Section: Miscellaneous

Original Research Article

SCRUTINIZATION OF MATERNAL DEATHS FOR DELAYS, DISTANCES AND DIFFERENT REFERRALS IN SELECTED DISTRICTS OF JABALPUR DIVISION, INDIA.

Neelam Anupama Toppo[1], Aditya Thakur[2], Archana G Singh[3], Deepali Soni[4], Priyanka Dubey[4], Sapna Tiwari[4], Archana Mishra[5], Ravindra Singh[6]

[1]Professor, Department of Community Medicine, Netaji Subhash Chandra Bose Medical College, Jabalpur, Madhya Pradesh, India.
[2]Associate Professor, Department of Community Medicine, Netaji Subhash Chandra Bose Medical College, Jabalpur, Madhya Pradesh, India.
[3]Associate Professor, Department of Obstetrics and Gynaecology, Netaji Subhash Chandra Bose Medical College, Jabalpur, Madhya Pradesh, India.
[4]PG Resident, Department of Community Medicine, Netaji Subhash Chandra Bose Medical College, Jabalpur, Madhya Pradesh, India.
[5]Deputy Director, Maternal Health in National Health Mission Govt. of Madhya Pradesh, India.
[6]State Programme Officer, Maternal Health in National Health Mission Govt. of Madhya Pradesh, India.

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Corresponding Author:
Dr. Aditya Thakur
Associate Professor, Department of Community Medicine, NSCB Medical College, Jabalpur, Madhya Pradesh, India.
Email: adityathakur701@gmail.com.

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ABSTRACT

Background: The disheartening reality sheds light on the tragic consequences that can arise from inaction and inefficiencies in maternal healthcare systems, often leading to devastating outcomes for mothers and their families. Among the multifaceted causes of maternal deaths, one deeply concerning aspect is the phenomenon of "maternal deaths due to delays". **Objective:** To explore the pervasive issue of maternal deaths due to delays, distance, different referrals highlighting the discrepancies in the system.

Materials and Methods: It was a descriptive cross sectional study done in selected district (Jabalpur, Mandla, Narsinghpur, Katni) of Jabalpur division of Madhya Pradesh, India for a period of 1 year from April 2021 to March 2022. A total of 68 maternal deaths were reviewed out of 324 total maternal deaths in Jabalpur division in 2019-2020.

Results: Pathway analysis of the maternal deaths were drawn to illustrate the Referrals of the maternal deaths in various health care facilities. About 42(61%) of the deceased mothers were referred to two facilities. 17(25 %) and 3 (5%) of the deceased mothers were referred to third and fourth health facilities respectively. Major causes of the delays were identified was the No birth preparedness by the family/deceased mother, inadequate referral system and shortage of staff in the facilities, Lack of encouragement from relatives & community members to seek care.

Conclusion: The delays require a multi-faceted approach involving improved healthcare infrastructure, increased access to skilled healthcare professionals, community education, removing financial barriers, promoting respectful and patient-centred care, and addressing cultural and societal norms that discourage timely care-seeking.

Keywords: Maternal, Death, Delay, Referral, Facilities.

INTRODUCTION

In an era marked by extraordinary advancements in healthcare and technology, the alarming persistence of maternal mortality remains a stark reminder of the challenges we face in ensuring safe childbirth for women around the world. Among the multifaceted causes of maternal deaths, one deeply concerning aspect is the phenomenon of "maternal deaths due to delays". This disheartening reality sheds light on the tragic consequences that can arise from inaction and inefficiencies in maternal healthcare systems, often

leading to devastating outcomes for mothers and their families.

Maternal mortality, defined as the death of a woman during pregnancy or within 42 days of the termination of pregnancy, is a global public health issue that transcends borders and socioeconomic status.[1-2] According to the World Health Organization (WHO), approximately 810 women die each day from preventable causes related to pregnancy and childbirth.[1-2]

According to the estimates of the Sample Registration System (SRS) of India, the MMR has significantly dropped from 400 per 100,000 live births in the early 1990s to 230 per 100,000 live births in 2008 and 130 in 2016. Recent estimates of SRS have witnessed a steady decline in the MMR from 130 to 113 per 100,000 live births, with the highest rate in the State of Assam (215 per 100,000 live births) and the lowest in the state of Kerala (43 per 100,000 live births).[3-4] Despite several initiatives taken by government bodies, disparities in maternal health have been noticeable across India's socioeconomic gradient due to poor health awareness.

Disturbingly, many of these deaths occur due to delays in accessing appropriate medical care and interventions during the crucial stages of childbirth. The concept of "maternal deaths due to delays" was first introduced in the seminal work of Thaddeus and Maine in 1994, who categorized delays into three distinct phases: Delay in Seeking Care, Delay in Reaching Care, Delay in Receiving Care.[2] Each of these delays can exacerbate underlying health conditions, escalating a manageable situation into a life-threatening emergency. The consequences are not limited to the loss of maternal lives; they extend to the well-being of new-borns and surviving family members who endure the pain of losing a loved one and may face economic hardships as a result. This article seeks to explore the pervasive issue of maternal deaths due to delays, distance, different referrals highlighting the discrepancies in the system and delving into potential solutions to address this pressing concern.

MATERIAL AND METHODS

It was a descriptive cross sectional study done in selected district (Jabalpur, Mandla, Narsinghpur, Katni) of Jabalpur division of Madhya Pradesh, India for a period of 1 year from April 2021 to March 2022. A total of 68 maternal deaths were reviewed out of 324 total maternal deaths in Jabalpur division in 2019-2020.

Selection of Maternal Deaths

From every selected district we reviewed 2-2 maternal deaths occurred at home and on the way to facility. 9 maternal deaths from 3 districts i.e. Katni, Mandla, Narsinghpur and 25 maternal deaths from Jabalpur district that have occurred in the facility were reviewed as shown in. Table.1. Selection of maternal deaths was further carried out by using random number table once the listing of maternal deaths was obtained from the division headquarter.

Table 1: Selection of District Wise Maternal Death

	Jabalpur	Katni	Mandla	Narsinghpur
Maternal Death occurred at home	2	2	2	2
Maternal Death occurred on the way to hospital	2	2	2	2
Maternal Death occurred at Hospital	25	9	9	9
Total	29	13	13	13

Inclusion Criteria

All pregnant women irrespective of gestational age and postpartum within 42 days of delivery registered or unregistered who died due to direct or indirect causes was included in the study.[5]

Exclusion Criteria

Relatives of deceased women whose houses were locked or who could not be traced, and stakeholders who could not be contacted.

Tools and Techniques

Verbal autopsy was done at the community for the identification and contributing factors for delays. [5-6]. Facility record review was done at every health facility level where the referral was done. Triangulation of data from district, verbal autopsies was done to identify the Delays, Distance and referrals factors responsible for maternal deaths at various levels.

Data analysis plan

Data obtained through verbal autopsy and record review was coded and entered in Microsoft excel sheet and frequency table was generated. Descriptive charts were prepared and Pathway analysis was done at depicts the different referrals of maternal deaths.

Ethical Consideration

Institutional Ethical clearance was obtained from institutional ethics committee of Govt. Netaji Subhash Chandra Bose Medical college, Jabalpur. Informed consent was taken from all the stake holders and families where verbal autopsy was done.

RESULTS

Table no.2. reflects that most of the deceased women had early marriage and early pregnancy and 38 (55.88%) belonged to Scheduled Tribe category followed by Other Backward Class 19 (27.94%) and Scheduled Castes 09 (13.24%) and only 2 women belonged to General category. Most of them were from BPL groups. Majority of deceased women

were not much educated and they might not understand all the importance of Antenatal Check-ups, nutritional diets etc.

Delays at different level is very contributory cause for death as those hours are GOLDEN HOURS to save such deaths. Figure 1. clearly depicts the median second delay was of 0.5 hour or 30 minutes in all four districts but its vary for First delay and third delay. Figure.2. shows the mean distance of facility where deaths occurred is 41.38 km to 70 km. In Jabalpur all multiple facilities are available and within the reach too so those delays are less compare to Katni, Mandla and Narsignhpur. Jabalpur received referral from Katni, Mandla and Narsignhpur, so, third delay are higher in those districts.

Figure 3. Shows that medical college shares the maximum load of the maternal deaths followed by District hospitals. Also 11 (16 %) of the in-transit maternal deaths were also reported might be due to first and second delays with multiple factors. Pathway analysis of the maternal deaths were drawn to illustrate the Referrals of the maternal deaths in various health facilities. About 42(61%) of the deceased mothers were referred to two facilities. 17(25 %) and 3(5 %) of the deceased mothers were referred to third and fourth health facilities respectively as show in figure 4. This picture shows the poor condition of the health system in birth preparedness and batching-matching plans of the present health system. The causes of three types of delay are displayed in Table 3. Major causes of the delays were identified was the No birth preparedness by the family/deceased mother, inadequate referral system and shortage of staff in the facilities, Lack of encouragement from relatives & community members to seek care. Most number of causes were identified from the first and the third delay, it may be possible that there is the combination of all three delays or two delays or may be single delay.

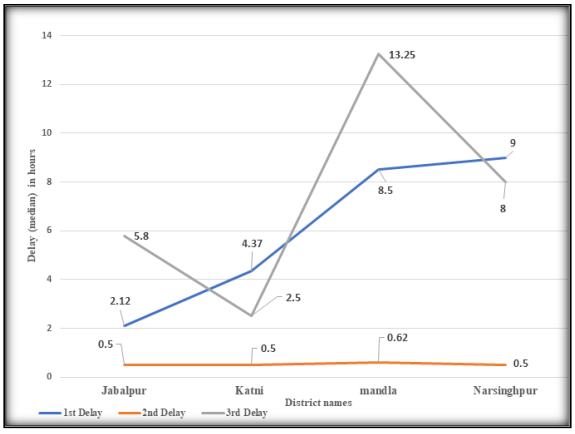


Figure 1: Median delays in hours of maternal deaths

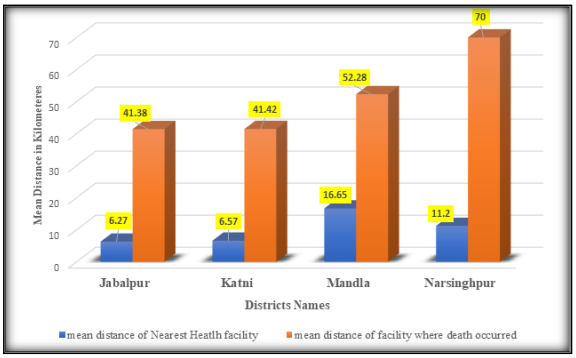
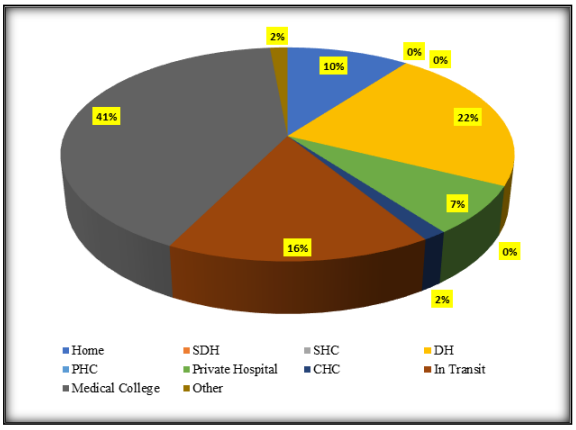


Figure 2: Mean distance (in Kilometres) of nearest facility and where death occurred



SDH= Sub District Hospital, SHC = Sub Health Centre, DH= District Hospital, PHC = Primary Health Centre, CHC= Community Health Centre.

Figure 3: Distribution of Deceased women according to place of their death

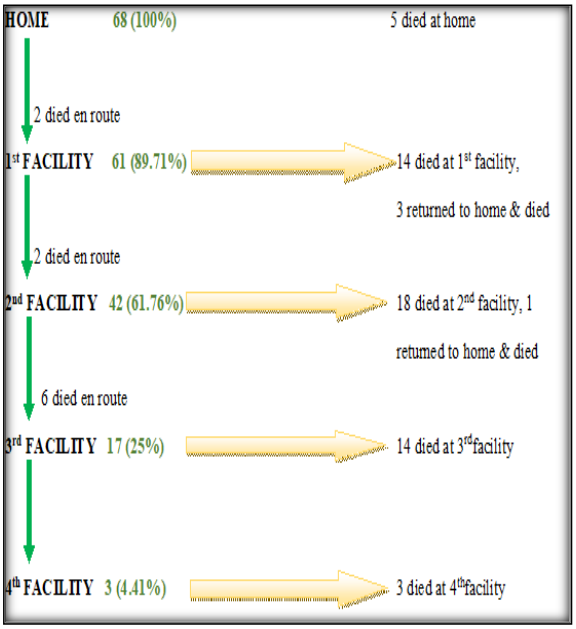


Figure 4: Pathway analysis of all maternal deaths

Table 2: Socio-demographic characteristics of the deceased mothers

Characteristics		Maternal Deaths n (%)
Age at marriage (years)	15-24	62 (91.18)
	25-34	3 (4.41)
	35-44	1 (1.47)
	≥45	0 (0)
	Not known	2 (2.94)
	Total	68 (100)
Age at death (years)	15-24	38 (55.88)
	25-34	27 (39.71)
	35-44	3 (4.41)
	≥45	0 (0)
	Total	68 (100)
Religion	Hindu	62 (91.18)
	Muslim	5 (7.35)
	Jain	1 (1.47)
	Total	68 (100)
Caste	Scheduled Tribe	38 (55.88)
	Scheduled Caste	9 (13.24)
	Other Backward Classes	19 (27.94)
	General	2 (2.94)
	Total	68 (100)
BPL Status	BPL	59 (86.76)
	Non-BPL	9 (13.24)
	Total	68 (100)
Education	Illiterate	11 (16.18)
	Up to 5th Standard	12 (17.65)
	Up to 8th Standard	30 (44.12)
	Up to 12th Standard	8 (11.76)
	Graduate and above	4 (5.88)
	Not known	3 (4.41)
	Total	68 (100)

Table 3: Causes of Three Types of Delay (n =68) *

Types of Delay	Causes	Deceased Mothers n (%)
First delay	No birth preparedness	32 (47.05)
	Fear of ill treatment at health facility	3 (4.41)
	Faith in local healers	2 (2.94)
	Lack of encouragement from relatives & community members to seek care	20 (29.41)
	Reluctance of the mother or family to seek care because of cultural constraints	7 (10.29)
	Lack of accompaniment to health facility	5 (7.35)
Second delay	Distance of healthcare facility	7 (10.29)
	Difficult terrain	11(16.17)
	Delay in getting transport	4 (5.88)
	Lack of awareness of existing services	9 (13.23)
Third delay	Inadequate referral system	31 (45.58)
	Substandard Treatment/ Mistreatment	10(14.70)
	Shortage of staff	25(36.76)

*Multiple responses

DISCUSSION

The "Three Delays" model is a framework used to understand the factors contributing to maternal mortality in low-resource settings. The type 1 and type 3 delay with combination or with isolation has occurred in most of the maternal deaths in the Present study similar to the studies done in Ethiopia.[7-8] Type 1 delay was also influenced by the traditional "wait and see" approach. In this approach action is taken only when condition worsens or when complications occur.[9]

Furthermore, there was a lack of perception that even a normal pregnancy could end in complications at time of delivery and in postpartum stages. In the Present study there was lack of encouragement from relatives & community members to seek care and moreover there was no birth preparedness. Some of these deceased mothers belongs to poorest of the poor group, most vulnerable due to poor nutritional status, further at risk for micronutrient deficiencies and thus vulnerable for pre-eclampsia and eclampsia. Time is lost also due to the understanding about pregnancy and childbirth related phenomenon as a natural one and hence the symptoms are not promptly addressed and sought care of. Their Poor economic condition and low educational status might be the barrier in identification of the danger signs and symptoms. Which ultimately lead to the Type 1 delay in these mothers. These findings are in agreement with the studies conducted by David E et al and Mohammed

MM et al.[10-11] The Factors founded in study of David E et al were lack of confidence in the healthcare system, lack of knowledge regarding the danger signs of pregnancy, inadequate antenatal care, non-compliance with health provider's advice and belief in alternative care were found to be responsible for type 1 delay.[10]

In present study the type 2 delays were also identified but were minimal in comparison to other two. 108 ambulance service in Madhya Pradesh has been one of the achievements of the national health mission that allows free transfer of pregnant mother from home to facility, inter facility transfer in case of referral and drop back facility for mother and children.[12] This is the reason in reduction of type 2 delays in the maternal deaths. Although there are cases in which there has been delay in getting these transport due to availability of only vehicle in the large area.

factors like difficult terrain in the tribal areas were also identified, there were two instances were relatives had to carry the mothers to some distance where vehicle were unable to come as there were no roads in the village. Also Lack of awareness of existing services were identified in some cases. In many instances, earning daily wage might be prioritized over transportation expenses for reaching healthcare facility even when the complications occur, which also worsens the situation sometimes.

The type 3 delay specifically refers to delays in receiving appropriate and adequate care at a healthcare facility. In present study causes identified for the type 3 delay were Inadequate referral system, Substandard Treatment/ Mistreatment and Shortage of staff in the health facility.

Mohammed MM et al also disclosed inadequate referral system (48.3%) to be one of the common reasons of delay similar to the Present study. Other reasons were unavailability of senior staff and lack of competence on emergency obstetric care services in health facilities.[11]

However, the observations of present study are consistent with the study conducted by Mgawadere F et al.[13] This study demonstrated long waiting time before at a healthcare institution to be the most common reason of delay followed by shortage of supplies. In present study District Mandla had the higher median type 3 delays. The reason might be the unavailability of the skilled obstetricians, and anaesthetists in the District hospital. There were few cases who were worsened while being admitted in the hospital.

Duty staff was unable to understand the worsened condition which ultimately leads to delays in referring patients from healthcare facility to tertiary centre. Delayed referral lead to in inadequate management of critical conditions. This might be interpreted as a lack of adequate emergency response from health services. Appropriate and timely complication management requires specific midwifery and specialist skills from the health providers as well as adequate availability of EmOC (EMERGENCY OBSTETRIC CARE) services which was clearly lacking in this case.[14-16]

Multiple referrals were predominating in the present study. most of the cases were referred without any pre-referral treatment and they had to go through multiple referrals. This resulted in delay in initiation of treatment. Multiple referrals not only delay treatment but also put patients at risk and they also exhibit lack of birth preparedness.

In concordance with the above results, in study of Aden JA et al, it was observed that 90% of the women among the maternal deaths presented to more than one healthcare facility of which 46.67% of the cases visited three healthcare providers.[17]

Whereas Raj SS et al had carried out a descriptive study in Unnao district, Uttar Pradesh, India. This study revealed contrasting results in which 57% of deceased women were taken to more than one health facility of which 25% were taken to three health facilities. Maximum proportion of women succumbed to death at the third health facility (19.3%) and at home (19.3%).[18]

Providing the substandard treatment and misbehaviour were also common causes of the type 3 delay. The Inadequate knowledge in the staff, outdated practices, and lack of protocols for managing obstetric emergencies can lead to type 3 delays in providing proper care. Also an importance aspect of doctor patient relationship is the good behaviour towards their patient. If a women have experienced disrespectful or abusive behaviour from healthcare providers in the past, they might delay seeking care due to fear or mistrust. Or they might leave without proper treatment.

In present study the highest load of maternal death was weighed by the Medical college hospitals. It was because medical college often receive referrals of complex and high-risk cases from lower-level facilities. These cases might involve severe complications, pre-existing medical conditions, or multiple complications that can increase the risk of maternal death. Insufficient resources and shortage of skilled staff at lower health facilities also increases the load in tertiary care centre. It was evident in the present study that more than 42(60 %) of the deceased women were referred to two or more health care facility, also referring patients from primary or secondary healthcare facilities to tertiary centres can lead to maternal deaths.

CONCLUSION

Our study sheds light on critical aspects of maternal mortality, revealing a significant trend in 1st and 3rd delays that demands attention. This identification of a heightened occurrence of the third delay in the crucial stages of maternal care underscores the need for targeted interventions during this phase. Moreover, the elevated frequency of referrals noted in our study during the first two facilities highlights the complexity of maternal healthcare delivery.

These Referrals are indicative of a poor healthcare system in the peripheral centres or near the homes of deceased mothers. Even after reaching the facilities in time the referral is unavoidable and bound to happen because of the resource less, non-skilled health care staff at these places. understanding the reasons behind these referrals is of a paramount importance. In essence, our findings emphasize the urgency of implementing strategic measures to mitigate the third delay and reduce the associated referrals. By focusing on improving accessibility, reducing systemic bottlenecks, and enhancing collaboration between healthcare providers, we can contribute to a more effective and responsive maternal healthcare system.

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