at home and 8 is at hospital), 5(4.10%) by health workers (1 is at home, 4 is at hospital), 5(4.10%) by themselves and 6(4.92%) by the relatives (5 is at home and 1 is on the way to hospital).

Table 14: No. of Normal Vaginal Delivery of Maternal Deaths by Place of Death, 1414-1424 (2008-2018)

Place of Death	Total Delivery	No. of Maternal Deaths	Percent of Normal Vaginal Maternal Deaths
Home	112830	44	36.07
Hospital	33731	78	63.93
Total	146561	122	100

Table 15: Maternal Deaths by Place of Delivery and Delivery Attendant 1414-1424 (2008-2018)

Place of normal vaginal delivery	Attendant of Normal Vaginal Delivery						Total vaginal delivery	Percent	Total Birth	Percent per 1000 live birth
	TBAs	Doctor	Nurse	Health worker	Self	Relatives				
At home	87	0	1	1	5	5	99	81.15	112830	0.88
Hospital	0	10	8	4	0	0	22	18.03	33731	0.65
Way to Hospital	0	0	0	0	0	1	1	0.82	0	0.00
Total	87	10	9	5	5	6	122	100	146561	0.83
percent	71.31	8.20	7.38	4.10	4.10	4.92	100			

Table 16: Delivery Attendant 1414-1424 (2008-2018)

Attendant Delivery	Attendant delivery (live birth+still birth)	Attendant delivery (live birth)	Total birth (live birth + still birth) (%)	Maternal death attended	Maternal death per 1000 live birth
TBAs	102920	101509	68.92	87	0.86
Doctor	20471	20100	13.71	58	2.89
Private Nurse	3714	3484	2.49	9	2.58
GK Health worker	7087	6907	4.75	5	0.72
Relatives	9782	9537	6.55	6	0.63
Gov. nurse	4122	3833	2.76	0	0.00
FWV	179	169	0.12	0	0.00
Village doctor	243	234	0.16	0	0.00
Medical assistant	172	151	0.12	0	0.00
NGO health worker	585	581	0.39	0	0.00
Self	62	56	0.04	5	89.29
Died before delivery	0	0	0.00	35	0.00
Total	149337	146561	100	205	1.40

Table 16 Shows the delivery attendants information. During the last eleven years, 1414-1424 total births were 149337 including 101509 live and 1411 still births. Out of the total 149337 deliveries, maternal deaths were 205. Of the 205 maternal deaths, 87 (68.92%) deliveries resulted live births attended by TBA, 58 (13.83%) by MBBS doctors, 9(2.41%) by private nurses, 5(4.79%) by GK paramedics, 6 (6.47%) by relatives and 5 (.04%) by themselves. Of the 205 maternal deaths 35 occurred before delivery.

Table 17 Shows the place of death of the 35 maternal deaths occurred before delivery. Among them at best 12(34.29%) died on the way to hospital. Second highest 9(25.71%) died in the Government hospital, 8(22.86%) died in their husbands house, 3 (8.57%) died in private hospital, 2(5.71 %) died in father’s house and only 1(2.86%) 3 died in GK hospital.

Table 18 Presents the number of births delivered in both husband’s and father’s house were 112830 of which 114 mothers died. Of the 114 maternal deaths 53 died at home, 1 in GK hospital, 22 in Govt. hospital, 12 in Private hospital, and 26 on the way to hospital. The mortality rate was 101.04 at home, 91.04 in GK hospital, and 798.53 in Private hospital 164.70 and 102.56 in NGO hospital. However, overall mortality rate was 139.87 during the period 2008-2018.

and 102.56 in NGO hospital. However, over-all mortality rate was 139.87 during the period 2008-2018.

Table 19 Shows the number of total live births and the mother died at the time of delivery attended by different professionals. Of the total live births 146561, deliveries attended by TBAs, 101509 and 87 (0.86) mothers died, by doctors, 20100 and 58(2.89) mothers died, by nurse both Govt. and private, 7317 and 9(1.23) mothers died, by health workers 6907 and 5(0.72) mothers died, by herself self 56 and 5(89.29) mothers died, by relatives, 9537 and 6(0.63) mothers died during 2008-2018.

Table 20 Presents the number of births delivered in both husband’s and father’s house were 112830 of which 114 mothers died. Of the 114 maternal deaths 53 died at home, 1 in GK hospital, 22 in Govt. hospital, 12 in Private hospital, and 26 on the way to hospital. The mortality rates were 101.04 at home, 91.04 in GK hospital, and 798.53 in Private hospital 164.70 and 102.56 in NGO hospital. However, overall mortality rate was 139.87 during the period 2008-2018.

Table 17: Died Before Delivery (Baby not Delivered) By Place of Deaths, 1414-1424(2008-2018)

Place of Death	Maternal death (Died Before Delivery)	Percent
Husband’s Home	8	22.86
Father’s Home	2	5.71
GK. Hospital	1	2.86
GOVT. Hospital	9	25.71
Private Hospital	3	8.57
Way to hospital	12	34.29
Total	35	100

Table 18: Maternal Deaths by Place of Delivery and Place of Death 1414-1424 (2008-2018)

Place of Delivery	Total Live Birth		Maternal Death								Total	Per 100000 Live Birth
			Place of Birth		Place of Maternal Death							
	Birth	%	No	%	Home	GK. Hospital	GOVT. Hospital	Private Hospital	Way to Hospital			
Home	112830	76.99	114	55.61	53	1	22	12	26	114	101.04	
GK. Hospital	7689	5.25	7	3.41	0	6	0	1	0	7	91.04	
Govt. Hospital	4884	3.33	39	19.02	1	0	34	1	3	39	798.53	
Private hospital	20037	13.67	33	16.10	0	0	4	26	3	33	164.70	
NGO hospital	975	0.67	1	0.49	0	0	1	0	0	1	102.56	
Upazilla hospital	146	0.10	0	0.00	0	0	0	0	0	0	0.00	
Way to hospital	0	0.00	11	5.37	0	0	1	0	10	11	0.00	
Total	146561	100	205	100	54	7	62	40	42	205	139.87	

Table 19: Maternal Deaths by Place of Delivery and Delivery Attendant 1414-1424 (2008-2018)

Birth place of maternal deaths	Delivery Attendant of Maternal Deaths								Total
	Died before delivery	TBAs	Doctor	Nurse (Govt+ private)	Health worker	Self	Relatives	FWV+village doctor+medical assistant+NGO health worker)	
Husband home	13	92	0	1	1	5	2	0	92
Father's home	2	22	0	0	0	0	3	0	22
GK. hospital	1	7	2	0	4	0	0	0	7
Govt. hospital	8	39	24	7	0	0	0	0	39
Private Hospital	1	33	31	1	0	0	0	0	33
NGO hospital	0	1	1	0	0	0	0	0	1
Way to hospital	10	11	0	0	0	0	1	0	11
Total maternal deaths	35	205	58	9	5	5	6	0	205
Total no. of live birth	0	146561	20100	7317	6907	56	9537	1135	146561
Maternal deaths per 1000 live births	0	1.40	2.89	1.23	0.72	89.29	0.63	0.00	1.40

Table 20: Died Before Delivery by Lower Uterine Caesarian Section and Normal Vaginal Delivery by Socio-economic Status, 1414-1424 (2008-2018)

Socio-economic status	Died before delivery	Percent	Lower uterine caesarian section	Percent	Normal vaginal delivery	Percent	Total	Percent
Destitute	0	0.00	0	0.00	2	1.64	2	0.98
Ultra-poor	1	2.86	0	0.00	0	0.00	1	0.49
Poor	29	82.86	29	60.42	96	78.69	154	75.12
Lower Middle	5	14.19	16	33.33	24	19.67	45	21.95
Middle	0	0	3	6.25	0	0	3	1.46
Upper Middle	0	0.00	0	0	0	0.00	0	0
Rich	0	0.00	0	0.00	0	0.00	0	0.00
Total	35	100	48	100	122	100	205	100

Table 19 Shows the number of total live births and the mother died at the time of delivery attended by different professionals. Of the total live births 146-561, deliveries attended by TBAs, 101509 and 87 (0.86) mothers died, by doctors, 20100 and 58(2.89) mothers died, by nurse both Govt. and private, 7317 and 9(1.23) mothers died, by health workers 6907 and 5(0.72) mothers died, by herself self 56 and 5 (89.29) mothers died, by relatives, 9537 and 6(0.63) mothers died during 2008-2018.

Table 20 Shows the social economic status of the mothers those who died due to pregnancy related complications. Of the 35 mothers died before delivery were 1(2.86%) belong to destitute, 29(82.86%) belong too poor and 5(14.29%) and 5(14.19%) belong to lower middle class. Among the caesarean deliveries 48 mothers died and according to their socioeconomic status 29(60.42%) from poor families, 16 (33.33%) and only 3(6.25%) from middle class. However, 122 mothers died at the time of normal deliveries, 2(1.64%) from destitute, 96 (78.695) from poor & 24(19.67%) from lower middle class families.

Table 21: Total Caesarian Section C/S and their Delivery Place 1414-1424(2008-2018)

Delivery Place	Number of Total C/S	Percent	Place of C/S delivery	Percent of Maternal death
G.K.Hospital	2021	10.44	2	4.17
Govt. Hospital	1979	10.22	19	39.58
Private Hospital	15009	77.50	26	54.17
NGO Hospital	358	1.85	1	2.08
Total	19367	100	48	100

Table 21 Shows the number of caesarean section deliveries in different institutions and died during the last eleven years (2008-2018). During this time at best 15009(77.50%) Caesarean deliveries occurred in private hospital/clinic and 26(54.17%) mothers had died. Second highest 2021(10.44%) caesarean deliveries occurred in Gonoshasthaya Kendra hospital and 2(4.17%) mothers died. 1979(10.22%) caesarean deliveries occurred in Government hospital and among them 19(39.58%) mothers died. Besides, there were 358(1.85%) caesarean deliveries occurred in NGO hospital and 1(2.08%) of them died during this time.

Table 22 Shows the trends of caesarian deliveries during the last eleven years (2008-2018) within different institutions. Year wise the caesarean deli-

veries increased every next year and most of the caesarean deliveries (77.50%) occurred in private hospital. Second highest (10.44%) caesarean deliveries occurred in Gonoshasthaya hospital. Besides, in government hospital 10.22% and NGO hospital 1.85% caesarean deliveries occurred during the last eleven years in the GK Catchment areas.

Table 23 Shows the maternal deaths of normal vaginal delivery by Socio-economic status and place of delivery since last eleven years (2008-2018). Of the 122 mothers died according to place of deliveries were 79 at husband`s home, 20 father`s home, 4 GK hospital, 12 govt. hospitals, 6 private hospitals and 1 on the way to hospital and of them 2 from destitute, 96 from poor and 24 from lower middle class families respectively.

Table 22: Year wise Total Caesarian C/S and Place of Delivery 1414-1424(2008-2018)

Year wise total C/S	G.K. Hospital	GOVT. Hospital	Private Hospital	NGO Hospital	Total
1414 (2007-2008)	91	86	478	15	670
1415 (2008-2009)	60	68	457	19	604
1416 (2009-2010)	84	91	495	15	685
1417 (2010-2011)	100	118	621	3	842
1418 (2011-2012)	122	125	554	0	801
1419 (2012-2013)	211	151	879	41	1282
1420 (2013-2014)	213	210	1626	23	2072
1421 (2014-2015)	227	268	1950	49	2494
1422 (2015-2016)	256	236	2441	75	3008
1423 (2016-2017)	325	251	2649	54	3279
1424(2017-2018)	332	375	2859	64	3630
Total	2021	1979	15009	358	19367
Percent	10.44	10.22	77.50	1.85	100

Table 23: Maternal Deaths of Normal Vaginal Delivery by Socio-economic Status and Place of Delivery 1414-1424 (2008-2018)

Socio-economic status	Birth place						Total
	Husband Home	Father's Home	GK. Hospital	GOVT. Hospital	Private Hospital	Way to Hospital	
Destitute	1	1	0	0	0	0	2
Ultra-poor	0	0	0	0	0	0	0
Poor	62	18	3	7	5	1	96
Lower Middle Class	16	1	1	5	1	0	24
Middle-class	0	0	0	0	0	0	0
Upper Middle class	0	0	0	0	0	0	0
Rich	0	0	0	0	0	0	0
Total	79	20	4	12	6	1	122

Table 24: Normal Vaginal Delivery Cost of Maternal Deaths by Socio-economic Status, 1414-1424(2008-2018)

Treatment Cost	Socio-economic status							Total
	Destitute	Ultra-poor	Poor	Lower Middle	Middle	Upper middle	Rich	
No treatment	1	0	26	5	0	0	0	32
<500	0	0	10	1	0	0	0	11

500-1000	0	0	13	3	0	0	0	16
1001-2000	0	0	8	2	0	0	0	10
2001-3000	0	0	6	1	0	0	0	7
3001-4000	0	0	9	0	0	0	0	9
4001-5000	0	0	5	3	0	0	0	8
5000+	1	0	19	9	0	0	0	29
Total	2	0	96	24	0	0	0	122

Table 24 Shows the normal vaginal delivery cost of mothers died at the time of delivery. Among 122 mothers, 32 either not able to take treatment or didn't get any chance to have treatment. Delivery costs were less than Tk.500 for 11 mothers, Tk.500-1000 for 16 mothers, Tk.1001-2000 for 10 mothers, Tk.2001-3009 for 7 mothers, Tk.3001-4000 for 9 mothers, Tk.4001-5000 for 8 mothers, and Tk.5000 for 29 mothers respectively.

Table 25 Shows that total 48 mothers died during and or after caesarean section deliveries and the cost of deliveries according to their socio-economic status (SES). Among them there were 29 from poor, 16 from lower, 3 from middle class family's respectively. Analyzing the delivery cost it is also found that one mother did not get any treatment and the remaining 47 mothers' treatment costs were Tk. 1000-5000 for 5, Tk.6000-15000 for 12, Tk.15001-

25000 for 9, Tk.26000-50000 for another 9 and Tk.50000 and above for 12 mothers.

Table 26 During and or after caesarean section deliveries total 48 mothers died. Among them 2 (14.2%) mothers in Gonoshasthaya Kendra hospital, 22(45.8%) in Govt. hospital, 20(41.7%) in private hospital and 4(8.3%) mothers died on the way to hospital. According to SES the highest number 29(60.42%) mothers died from poor, Second highest number 16(33.33%) died from lower middle class and only 3(6.25%) from middle class families respectively.

Table 27 Shows that caesarian section deliveries were highest in number 14(51.85%) among the poor, the 2nd highest number 10(37.04) from the lower middle class and only 3(11.11%) from middle class families respectively.

Table 25: Caesarian Cost of Maternal Deaths by Socio-economic Status, 1414-1424(2008-2018)

Treatment Cost	Socio-economic status							Total
	Destitute	Ultra-poor	Poor	Lower Middle	Middle	Upper middle	Rich	
No treatment cost	0	0	0	1	0	0	0	1
1000-5000	0	0	5	0	0	0	0	5
6000-15000	0	0	9	3	0	0	0	12
15001-25000	0	0	4	4	1	0	0	9
26000-40000	0	0	5	1	1	0	0	7
41000-50000	0	0	0	1	1	0	0	2
50000+	0	0	6	6	0	0	0	12
Total	0	0	29	16	3	0	0	48

Table 26: Maternal Deaths and Socio-economic Status by Place of Death, 1414-1424 (2008-2018)

Socio-economic status	Place of death				Total	Percent
	GK. Hospital	GOVT. Hospital	Private Hospital	Way to hospital		
Destitute	0	0	0	0	0	0
Ultra-poor	0	0	0	0	0	0
Poor	2	16	7	4	29	60.42
Lower middle	0	3	13	0	16	33.33
Middle	0	3	0	0	3	6.25
Upper middle	0	0	0	0	0	0
Rich	0	0	0	0	0	0
Total	2	22	20	4	48	100
Percent	14.17	45.83	41.67	8.33	100	

Table 27: Total No. of Caesarians and Maternal Deaths by Socio-economic Status and Place of Death, 1420-1424 (2013-2018)

SES Group	Total No. of Caesarian birth	Place of death				Total	Percent
		GK. Hospital	Govt. Hospital	Private Hospital	Way to hospital		
Destitute	4	0	0	0	0	0	0
Ultra-poor	0	0	0	0	0	0	0
Poor	6841	0	9	2	3	14	51.85
Lower middle	6258	0	3	7	0	10	37.04
Middle	1193	0	3	0	0	3	11.11
Upper middle	120	0	0	0	0	0	0
Rich	67	0	0	0	0	0	0.00
Total	14483	0	15	9	3	27	100

Table 28: Year wise Total Caesarian and Total Maternal Death 1414-1424 (2008-2018)

Year	No. of total Deliveries	No. of Total Maternal Death	Percent of Maternal Death	No. of Total Caesarian Deliveries	Year wise Maternal Death by C/S	Percent of C/S Death
1414 (2007-2008)	15874	34	16.59	670	2	4.17
1415 (2008-2009)	13583	17	8.29	604	2	4.17
1416 (2009-2010)	12606	13	6.34	685	1	2.08
1417 (2010-2011)	12956	16	7.80	842	2	4.17
1418 (2011-2012)	13196	12	5.85	801	6	12.50
1419 (2012-2013)	12735	18	8.78	1282	8	16.67
1420 (2013-2014)	12696	15	7.32	2072	3	6.25
1421 (2014-2015)	13059	21	10.24	2494	6	12.50
1422 (2015-2016)	12543	14	6.83	3008	5	10.42
1423 (2016-2017)	12756	20	9.76	3279	6	12.50
1424(2017-2018)	14557	25	12.20	3630	7	14.58
Total	146561	205	100	19367	48	100

Table 28 shows the year wise total deliveries of 11 years from 2008-2018. Of these total 146561 deliveries 205 mothers died and from 19367 caesarean deliveries during the same period 48(23.4%) mother died. There were significant year wise variations of maternal deaths during the study period. The rate fluctuated from the highest 16,59 percent in 2008-9 to lowest 5.85 in 2011-12 in case of all deliveries and in

case of caesarean deliveries the variation ranges from 2.08 in 2009-10 to 16.67 percent in 2012-13.

Table 29 shows that during and or after caesarean deliveries 48 mothers died. Among them, the highest number of deaths occurred in age 20-24(41.67%), and it gradually declined to age groups 25-29(25.00%), 30-34(22.92%), 35-39 (4.17%), 40 and above only (2.08%) respectively.

Table 29: Caesarian Section of Maternal Death by Age group of Wife 1414-1424(2008-2018)

Age Group	No of Death	Percent
15-19	2	4.17
20-24	20	41.67
25-29	12	25.00
30-34	11	22.92
35-39	2	4.17
40+	1	2.08
Total	48	100

Table 30: No. of Total Births & Caesarian Section of Maternal Death by Age group of Mother 1414-1424-(2008-2018)

Age Group of Mother	No. of deliveries (live birth+still birth)		No. of Caesarian Death	
	No	Percent	No	Percent
15-19	16465	11.03	2	4.17
20-24	62563	41.89	20	41.67
25-29	48692	32.61	12	25.00
30-34	15222	10.19	11	22.92
35-39	5431	3.64	2	4.17
40+	964	0.65	1	2.08
Total	149337	100	48	100

Table 30 shows the number of deliveries by the age of mothers. During the last eleven years from 2008 to 2018 there were 149337 deliveries occurred. Of the deliveries highest 41.89 percent aged 20-24, the second highest 32.61 percent aged 25-29 years and the lowest 0.65 percent aged 40 years and above. A similar result of caesarian deliveries are observed, the highest 41.67 percent aged 20-24, the second highest 32.61 percent aged 25-29 years and the lowest 0.65 percent aged 40 years and above. There was no caesarian information in the live birth forms during 2007-2012. Since 2013, caesarian information included in the birth form, so caesarian data are being collected from 2013-2018. Among them, only those who died during 2013-2018 are shown in the (**Table 31**).

Table 32 Shows the educational qualification of those mothers who had died during and after cae-

sarian delivery. Among the 48 mothers there were 6(12.50%) literate 13(27.08%), read up to 1-5 class, 24(50%), read up to 6-10 class and only 5 (10.42%), got higher education, SSC and above.

Table 33 presents the Caesarian Section of Maternal Death by Education of husband. There was no caesarian information in the live birth forms during 2008-2012. Since 2013 caesarian information was included in the form, so caesarian data are available from 2013-2018 used in this table. Of the 14483 Caesarian mothers 27 died at the time of delivery. Among the caesarians deaths, 8 (29.63 %) read up to 1-5 class, the highest no.13 (48.5%) read up to class X and only 4(14.81%) SSC and above education. On the contrary among the husbands of those women were 2(7.41%) illiterate, 29.63% up to 5 class, 29.63% high school 6-10 class and 33.33% SSC and above education.

Table 31: Total Caesarian Section and Caesarian Maternal Death by Age group of Mother 1420-1424-(2013-2018)

Age Group	No. of Caesarian	Percent	No of Death	Percent
15-19	1987	13.74	1	3.70
20-24	5653	39.09	9	33.33
25-29	4361	30.16	10	37.04
30-34	2081	14.39	5	18.52
35-39	350	2.42	1	3.70
40+	51	0.35	1	3.70
Total	14483	100	27	100

Table 32: Caesarian Section of Maternal Death by Education of Mother 1414-1424(2008-2018)

Education Mother	No of Death	Percent
Illiterate	6	12.50
Primary (1-5 class)	13	27.08
High School 6-10 class	24	50.00
College & above (SSC. and above)	5	10.42
Quranic education	0	0.00
Total	48	100

Table 33: Total Caesarian Section of Maternal Death by Education of husband 1420-1424 (2013-2018)

Education of Mother	No .of Total Caesarian mothers	Percent	Education of the caesarian maternal deaths	Percent of C/S maternal Deaths	Husbands' education caesarian maternal deaths	Percent of C/S maternal Deaths
Illiterate	559	3.86	2	7.41	2	7.41
Primary 1-5 class	4085	28.21	8	29.63	8	29.63
High School 6-10 class.	5570	38.46	13	48.15	8	29.63
College & above SSC. and above	4260	29.41	4	14.81	9	33.33
Quranic education	9	0.06	0	0.00	0	0.00
Total	14483	100	27	100	27	100

Table 34: Total no. of Caesarian Section and no. of Maternal Death by Education of Husband 1420-1424 (2013-2018)

Education of Husband	Total No. of Caesarian	Percent of Total C/S	No. of C/S Death (Husband)	Percent of C/S
Illiterate	771	5.32	2	7.41
Primary, read upto 1-5 class	3681	25.42	8	29.63
High school, read up to 6-10 class	5286	36.50	8	29.63
College & above, SSC and above	4727	32.62	9	33.33
Quranic education	21	0.14	0	0.00
Total	14483	100	27	100

Table 35: Maternal Deaths by TT Dose of Mother 1414-1424 (2008-2018)

TT Dose of Mother	No. of Death	Percent
None	10	4.9
First dose	7	3.4
Second dose	24	11.7
Third dose	37	18.0
Fourth dose	32	15.6
Fifth dose	91	44.4
Booster dose-vaccination completed given in each pregnancy	4	2.0
Total	205	100

Table 36: Caesarian Section of Maternal Death by Education of Husband 1414-1424 (2008-2018)

Education of Husband	No. of Death	Percent
Illiterate	6	12.50
Primary, 1-5 class	11	22.92
High school, 6-10 class	21	43.75
College & above, SSC and above	10	20.83
Total	48	100

There was no caesarean information in the birth forms during the period 2008-2012. Since 2013, caesarean information included in the form, so caesarean data are analyzed from 2013-2018. Within this period 27 mothers had died. Among the hus-

bands of those women were 7.41% illiterate, 29.63% primary (1-5) 29.63% high school (6-10) class and 33.33% SSC and above education (**Table 34**).

Table 35 Shows the doses of Tetanus Toxoid Injection (TTI) given to those women who died due to pregnancy related complication during this period of time 2008-2018. Of the 205 maternal deaths, 95 mothers were given TT doses and among them 7(3.4%) mothers given only first dose, 24(11.7%) mothers 2nd doses, 37(18.0%) mothers 3rd doses, 32(15.6%) mothers 4th doses, 91(44.4%) mothers 5th doses and only 4(2.0 %) mothers completed booster dose-vaccination.

Table 37: Maternal Deaths by Antenatal Visit of Mother 1414-1424 (2008-2018)

Antenatal Visit of Mother	No. of Death	Percent
None	11	6.3
1-2	32	18.2
3-4	100	56.8
5-6	50	28.4
7+	12	6.8
Total	205	116

Table 36 Shows the educational qualification of husband of those women who had died during Caesar or after caesarean delivery within 2008-2018. The husbands' educational qualification of those 48 mothers died were 6(12.50%) illiterate, 11 (22.92 %) read up to class 5, 21(43.75%) read up to class X and 10(20.83%) SSC and above passed.

Table 37 Presents the maternal deaths by Antenatal visit during 2008 to 2018. Of the 205 pregnant mothers the number antenatal care were given 1-2 times to 32 (18.2%)mothers,3-4 times to 100 (56.8%), 5-6 times to 50(28.4%), 7+ times to 12 (6.8%) and only 11(6.3%) mothers were not given any antenatal care.

Table 38: Maternal Deaths by Duration of Husband's Second Marriage 1414-1424 (2008-2018)

Husband Duration of Second Marriage	No. of Death	Percent
Not Married Second time	36	17.6
<1 Month	8	3.9
1-2months	33	16.1
4 months	34	16.6
6 months	30	14.6
1 year	33	16.1
1+	29	14.1
Soon after death 1st wife came back	1	0.5
First wife died but second wife alive	1	0.5
Total	205	100

Table 38 Shows the maternal deaths (wife) by husband's duration of second marriage. Of the husbands of 205 maternal deaths, there were 8(34.9%) got married after less than one month, 33 (16.1%) after 1-2 months, 34(16.6%) after 4 months, 33(16.1%) after 1 year, 29(14.1%) after one year above and 38((18.6%) not married for the second time after death of their wives.

Table 39 Presents those who were taken care of new born babies after the death of their mother. Of the 205 maternal deaths there were 35(17.1%) mothers died before delivery, 35(17.1%) delivered still birth including 3 abortions and the remaining 124 mothers

delivered live births. Those who taken care of live births were 48(38.7%) paternal grandmother, 18 (15.0%) paternal anti, 15(12.1%) maternal grandmother, 15(12.1%)adapted elsewhere, 11(9%) father himself, 8(6.0%) father and step mother, 8(6.0%) maternal anti and only 1 baby died after 2 and a half year.

Table 39: After Maternal Death by Care Taker of New Born Baby 1414-1424 (2008-2018)

Who has taken care of the new born baby	No. of Death	Percent
Died before delivery (Baby not delivered)	35	17.1
Paternal Grand mother	48	23.4
Still birth	32	15.6
Paternal anti	18	8.8
Maternal Grandmother	15	7.3
Adapted	15	7.3
Father himself	11	5.4
Live birth but died after delivery	11	5.4
Father & Step mother	8	3.9
Maternal anti	8	3.9
Abortion (MR)	3	1.5
Died after 2 years 6 months	1	0.5
Total	205	100

Table 40: Total No. of Caesarian Section Mother by Age 1420-1424 (2013-2018)

Age group of Wife	No of Caesarian	Percent
15-19	1987	13.7
20-24	5653	39.0
25-29	4361	30.1
30-34	2081	14.4
35-39	350	2.4
40-44	46	0.3
45-49	5	0.0
Total	14483	100

Table 41: Total No. of Caesarian Section Mother by Education 1420-1424 (2013-2018)

Education of Wife	No of Caesarian	Percent
No schooling	559	3.87
Primary	4085	28.25
High school	5575	38.55
S.S.C	2870	19.85
College & above	1383	9.56
Quranic education	11	0.08
Total	14483	100

Table 40 Shows the number of Caesarian mother by age during 5 years from 2013 to 2018. Of the 14483 Caesarian mothers, there were 13.7 percent aged 15-

19, 39.0 percent in the age group 20-24, 30.1 percent belong to 25-29 ages, 14.4 percent aged 30-34 and 2.5 percent of aged 35 and above.

Table 41 Presents number of Caesarian mothers by education. Among the 14483 Caesarian mothers, the highest percentage 38.55 read up to high school, the second highest 28.25 read up to class V, 19.85 percent passed SSC, 9.56 percent passed HSC and above and only 0.08 percent had Quranic education.

Table 42: Total No. of Caesarian Section Mother by SES Group 1420-1424 (2013-2018)

SES Group of Wife	No of Caesarian	Percent
Destitute	4	.03
Poor	6841	47.2
Lower middle class	6258	43.2
Middle class	1193	8.2
Upper middle class	120	.8
Rich	67	.5
Total	14483	100

Table 42 Shows the Socio-economic status of the 14483 Caesarian mothers during 5 years period from 2013 to -2018. Among the Caesarian mothers there were only 4(.03%) destitute, the highest no.6841 (47.2%) poor, 6258(43.2%) lower middle class, 1193 (8.2%) middle class and 187(2.00%) upper middle class and rich.

Table 43: No. of Total Caesarian Delivery by Number of Pregnancy 1420-1424 (2013-2018)

No. of Pregnancy	No. of Caesarian	Percent
1-2	10808	74.63
3-4	3496	24.14
5-6	158	1.09
7+	21	0.14
Total	14483	100

Table 43 Presents Caesarian deliveries by number of pregnancies of the mothers during 5 years period since 2013. The highest number of mothers 10808 (74.63%) were 1-2 times pregnant before this Caesarian delivery, 3496(24.14%) pregnant for 3-4 times and 179(1.24%) got pregnancies for 5-7 times respectively before these Caesarian deliveries.

Table 44 Shows the number of wives with Caesarian Section deliveries by the age of their husbands during 5 years period from 2013 to 2018. The highest number of husbands 5488 (38.0%) aged 25-29 years.

Table 44: Total No. of Caesarian Section by Age group of Husband 1420-1424 (2013-2018)

Age group of Husband	No of Caesarian	Percent
19-24	1096	7.6
25-29	5488	38.0
30-34	4298	29.7
35-39	2529	17.5
40-44	774	5.4
45-49	244	1.7
50+	54	0.4
Total	14483	100

Table 45: Caesarian Section by Education of Husband 1420-1424 (2013-2018)

Education of Husband	No of Caesarian	Percent
No Schooling	771	5.3
Primary (1- 5 class)	3681	25.4
High school (6-10 class)	5031	34.7
S.S.C	2432	16.8
College & above	2551	17.6
Quranic education	17	0.1
Total	14483	100

Table 45 presents the number of wives with Caesarian Section deliveries by the education of their husbands during 5 years period from 2013 to 2018. The highest number of husbands 5031 (34.7%) read up to class X.

Table 46: Caesarian section by SES Group of Husband 1420-1423 (2013-2018)

SES group of Husband	No of Caesarian	Percent
Destitute	4	.03
Poor	6841	47.23
Lower middle class	6258	43.21
Middle class	1193	8.24
Upper middle class	120	.83
Rich	67	.46
Total	14483	100

Table 46 shows the number of wives with Caesarian Section deliveries by the socio-economic status of their husbands during 5 years period from 2013 to 2018. Of the total 14483 husbands, the highest number were 6841(47.23%) among the poor and only 187(1.3%) in upper middle class and rich SES groups.

Table 47: Numerical and Percentage Distribution of Mothers Age, Pregnancy Order and Socio-economic Status of Maternal Deaths (N=205) 1414-1424 (2008-2018)

Pregnancy	Mother age group	Socio-economic status														Total	Percent
		Destitute	%	Ultra-poor	%	Poor	%	Lower Middle Class	%	Middle Class	%	Upper Middle class	%	Rich	%		
1-2	15-19	0	0	0	0.0	9	5.8	1	2.2	1	33.3	0	0	0	0	11	5.37
	20-24	0	0	1	33.3	42	27.3	11	24.4	1	33.3	0	0	0	0	55	26.83
	25-29	0	0	0	0.0	22	14.3	7	15.6	0	0	0	0	0	0	29	14.15
	30-34	0	0	0	0.0	5	3.3	5	11.1	0	0	0	0	0	0	10	4.88
	35-39	0	0	0	0.0	4	2.6	1	2.2	0	0	0	0	0	0	5	2.44
3-4	20-24	0	0	0	0.0	3	1.9	0	0.00	0	0	0	0	0	0	3	1.46
	25-29	1	50.0	0	33.3	27	17.5	7	15.6	0	0	0	0	0	0	35	17.07
	30-34	0	0	0	0.0	7	4.5	8	17.8	0	0	0	0	0	0	15	7.32
	35-39	0	0	0	0.0	8	5.2	1	2.2	0	0	0	0	0	0	9	4.39
	40+	1	50.0	0	33.3	2	1.3	1	2.2	1	33.3	0	0	0	0	5	2.44
5+	25-29	0	0	0	0.0	3	1.9	0	0.0	0	0	0	0	0	0	3	1.46
	30-34	0	0	0	0.0	10	6.5	2	4.4	0	0	0	0	0	0	12	5.85
	35-39	0	0	0	0.0	8	5.2	1	2.2	0	0	0	0	0	0	9	4.39
	40+	0	0	0	0.0	4	2.6	0	0.0	0	0	0	0	0	0	4	1.95
Total	15-19	0	0	0	0.0	9	5.8	1	2.2	1	33.3	0	0	0	0	11	5.37
	20-24	0	0	1	33.3	45	29.2	11	24.4	1	33.3	0	0	0	0	58	28.29
	25-29	1	0	0	33.3	52	33.8	14	31.1	0	0	0	0	0	0	67	32.68
	30-34	0	0	0	0.0	22	14.3	15	33.3	0	0	0	0	0	0	37	18.05
	35-39	0	0	0	0.0	20	13.0	3	6.7	0	0	0	0	0	0	23	11.22
	40+	1	50.0	0	33.3	6	3.1	1	2.2	1	33.3	0	0	0	0	9	4.39
	Total	2	100	1	100	154	100	45	10	3	100	0	0	0	0	205	100
	Percent	0.98		0.49		75.12		21.95		1.46		0	0	0.00		100	

Table 47 Presents the Maternal Deaths by their Socio-economic Status. The result indicates that the maternal deaths were highest (75.12%) among the poor SES groups, the second highest (22%) among the lower middle class and only (1.46%) among the middle class. On the other hand less than (1%) maternal deaths found among the poorest SES group. according to age specific maternal deaths, it is observed that the highest death rate 32.68 found in the age group 25-29. The

second highest death rate 28.29 in age group 20-24 and 18.05 percent death occurred in age group 30-34. The numbers of pregnancies have impact on maternal mortality. It is evident from the result of this table that when only age is considered for the causes of maternal deaths it seems to be higher in age grope 25-29 but when both age and number of pregnancies are considered, the rate of maternal mortality is higher in age group 20-24.

Table 48: Maternal Death before Delivery, During Delivery and by Place and Causes of Death, 1414-424(2008-2018)

Causes of Death	Place of Death							%
	Husband Home	Father's Home	GK. Hospital	GOVT. Hospital	Private Hospital	Way to Hospital	Total	
Ante partum Eclampsia	0	0	0	4	1	4	9	25.71
Ante Partum Haemorrhage	1	1	0	3	1	1	7	20.00
Obstructed Labour	2	0	0	1	0	2	5	14.29
Hypertention	1	0	0	0	0	3	4	11.43
Anaemia	1	0	0	0	0	1	2	5.71
Cardiac Failure	2	0	0	0	0	0	2	5.71
Ruptured Uterus	0	0	1	1	0	0	2	5.71
Respiratory Failure	1	0	0	0	0	0	1	2.86
Typhoid fever	0	0	0	0	1	0	1	2.86
Blood reaction	0	0	0	0	0	1	1	2.86
Hung to Death	0	1	0	0	0	0	1	2.86
Total	8	2	1	9	3	12	35	100
Percent	22.86	5.71	2.86	25.71	8.57	34.29		100

Table 48 Shows the maternal deaths occurred before and during delivery by place and causes. There were 35 maternal deaths before delivery of which 9(25.7%) due to ante partum Eclampsia, 7(20.0%) for the cause of ante Partum Haemorrhage, 5(14.3%) by the cause of Obstructed Labour, 4(11.4%) because of Hypertention, 2(5.7%) by each causes of Anaemia, Cardiac Failure and Ruptured Uterus respectively, similarly only 1(2.9%) from each causes of Respiratory Failure, Typhoid fever, Blood reaction and Hung to Death. Out of these 35 maternal deaths, there were 12(34.3%) died on the way to hospital, 9(25.7%) in the Govt. hospital, 8(22.9%) in husband’s house, 3(8.6%) in Private hospital, 2(5.7%) in father’s house and only 1(2.9%) in GK hospital.

Table 49 explains the number of maternal deaths delivered at home by their Socio-economic status during 11 years period from 2008 to 2018. The result shows that of the total 112830 home deliveries there were 59(0.06%) destitute mothers having 3.71 percent maternal death, 301(0.27 %) ultra-poor mothers having no maternal death, 89959 (79.73%) poor mothers having 85.19 percent maternal deaths, 20563(19.00%) lower middle class mothers having 11.12 percent maternal deaths, 1841(1.64%) middle-class mothers having no maternal deaths, 62(0.06%) upper middle class and 45(0.04%) rich mothers had no maternal deaths. So over all 54(0.05%) maternal deaths occurred among the mothers delivered 11230 live births.

Table 49: Total Home Delivery by Socio-economic Status of Maternal deaths1414-1424 (2008-2018)

Socio-economic status	Home delivery (live birth)	Percent	Died Home	Percent
Destitute	59	0.06	2	3.71
Ultra-poor	301	0.27	0	0.00
Poor	89959	79.73	46	85.19
Lower Middle Class	20563	19.00	6	11.12
Middle-class	1841	1.64	0	0.00
Upper Middle Class	62	0.06	0	0.00
Rich	45	0.04	0	0.00
Total	112830	100.00	54	100.00

DISCUSSION:

In this study the socio-economic status (SES) of a household decided on the basis of qualitative and quantitative socio-economic and demographic indicators, such as occupation, education, food intake of members of the household, ownership of land for dwelling and for cultivation, owner of domestic ani-

mals, trees and household belongings. Number of houses and the materials used in the construction of wall, roof and floor of the house as well as type of latrine used and sources of drinking water etc. All these criteria are considered by village level GK health worker and classified as (1) Ultra Poor; (2) Poor; (3) Lower Middle Class; (4) Middle Class; (5) Upper Middle Class; and (6) Rich. The status of the

household is likely to be positively associated with maternal mortality as the mother of a well off households are suppose to be more aware of risk of pregnancies than the poor mothers. Moreover, the former is more likely to have utilized ANC and PNC services than the latter because of their greater awareness and afford-ability.

A pregnant mother is more vulnerable to a deadly disease like tetanus, particularly in poor sanitary condition in many developing countries like Bangladesh. The tetanus vaccinations are used for the safe guard of mother. Moreover, in rural areas of Bangladesh there has been a common practice to cut the umbilical cord using steel blade (not boiled) or blade made of bamboo and paste cow dung on the cord. This unhygienic method causes the risk of tetanus infection. The data in **Table 49** confirm the result that the vaccinated women have considerably lower rate of mortality than those women who have not vaccinated. Educated pregnant women are more conscious for taking and utilizing antenatal and post natal care services than the women who have no formal education. The other cause of maternal mortality is severe anemia. It is observed and estimated that a pregnant women's blood volume increases almost 50 percent, although the amount of plasma is disproportionately greater than blood volume. As a result the fall in the hemoglobin level below the normal level may expose pregnant women to a higher risk of death. To save the mother GK workers treat with iron supplementation.

In Bangladesh there has been a decline of 40% maternal mortality over a period of 9 years from 2001 to 2010. However the maternal mortality due to indirect causes somewhat increased (BMMS, 2010). In this respect the researchers opined that the indirect causes of maternal mortality include diabetes, high blood pressure, heart disease, cancer, tuberculosis, anemia, hepatitis 'B', HIV Aids and Malaria. The age of conception of women either too early or too late also the causes of maternal deaths. One of the members of the Bangladesh maternal mortality and health care survey, 2010 suggests that during and after conception of women if the following measures are taken in the Govt. save motherhood campaign programme to reduce the indirect causes of maternal deaths such as: a) to identify the mother who has been suffering from the diseases mentioned above; b) Cancer vaccination has been given or not. Year Wise

Total Population by Socioeconomic Status, Total Live Birth and Maternal Deaths of Gonoshasthaya Kendra's Health and Demographic Surveillance Areas in Bangladesh 1414-1424 (2008-2018) are shown in (**Appendix A**).

Gonoshasthaya Kendra provides reproductive and child health care as well as family planning services with other services to its catchments villages. Among other things, these are:

- 1. Planning for a healthy pregnancy-** GK health workers regularly go to the villages, find out eligible couple and provide consultation to them about family planning and nutritional matters. Especially, new couple who do not wish to take baby immediately after marry. To identify all eligible couple and inform them about the necessary to accept family planning. Besides, if anyone needs to take any family planning method with the help of government family planning department, then maintain a liaison with them and to provide instrument of family planning methods. If any woman of eligible couple didn't take TT vaccine before, then give her TT vaccine and ensured that she has accepted full course of TT vaccine.
- 2. Care during pregnancy (Antenatal Care)-** Firstly, identify pregnant woman, enlisted and make a follow-up card. The provided health care's are regularly recorded in the follow-up card. Generally, four times antenatal follow-up provides to a normal pregnant woman, but in case of sick, risky and complicated pregnant, antenatal follow-up may be more times. Examining their health condition such as edema, blood pressure, jaundice, anemia etc. At the same time health workers also observe eyes, nose, teeth and stomach height of the pregnant mother. They also observe the movement and heart beat of the womb baby and test urine albumin of the mother. If anyone needs to take nutrition then provide Iron, calcium, vitamin-A and also provide consultation to eat proper nutritious (vegetables) food and minavit for filling up malnutrition.

To register the pregnant mother and recorded various ANC related services, such; (a) height and weight, edema; (b) BP measurement, examining jaundice and anemia; (c) Urine test to iden-

tify sugar and albumin; (d) Examine eyes, ear and teeth; (e) Pregnant cervical height measurement and observe heart beat and movement of the womb baby. To teach the pregnant mother to realize about fetus movement. Encourage the pregnant mother to take Iron and Calcium tablet. Provide TT vaccine to the pregnant mothers. Measuring (Pregnant camp, yard meeting and immunization center) blood grouping of all pregnant mothers. It is also identified some relatives of the pregnant of same blood group from beginning, if blood is required during delivery. If blood is needed, from the close relatives, voluntary blood donor groups (Bondhon, Sondhani) and blood banks are collected the blood and after cross-matching, the blood has to be circulated. Sometimes in need have blood, to announce locally using mosque mike to collect blood. Ensure to identify high risk pregnant, conduct regular follow-up, arrange medicine and timely refer system to the certain place. After identifying pregnant women, firstly attached her with a nearest skilled TBA and provide her/family members the mobile number of the project manager/health in charge/supervisor so that they can communicate with them at any time finding any danger sign of the pregnant.

- 3. Care during Labour and Delivery: Delivery time-** Hearing the news of delivery pain of the woman, at once the trained TBA goes to their home. Most of the time the family member of the pregnant informs GK health workers by phone. 1). It is actual pregnant related pain or not; 2). Due to actual labor, the duration of the contraction will increase and reduce the contraction time from one contraction to the next. If the contraction does not start, the mother is prohibited from pressing, and it is said to make walking, it is said to take long breathing and also said to eat light hot liquids and soft foods. After 2 hours, it is said to urinate; 3). Examine vaginal path, (a) Watch (Slippery fluid content is seen in the vagina with a finger), (b) Whether the uterus has opened and how many fingers it has, (c) Whether the water has broken, the presence of the baby in the womb is diagnosed, (d) Whether there is water colour and smell, (e) Monitoring delivery progress (child movements, checking the heart beat of the child), mother's pulse motion and blood pressure are tested through

partograph, (f) Perineal guard is used to protect perineal tear, (g) The child is caught for not getting hurt as the child falls.

4. The problems which can be performing due to home delivery are as follows

- There are no facilities of Oxygen, Nebulizer or suction if needed.
- If perineum tear and/or heavy bleeding occur after delivery there is no way to provide emergency treatment.
- During delivery pain many of the villagers call quack. Before water leakage the unskilled village doctors push injection for increasing unnecessary pain. As a result still birth may occur, Uterus may be tearing and heavy bleeding occurs and placenta may not be come out smoothly. For that reason many other problems can be seen and at once the patient need to take in the hospital emergency. The conditions of the pregnant mother then become very risky.
- Generally the cultures in our country especially in the community, during the 1st delivery of pregnant mother have to send to her parent's house. During delivery pain, generally unskilled relatives are called to attend delivery who usually don't properly understand. At the time of delivery sometime it is seen that the baby was in breech position. The canal of the uterus was narrow and the unskilled TBA pulled the baby with force, as a result tear the membrane and heavy bleeding occurs. If they fail to stop bleeding then the pregnant mother may be died.

Solution

- Delivery should be conducted by the trained TBA and health workers.
- If the sign and Symptom identified complicated from the beginning, then after starting delivery pain at once the mother have to send in hospital or any health center for safe delivery.
- If any health worker of GK get news of delivery pain from any guardian in village, at once the health worker go to the spot along with doctor and necessary instruments. If they find complication, they bring her to the GK hospital. Besides, they refer the patient to the nearest Govt. hospital or other health centers.

- If any skilled TBA finds complication of the pregnant mother, then she sends her as early as possible to nearest hospital. In this way such problems can be solved.
- 5. For mother and child after birth-**
- (1) Keep the baby a little below at the parallel of the mother's stomach, then the umbilical cord is cremated several times till 2-3 minutes like milking a cow, and is given her directly to mothers breast;
 - (2) After a few minutes, the umbilical cord is bound by three hurdles, then keep the two binding with the baby and cut the umbilical cord between two to three number binding. The cord side of the mother is tied with mother's thyroid. The cord side of the mother is tied with mother's thyroid. It is mentionable that there will not be any cloths to make barrier among mother and baby's skin. It is to keep the baby on the mother's breast for suckling cholesterol. Mothers Placenta is thrown out. It turns out that the placenta is completely untouched. Generally the placenta come out after 30 minutes of delivery, then examine the mothers vaginal path (1) whether it is being tear, (2) Whether excess bleeding is occurring, (3) the uterus is contracted, (4) whether the uterus come down, (5) whether another baby is in the womb. After ensuring positive all, two mesoprostol tablet may be give her through oral or vagina for protecting excess bleeding.
 - 2) Excess bleeding
 - 3) Oedema
 - 4) Blurred vision
 - 5) If the baby is at land shape
 - 6) If baby come out with uterus bag.
 - 7) Whether the baby die in the womb of mother. Pregnant pain is zero but water is broken.
 - 8) If uterus come out after delivery.
 - 9) If the child throat is trapped.

After delivery, if the baby don't cry, the color of the child becomes red-blue then at once have to refer to the suitable health center.

The following matters are taught to the birth attendants during training

Hand washing (practically), Nails cutting, Communication, Counseling, Pregnant care (Safe delivery, normal sign of the womb, danger sign at pre, present and post delivery, primary management and about referring systems), Neonatal care, advantages of cholesterol, Certain time of breast feeding, the way of feeding baby, balance diet for mother and baby, Family planning methods, Immunization etc. Especially, teaches them, how to refer in the emergency situation. Some drugs were taught to them (Iron, Calcium, Paracetamol, Antacid, Vitamin B-Complex, ORS, Messoprostol and about minavit). Maternal death meeting: Maternal death meeting is started at 1990. Super visors as well as health in charge with paramedic have to present in such meeting. Besides, union parishad members, government worker and local well-known persons are requested to join the meeting. At that meeting, the causes of death are discussed with the family members and other attendants. At the same time, it is to provide consultation to the attendants and local community about their duties in such a situation in future.

After childbirth, the mother and child are kept in constant monitoring for two hours so that the mother and the baby can be identified immediately and take proper step to solve the identifying problem. After delivery, at least 3 Post Natal Care (PNC) needed. First visit starts within first week of delivery, but it would be better from first 12 to 24 hours.

Baby and mothers health condition is observed from this visit. 2nd visit is starts after 2nd week of delivery. Advice to give the baby vitamin -A capsule and again examine mother and child health condition. 3rd visit is to be complete within six week after delivery. In this visit, generally encourage mother for immunization of her baby and accept family planning. At the same time encourage other members of the family to provide balance diet to the mother.

When needs to refer

- 1) Being Eclampsia

In this way, the paramedic acquired knowledge to prevent the maternal death. In every monthly meeting, paramedics illustrate their success and failure. The function of various paramedics in the meeting was judged in the best measure. In the next month, again check up the matter of maternal and infant death and try to find out the reasons of it. At the end of the year, paramedic's promotion and salary increase depends on this evaluation. All paramedics of Gonoshasthaya Kendra are dedicated to their responsibility and are sincere in providing services. As a result, their popularity and acceptance is in-

creasing day by day in the villages and clinic level. A matter is needed to mention here that, Gonoshasthaya Kendra never thought against village doctor and dhai, otherwise always tried to train them.

CONCLUSION:

The result of this study suggests that the tetanus vaccination reduce maternal mortality. Iron supplementation will also reduce the high risk of maternal deaths. Increased age at marriage of women will increase the age of conception and maternal death will be declined. If the following measures are taken in the Govt. "Save the motherhood campaign programmers" will help to reduce the indirect causes of maternal deaths. Of the direct causes of maternal deaths, a) Home delivery with untrained dhai, b) Early marriage and conception, c) Not taking proper health care before, during and after delivery, d) Malnutrition, e) Mental and physical torture of pregnant mother. To reduce the indirect or direct causes of maternal mortality, mothers' and guardians awareness must be build up through different Govt. non Govt. Organizations either National or International and also mass media can play vital role how to take proper care of mother during pregnancy and after delivery. Moreover, pregnant mother and her family members should take care about the following four topics to reduce the maternal deaths:

- Pregnant mother have to eat again and again a little amount of nutritious food, not at the end of all members, always try to eat firstly with other children.
- Have to take rest (two hours after lunch and eight hours after dinner)
- Cleanliness (takes care of personal cleanliness and breast)
- Provide cholesterol and exclusive breast feeding after delivery the baby.

Advice to take pre-preparation before delivery:

- To select neat and clean place where adequate light and air are available (clean wealth cloth and rexin sheet).
- Germfree yarn, blade and hand washing soap, covered clean pot for boiling water.
- For taking the baby in lap and wrapping her, need to collect clean dry cloths.

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CONFLICTS OF INTEREST:

The author declares there is no conflict of interest to publish it.

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Appendix-A

Year Wise Total Population by Socio-economic Status, Total Live Birth and Maternal Deaths of Gonoshasthaya Kendra's Health and Demographic Surveillance Areas in Bangladesh 1414-1424 (2008-2018).

Year	Destitute			Ultra poor			Poor			Lower Middle Class			Middle Class			Upper Middle Class			Rich			Total				
	Population	Birth	M Death	Population	Birth	M Death	Population	Birth	M Death	Population	Birth	M Death	Population	Birth	M Death	Population	Birth	M Death	Population	Birth	M Death	Birth	*Rate	M Death	**Rate	
1414 (2007-2008)	2192	3	0	18183	133	0	69432	13191	27	31931	2367	7	51191	180	0	0	0	0	0	0	0	1081779	1574	14.57	34	21419
1415 (2008-2009)	2046	3	0	18590	75	1	675492	11196	15	314818	2210	1	51415	99	0	0	0	0	0	0	0	1063361	1383	12.77	17	12316
1416 (2009-2010)	1997	3	0	18474	44	0	686480	10216	13	316390	2234	0	51507	109	0	0	0	0	0	0	0	1074848	1266	11.73	13	10313
1417 (2010-2011)	1963	1	0	18554	18	0	704651	10652	14	323675	2248	2	52713	137	0	0	0	0	0	0	0	1081576	1296	11.76	16	12349
1418 (2011-2012)	1944	0	0	17713	31	0	748145	11078	9	326693	1928	3	52277	159	0	0	0	0	0	0	0	1149772	1316	11.48	12	9694
1419 (2012-2013)	2119	2	0	17183	22	0	641378	10357	14	330797	2098	4	153516	256	0	38497	0	0	0	0	0	1183490	1275	10.76	18	14134
1420 (2013-2014)	9516	21	0	0	0	0	642181	8888	12	347820	3259	3	150723	427	0	73314	76	0	19265	25	0	1242819	1296	10.22	15	11815
1421 (2014-2015)	8250	15	1	0	0	0	636580	8399	12	346457	4071	7	146102	519	1	69205	21	0	29248	34	0	1235842	1369	10.57	21	16031
1422 (2015-2016)	8523	13	1	0	0	0	597755	7693	11	345604	4140	2	142126	641	0	68377	28	0	30786	28	0	1191171	1253	10.53	14	11142
1423 (2016-2017)	8359	6	0	0	0	0	604187	7830	13	325662	4440	5	143301	447	2	68554	19	0	31281	14	0	1205343	12756	10.56	20	15679
1424 (2017-2018)	0	0	0	8181	0	0	634903	8203	14	362603	5621	11	150037	623	0	67784	78	0	31751	34	0	1234559	1457	11.60	25	17174

Note: M death= Maternal Death, *Per 1000 lives birth, ** Per 100000 lives birth

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