Original Research Paper

Community Medicine

A PROSPECTIVE STUDY OF MATERNAL MORTALITY IN JORHAT AND GOLAGHAT DISTRICTS OF ASSAM

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ABSTRACT

Background: Pregnancy, although being considered as physiological state, carries serious risk of preventable maternal morbidity and mortality.
Objective: To find out the causes of maternal deaths occurred in Jorhat and Golaghat district of Assam .
Materials and Methods: A prospective study was conducted for one year.
Result: 36.7% maternal death were due to anemia, 30% due to Eclampsia, 6.7% due to PIH. 90% cases were from rural areas. Majority of(55.6%) rural subject were from tea garden areas. Most of (70%) the deaths were found in 18-25 years of age group. 63.3% were illiterate. More(56.7%) maternal deaths were found in lower socio-economic class and 2nd delay was found to be as major delay(60%). **Conclusions:** anemia was the major cause of maternal deaths followed by eclampsia, PIH & PPH. Illiteracy, ignorance, unawareness, poor socioeconomic conditions, lack of antenatal checkups, and drawbacks in referral systems were the major causative factors.

KEYWORDS : Maternal Death, Facility Based Surveillance, Community Based Surveillance

INTRODUCTION

The status of health care in a community can be accessed by the maternal mortality rate and infant mortality rate. Maternal death is one of the most devastating events in obstetrics with widespread implications on both the family and the medical staff involved. Every woman goes through a risk for this sudden and unexpected event during pregnancy, childbirth and after delivery (1). In India maternal mortality is still having a very high rate, i.e.130 per lakh live births (SRS 2014-2016) in comparison to developed countries (2).

Worldwide 5, 36000 women are dying of pregnancy related complication annually. India is carrying 25% of global burden (3). In every minute a maternal death occurs all over the world and in India there is a maternal death in every five minute. Almost half a million women die every year from complications during pregnancy and childbirth (3). One of target of the Sustainable development goal is to reduce maternal mortality ratio to less than 70 per 100000 live birth by 2030 under goal 3 as set based on proposal of UN General Assembly open working groups(4) .

Causes of maternal deaths varies among different countries. In developed countries major causes of maternal deaths are hypertensive disorders, hemorrhage and embolism. On the other hand, in developing countries major causes of maternal deaths are anemia, hemorrhage, hypertensive disorders and sepsis(2).

Although various programmes like Jananisuraksha Yojana, Jananishishu Suraksha Yojana and Rajiv Gandhi Jeevandayi Yojana etc has been implemented with a view to reduce maternal mortality in India , the country is far away from reaching the set target in term of reduction in MMR . Maternal death audits are being conducted at every district for identifying the cause of maternal deaths and for immediate correction of the factors. Various underlying factors (delays in care)are being identified and tried to addressed. Medical officers are being trained so that they can provide skilled and effective care. Ambulance care is made available free of cost for prompt transportation of mothers and neonates(3).

With MMR of 237/Lakh live births (SRS 2014-2016) Assam contributes the highest burden of maternal death among the Indian state. Further study was realized necessary to find out causes of such higher rate of maternal death in this part of country. Considering this variation in maternal death rate the study was undertaken to find out the causes of maternal deaths occurred in Jorhat and Golaghat district of Assam from during April 2017 to March 2018.

METHODOLOGY

It was a prospective study conducted in Jorhat and Golaghat district which are administrative districts of Assam. Jorhat district covers an area of 2851 sq.kms with a population of 1,091,295. Health care delivery system of Jorhat district consist of 144 sub-center,44 Primary health center,6 Block PHC,5 community health center,2 sub-divisional civil hospital and 1 medical college. Golaghat district occupied an area of 3502 sq.km with a population of 10, 58,674. Health care delivery system of Golaghat district consist of 144 Sub-centre, 40 Primary health centre, 5 Block PHC, 4 Community health centre, 1 Sub-divisional civil hospital and 1 District hospital. The study was carried out over a period of one year from April 2017 to March 2018.

Type of study: - Prospective study.
Sampling technique: - Sequential sampling.

Study period: - The study was carried out over a period of one year from April 2017 to March 2018.

Study Participants: - Respondents of deceased family of Jorhat & Golaghat district.

Sample size: - All maternal deaths reported in Jorhat & Golaghat districts during study period were taken as sample for the study

Inclusion criteria
1) Maternal deaths that occurred at Jorhat & Golaghat District during study period.

Exclusion criteria
1) Non-maternal deaths (Deaths from Accidents, Poisoning or Physical assault)
2) Family not giving consent for the study.
3) Maternal deaths occurring beyond the study period.

During the study period the maternal deaths reported were ascertained from the death register maintained in the department of Obstetrics & Gynaecology of Jorhat Medical College and at the district nodal office (maternal death) of Jorhat and Golaghat districts.

The death registers were searched /explored every week for this purpose during study period.

Facility based surveillance:-
For conducting facility based surveillance of the maternal deaths which occurred at Jorhat Medical College and Hospital, the bed head tickets of deceased women maintained by the department of Obstetrics and Gynaecology were consulted for collection of data.

The death which occurred in Primary Health Centre (PHC),

Community Health Centre (CHC), Block Primary Health Centre (BPHC) & First Referral Units (FRU) of Jorhat and Golaghat Districts, the death records maintained/available at BPHC of respective Districts were consulted for collection of data.

Community based surveillance:-
For evaluating the circumstantial causes of maternal death, the residence of deceased family was visited for conducting community based maternal death surveillance. For home visit prior intimation was given to ASHA/ ANM/Field workers to track the deceased family in their village and to fix a mutual date for interview.

On the basis of information provided by ASHA/ANM/Field workers the deceased family was visited and data were collected from the respondents (Husband/Mother/Sister/Brother.etc) who could provide information of all in regards to the event from the beginning. It was done within 21 days from the death of study subjects.

Data were collected using Facility Based and Community Based Maternal Death Surveillance & Response Performa adopted from NHM (National Health Mission) MDSR (Maternal death surveillance & response) guideline. Detailed history regarding demographic characters, cause of death, level of ANC, types of delay etc. were noted.

Types of delay according to maternal death review form
Type 1 delay- Delay in decision making to seek help.
Type 2 delay- Delay in transport due to deplorable roads and unavailability of vehicles.
Type 3 delay- Delay in institutional level.

RESULT & OBSERVATION
A total of 30 maternal deaths from Jorhat and Golaghat district during study period were included in the study. Out of 30 maternal deaths, 27(90%) cases were from rural areas and 3(10%) cases were from urban areas. Among the rural deceased women majority were from tea garden areas 15 (55.6%). Most of the deaths were from 18-25 years of age group 21(70%) followed by 26-30 years of age group 6(20%).

In our study majority of the deceased women were illiterate 19(63.3%). More maternal deaths were found among lower socio-economic class 17 (56.7%) followed by Upper lower class 11(36.7%).

Table 1: Different features of deceased women

Categories		Number	Percentage
Residence	Rural	27	90%
	Urban	3	10%
Age	< 18 years	0	0
	18-25 years	21	70%
	26-30 years	6	20%
	31-35 years	2	6.7%
	≥ 36 years	1	3.3%
Educational Status	Illiterate	19	63.3%
	Literate	11	36.7%
Socioeconomic status	Upper class	0	0
	Upper middle class	1	3.3%
	Lower middle class	1	3.3%
	Upper lower class	11	36.7%
	Lower class	17	56.7%
Parity	Primi	17	56.7%
	Multy	13	43.3%

Out of total 30 maternal deaths; 36.7% were due to anemia, 30% were due to Eclamsia, 6.7% were due to PIH. Septic abortion, PPH, pulmonary embolism and ARDS account for 3. 3% of each; cause of 13.4% of maternal deaths could not be ascertained.

Table 2:- Distribution of deceased women according to diagnosis at admission (n=30)

Cause	No. Of maternal deaths	Percent
Direct cause		
PPH	1	3.3
Eclampsia	9	30
PIH	2	6.7
Septic abortion	1	3.3

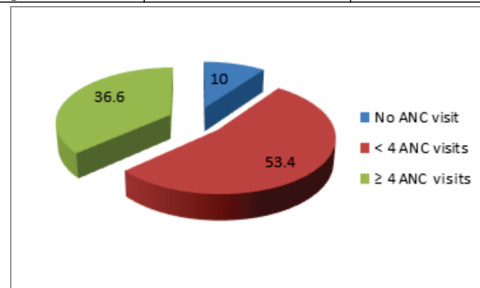| Indirect cause		
Anaemia	11	36.7
Pulmonary embolism	1	3.3
Others (ARDS)	1	3.3
Undiagnosed	4	13.4

Figure 1: Utilization of ANC services by deceased women throughout pregnancy

In the study only 36.6 % (11) of pregnant utilized ≥ 4 ANC visit. Majority53.4 % (16) of pregnant women received < 4 ANC visit throughout their pregnancy and 10%(3) of pregnant were found having no antenatal check up.

Table 3: - Distribution of delay among deceased women (n=30)

Delay	No.of maternal death	Percentage
1st delay	8	26.6
2nd delay	18	60
3rd delay	4	13.4

Considering the type of delay type 2 delay (60%) was commonest followed by type 1 delay (26.6%), type 3 delay was least common (13.4%).

DISCUSSION
Maternal mortality is an index of reproductive health of the society. High incidence of maternal deaths reflects poor quality of maternal services, late referral, illiteracy and low socio-economic status(3).

In the study, most common cause of maternal deaths were found to be anemia(36.7%) which is multifactorial in origin. Retrospective studies done by Mukherjee et al from 2006 to 2010 at a tertiary care(teaching) institute in Uttar Pradesh and Bor RC et al from 2014 to 2016 at Tezpur medical college and hospital, Tezpur, Assam found a similar result of 25.4% and 28.8% respectively (5,2). Anemia was the leading cause of maternal deaths of our study, this is accounted to the fact that most of the patient were from rural areas with poor nutrition, lack of awareness, poor education, inadequate birth spacing and irregular ANCs.

Eclamsia (30%) was the second major cause of maternal deaths in the study. Retrospective studies done by Badrinath M et al from 2009 to 2014 at SDM Medical college of Karnataka and Khandale SN et al from 2011 to 2015 at Indira Gandhi Government Medical College, Nagpur, Maharashtra found 28.8% and 28.9% respectively(6,3). High rate of Eclamsia in our study may be due to poor health seeking behavior, illiteracy, low socio-economic condition and lack of awareness about complication of Eclampsia.

Regarding 3 delays, the 2nd delay (60%) was identified as major delay in our study. Similar study conducted by Khandale SN et al from 2011 to 2015 at Indira Gandhi Government Medical College, Nagpur,Maharashtra found 1st delay as major delay (85.8%). Dayalal VA et al in a study carried out from 2011 to 2015 in Surat Municipal Institute of Medical Education Research also found 1st delay as major delay (57.7%)(3,7). 2nd delay in our study may be due to poor condition of road, late arrival of transport after calling and long distance between home & health facility.

CONCLUSIONS
From our study, it was found that anemia was the major cause of maternal deaths followed by eclampsia, PIH & PPH. Attempts should be made to reduce maternal death by maintaining strict adherence to the protocols for prevention of nutritional anemia , management of eclampsia and post partum haemorrhage at all levels . Quality training of the health care personal to combat these life threatening

events at the grass root level ,timely identification of complications and prompt referral to higher centre whenever necessary is very crucial for prevention of maternal deaths. Further as the present study showed that type 2 delay (60%) was commonest amongst the deceased subject, prior arrangement of transportation facility can be a vital strategy for avoiding maternal death. On the other hand, awareness among the common population regarding importance of routine antenatal check up is prime importance. Most deaths can be avoided by improving socio-economic status, level of education, quality of patients' nutrition, good antenatal, intra-natal and postnatal care and early referral of the complicated cases.

ETHICAL APPROVAL- Approved by the Institutional Ethical Committee.

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