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Maternal Mortality in a District Hospital of Bangladesh An In-Depth Search of the Underlying Causes

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Abstract

Maternal death is a tragedy - a social injustice to individual women, to a family and to their community. To reduce maternal mortality is at the top of the national health priorities. Emergency obstetric care service is thought to be the basis of reducing maternal mortality and morbidity. This study was carried out to determine the case fatality rate and risk factors of maternal mortality in Kushtia General Hospital, a secondary health care facility, where comprehensive Emergency Obstetric Care (EmOC) service is established. A total of 3,709 cases were admitted with pregnancy or related complications during pregnancy or within 42 days of confinement, from August 1999 to July 2000. Among them 3,186 were obstetric patients and 523 were gynaecological cases. Within this 12-months period 37 mothers died. Clinical causes of deaths were: 32 (86.48%) due to eclampsia, 3 (8.1%) due to ruptured uterus with shock, 1 (2.7%) due to induced incomplete abortion with shock and 1 (2.7%) due to PPH with shock. Almost 100% of the deaths could be prevented if they had come to the hospital at an earlier part of the disease. Responsible factors for these deaths could be at personal, familial, socio-cultural or health care center level. So this study was carried out to identify the risk factors of maternal death and also the status of health care delivery system at the peripheral level of the country i.e. the EmOC delay model in this perspective has been tried to identify.

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Introduction

Pregnancy and childbirth is a normal physiological process, a life -giving event[1]. Globally nearly 6,000,000 women die every year from complications of pregnancy and child-birth[2] and most maternal deaths occur in Asia.[3] The model displaying three types of delay in receiving EmOC services invented by Thaddeus and Maine need to be evaluated in individual community to know their own status.[4] In Bangladesh 28,000 women die every year which stems from pregnancy related complications[5]. However, if deaths are to be avoided, women must have access to emergency obstetric care (EmOC) services.[1] In Bangladesh, comprehensive EmOC service is well established in district hospitals. District hospitals are counted as 'secondary care' health centre and are at a close proximity to the community people. So at the district level, relationship between maternal mortality with those of the day to day life of community people, their education, profession, socio-cultural influences and health care delivery system can be easily counted. Kushtia General Hospital, a district hospital of Bangladesh, has a comprehensive EmOC facility having high caseload.

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Till April 2000 it has provided a total of 100-bed arrangement out of which nineteen (19) beds were allocated for Obstetrical cases (12) and Gynaecological cases (7). From April 2000 numbers of beds were increased up to 150 within the same area, with same logistic and manpower supports.

This study reveals information about maternal deaths in Kushtia General Hospital from August 1999 to July 2000. An in-depth search of risk factors has been carried out with regard to maternal age, parity, educational status, and socio-cultural environment of dead mothers and health care delivery system of the area, including referral system.

Aims and objectives:

The main aims and objectives of this study were:

- To determine the maternal case fatality rate and clinical causes of deaths in Kushtia General Hospital of Bangladesh.
- To know the actual situation of EmOC delay model in the peripheral hospital level of Bangladesh.
- To identify the level of action on priority basis.
- To assist the nation to the on going research on health and population by providing proper information.

Material and Methods

This was a cross sectional observational type of study, carried out in Kushtia General Hospital, during the period from August 1999 to July 2000. Total 1057 cases were included in this study having pregnancy related complications. The study was carried out in two parts. First part of the study was conducted in Obstetrics and Gynaecology units of Kushtia General Hospital (KGH) and was intended to determine the case fatality rate and to find out the clinical causes responsible for these deaths. Then second part of the study was carried out to elicit the risk factors that remain behind these deaths. A questionnaire was prepared by a consultant obstetrician to know the risk factors responsible for high maternal mortality in a district hospital where comprehensive EmOC service is well established. The questionnaires were filled up by the doctors and by the examinee students of Diploma Medical course. Doctors collected data from hospital & medical students were specially trained to collect data from the houses of the dead mothers. At the houses data were collected from the relatives of the dead mothers. Though 37 mothers died in this one-year of period, complete data could be collected from 28 families.

Results

Total 37 mothers died of different causes within one year of study period. Case fatality rate was 3.5%. Most of the maternal deaths were due to clampsia (86.84%) followed by ruptured uterus (8.1%), PPH with shock (2.7%) and septic abortion with shock (2.7%) (Table I). In this study, 73% of the mothers died within age 23 and 24% died within 18 years of age (Table-II). Out of 28 mothers 10(36%) were illiterate (Table-III). (86%) of dead mothers were primi-gravida (Table-VII) & 22(78.57%) married before age of 18 years (Table-VI). Among the dead mothers, 24 (86%) conceived for the first time within the age of 20 years (Table-VIII). Most of dead mothers (57.14%) were from lower or middle-income group family (Table-IX). Patient herself could not give any decision about her pregnancy or delivery (Table-X). About 40% mothers got no antenatal checkup and the remainders had only 1 or 2 checkups. In 24(85.70%) of cases, diseases started at or above 32 weeks of pregnancy and those were close to the foetal viable age (Table-XII). In 82% cases disease started insidiously, but these patients failed to get proper care and thus became endangered. When the patient's condition became worse only then they were transferred to Health care centers (Table-XIII). Most of the mothers remained at home at early part of their illness, even the attending service providers failed to direct them properly (Table-XV). Out of 28 cases only 4(14.28%) neonates were alive during this data collection (Table-XVII).

Table-I: Clinical causes of maternal death (n = 37)

Clinical causes of death	No. Of death	Percentage
Eclampsia	32	86.48%
Ruptured uterus	3	8.1%
PPH with shock	1	2.7%
Septic abortion with shock	1	2.7%

- Most of the maternal deaths were due to eclampsia (86.84%).

Table- II: Age of mothers during death (n = 37)

Age in years	No. of death	Percentage
14-18	9	24%
19-23	18	49%
24-28	4	11%
29-33	3	8%
39-43	2	5%
44-48	1	3%

- 73% of the mothers died within age 23 and 24% died within 18 years of age.

Table-III: Educational status of dead mothers (n=28)

Educational status	No.	Percentage
Illiterate	5	17.85%
Able to do Signature	5	17.85%
0-V class	8	29%
VI-X class	9	32%
XI-XII class	1	3.57%

- Out of 28 mothers 36% were illiterate.

Table-IV: Causes of non-school going / dropping out from the school (n=28)

Factors for non school going	No.	Percentage
More than one factor	5	17.85%
Factors for dropping out from school	No.	Percentage
Economical cause	6	25%
Guardian's consideration	5	20.83%
Due to marriage	4	16.66%
Social factors	3	12.5%
More than one factor	4	16.66%
Willingly	1	3.57%

Table-V: Height of the dead mothers (n=28)

Height	No.	Percentage
≤4.10″	10	35.71%
4.11″ – 5′	7	25%
5.1′ – 5.2′	6	21.42%
>5.2′	5	17.85%

- Height of the dead mothers were assumed from their relative's height

Table-VI: Factors responsible for their early marriage (n=22)

Responsible factors	No.	Percentage
Guardian's consideration	10	45.45%
Economical	4	18%
Social factors	2	9%
More than one factor	5	22.72%
Self interest	1	5%

Table-VII: Gravidity of the dead mothers (n=28)

Gravidity	No.	Percentage
Primi-gravida	24	85.7%
2nd — 3rd	2	7.14%
4th—5th	1	3.57%
>5th	1	3.57%

- Most of the dead mothers (86%) were primi-gravida.

Table-VIII: Age of first conception of the dead mothers (n = 28)

Age in years	No.	Percentage
<15	1	3.57%
15 – 17	15	53.57%
18 – 20	8	28.57%
21 – 23	3	10.07%
24 – 25	1	3.57%

- 86% of the mothers conceived for the first time within age 20.

Table-IX: Annual income of the Family members (n=28)

Annual income (Taka)	No.	Percentage
0-5000/-	4	14.28%
5001/- to 10000/-	1	3.57%
10001/- to 15000/-	11	39.28%
15001/- to 20000/-	6	21.4. %
20001/- to 25000	3	10.76%
25001/- and above	3	10.71%

- 57.14% mothers were from lower or middle-income group family.

Table-X: Literacy rate of family members (n=156)

Literacy	No.	Percentage
Illiterate	93	60%
0 – 5 class	23	14.74%
6 – 10 class	23	14.74%
11 – 12 class	8	5.12%
>12 class	2	1.28%

- 60% of the family members were illiterate.

Table-XI: Decision-making persons of the families of dead mothers (n=28)

Name of person	No.	Percentage
Husband	8	28.57%
Father	6	21.43%
Father-in-law	6	21.43%
Mother	1	3.57%
Mother-in-law	2	7.14%
More than one factor	5	17.86%

- Patient herself could not give any decision about her pregnancy or delivery.
- About 40% mothers got no antenatal checkup and the remainders had only 1 or 2 checkups.

Table-XII : Onset of illness & gestational age (n=28)

<20 wks	20-24 wks	24 - 28 wks	28-32 wks	32-36 wks	>36 wks	Puerperium
01 (3.57%)	0	0	02	18	06	01
	0	0	(7.14%)	(64.28%)	(21.42%)	(3.57%)

- In 85.70% of cases diseases started at or above 32 weeks of pregnancy and those were close to the foetal viable age.

Table-XIII : Presence of illness before attending hospital (n=28)

Symptoms absent	Symptoms Present
5 (17.85%)	23 (82.14%)

- In 82% cases disease started insidiously, but these patients failed to get proper care and thus became endangered. When the patient's condition became worse only then they were transferred to Health care centers.

Table-XIV : Causes of delay at home (n=28)

Could not understand the graveness from early signs	Did not know where to go	Did not give importance		Did not go to Health Care Center due to fear of-
		Guardian	patient herself	
9 (32.14%)	3 (10.71%)	11 (39.28%)	2 (7.14%)	1.Unknown center- 0 2. Financial cause- 2 (7.14%) 3. Unsatisfactory treatment-0 4. Misbehaviourof service providers- 0 5. Communication problem-1 (3.57%)

Table-XV : Persons who treated the mothers at home (n=28)

Persons	In early clinical problems	In worst condition	Did not get treatment
Kabiraz	3 (10.71%)	3 (10.71%)	
Village quack	9 (32.14%)	1 (3.57%)	
Medical assistant	1 (3.57%)	_	10 (35.71%)
Traditional birth attendant	4 (14.28%)	_	
Others	_	_	

- Most of the mothers remained at home at early part of their illness, even the attending service providers failed to direct them properly.

Table-XVI : Distance, which the patients had to travel to reach the KGH (n=28)

Distance in Km	No. of mothers who arrived at KGH from home (n=20)	No. of mothers who arrived at KGH from home via health center (n=8)
<10	03	0
11 – 20	08	0
21 – 30	03	02
31 – 40	04	04
41 – 50	02	02

Graph-I: General condition of patients on arrival (n=28)

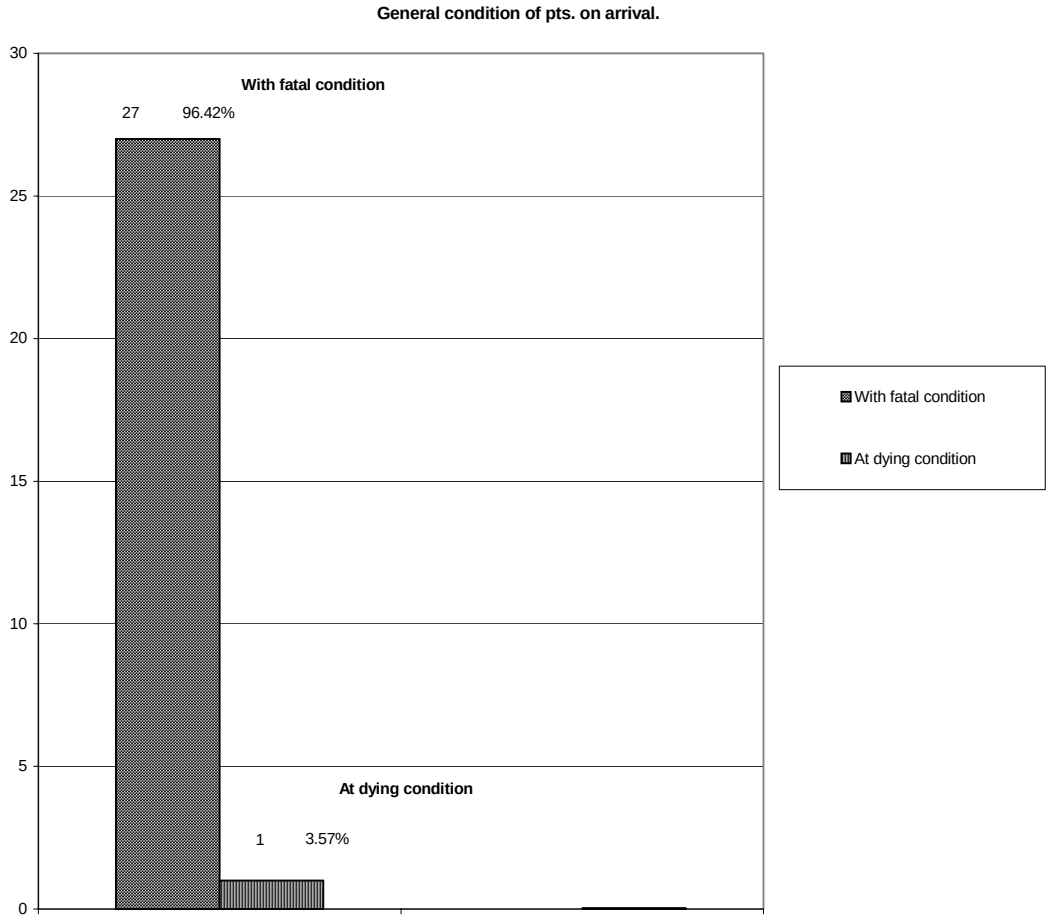

Table-XVII : Foetal outcome (n=28)

Lost in maternal womb	During delivery		After Delivery	
	Alive	Still birth	Alive	Died on first day of life
17 (60.71%)	5 (17.85 %)	6 (21.42 %)	4 (14.28 %)	1 (3.57%)

- Out of 28 cases only 4(14.28%) were alive during this data collection.

Table-XVIII : Relatives comments regarding hospital services (n=28)

Comment	Regarding treatment (n=28)	Regarding service provider's dealings		
		Doctor (n=28)	Aya (n=28)	Nurse (n=28)
Satisfied	46.7%	47.82%	33.33%	24%
Not satisfied	53.12%	52.18%	66.67%	76%

Table-XIX : Number of service providers in relation to patients admitted in KGH

Average no. of patients staying in hospital per 24 hrs.	Number of service providers per 24 hrs.					
	Specialist doctor	MBBS doctors	Nurse		Aya	Sweeper
			Staff	Student		
52.50	1	2 (periodic)	4	8	3	3

Discussion

To reduce maternal mortality is a top priority in our health care system as well as in the international level. It is the most sacred duty and obligation of an obstetrician to overcome all the obstacles to have a woman's dignified obstetric care. In Bangladesh, emergency obstetric care service (EmOC) has been recognized as a key intervention for reducing the high rate of maternal mortality[1]. Once a pregnant woman develops complication, she needs prompt access to EmOC services, if death or disability is to be prevented. However, there is a lack of immediate action at different levels that lead to a high maternal mortality and morbidity. The secondary facilities are closer to the communities. Although a good infrastructure of health care system exists, [1] the referral system is at dismal. A good referral a system is badly needed that could support the existing health cares system.

In this study most of the deaths were due to eclampsia (86.48%). We know eclampsia is a grave disease but almost 100% preventable. It needs proper community awareness, regular checking of blood pressure and urinary albumin tracing specially at late pregnancy. Referral of the cases in pre-eclamptic condition could decrease the number of eclampsia substantially. On the other hand, to prevent deaths from eclampsia an extra setup is urgently needed in the district hospitals.

The ongoing social trait of an early marriage is a curse for a woman's life. Teenage pregnancy has a 2-5 times greater risk of maternal death than women between 20-25 years.[2] In this study 78.57% got married before age of 18 years. Though nationally the legal age of marriage is 18, the legislation is yet less successful in weeding out the practice.[6] Dropping out of school, early marriage and early conception all these make a vicious cycle in a woman's life. In this study, 86% of the mothers (Table-VII) conceived for the first time within age 20 and 73% died within age of 23. Thus one can easily assume how these lives come to an end before blossom fully.

At the background of high maternal mortality remains years of social injustice to female children and as a whole the result of a direct neglect to the women population. Low literacy rate and poverty of the nation is to a great extent responsible for this negative attitude towards women population[7]. Same facts are emerging from this study, where we see 36% of the dead mothers were illiterate. Though 32% had education within class VI-X but that could not save their lives. However, it does indicate our literacy rate is improving. From the national statistics the rate of dropping out from school is available, but we do not have any statistics about the fate of this group. In this study 85.71% of the mothers were in non-school going or dropping out group. Factors responsible for dropping out or non school going were 25% due to economic reasons, in 21% cases guardians were

responsible, 16.66% due to marriage, 12.5% due to social factors. Non school going or dropping out from school leads to a fate of early marriage & early conception & the girls become the owner of all the mishaps sequentially.

In this study we can see more than 71% cases male were the decision maker in the families but they failed to take any proper decision regarding their females during their crucial period. The female lags far behind in putting their opinion regarding vital issues of the family or even her pregnancy and pregnancy related complications. They could not take decision regarding antenatal care or early health check-up during pregnancy.

The potentiality of antenatal care to decrease maternal mortality is out of controversy at least in some clinical conditions like anaemia in pregnancy, pre eclampsia, eclampsia, short statured female, multi parity etc[8]. In this study 40% of the mothers got no antenatal checkup and the remainders had only 1 or 2 checkup. Thus in 82% of cases though disease started insidiously but they failed to be at proper care in time and became endangered. When the patients' condition became worse, then only they were transferred to Health Care Centers. About the delay at home 32% responders expressed that they did not understand the graveness from early signs; 39% were careless about the matter such that they gave no importance to it at all and 11% did not know where to go. These findings correlate well with those done by Abul Barkat & et al[5]. In most of the cases they got treatment from untrained persons in early part of the disease, that also make much delay in getting service from the secondary care centers. But when the patients' condition became worse, they were transferred either to a nearby health facility or to Kushtia General Hospital. Those mothers had to travel a long way to reach Kushtia General Hospital in moribund condition. One mother (3.57%) arrived at the Hospital at gasping condition and the others 27 (96.42%) in fatal condition.

Regarding foetal outcome 63% of the foetuses were not delivered & remained within the womb of the dead mothers. Remaining 37% who were delivered, 50% of them were stillborn and the remaining 50%, i.e. only 18.51% of the totals were alive. One died on the first day of life. Thus out of total 28 babies only 4(14.28%) were alive during this data collection.

At the later part of the study we tried to elicit the level of satisfaction from the family members about the health facility, even after the mothers expired. This shows as whole they were dissatisfied to the existing health care delivery system that needs further in depth search.

It has been said that measurement of quality allows the conservation of resources and it is more important to have the best possible use of limited resources[9]. On the other hand the study reveals the crisis of manpower which itself is an obstacle to delivery of adequate and satisfactory services.

Conclusion

This study put forward the same truth about which a long discussion has been going on since Cairo ICPD, 1994 [10] - at the background of high maternal mortality remains long years of social injustice to the female population. Low literacy rate and ignorance of the people are responsible for this negative attitude towards women. Non-school going or dropping out from the school (86%), early marriage (71%) and early conception (86%) make a vicious cycle responsible fore maternal life expiration. In this study eclampsia was the leading cause of maternal mortality (86%) but ruptured uterus, post partum haemorrhage & septic abortion also contributed a lot.

The manpower crisis should be taken care of by the equal distribution of skilled manpower throughout the country and by building up of resource persons and adequate supportive staffs. Referral must be updated to prevent such deaths.

This study has been conducted about six years back and has passed many promising years of implementation of new ideas and interventions. Now it is the time to have a criterion-based audit to evaluate the whole situation and to find out a right way not only to decrease maternal mortality but also to save the rights and dignity of our females

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